RECORD OF DECISION

for

Troy Mine Revised Reclamation Plan

Lincoln County, Montana

September 2012

Prepared by:	
U.S. Department of Agriculture – Forest Service Kootenai National Forest Three Rivers Ranger District	State of Montana Department of Environmental Quality Environmental Management Bureau
Responsible Officials **FOREST SERVICE DECISION BY:** PAUL BRADFORD Forest Supervisor, Kootenai National Forests Date: 9/12/2012	**DEPARTMENT OF ENVIRONMENTAL QUALITY DECISION BY:** RICHARD OPPER Director DEQ Date: 9/11/12

Section 1 - Background

Introduction

In 1978, Kootenai National Forest (KNF), United State Department of Agriculture – Forest Service, and the Montana Department of State Lands (DSL) issued respective federal and state approvals for the Troy Mine. KNF issued a Record of Decision (ROD) on October 23, 1978, and DSL issued Operating Permit No. No. 00093 on November 27, 1978. Troy Mine Incorporated (Troy Mine, Inc.), formerly known as Genesis, operates the Troy Mine.

In the fall of 1999, the Department of Environmental Quality (DEQ), DSL's successor state agency, and KNF conducted a review of the reclamation bond for the Troy Mine. As a result of that review, DEQ and KNF (collectively referred to as the Agencies) notified the mining company that the reclamation plan approved in 1978 needed to be revised and that a bond increase would be required. The mining company prepared a revised reclamation plan and, in March of 2006, submitted applications to amend its state and federal approvals to incorporate the revised reclamation plan (*2006 Revised Reclamation Plan*).

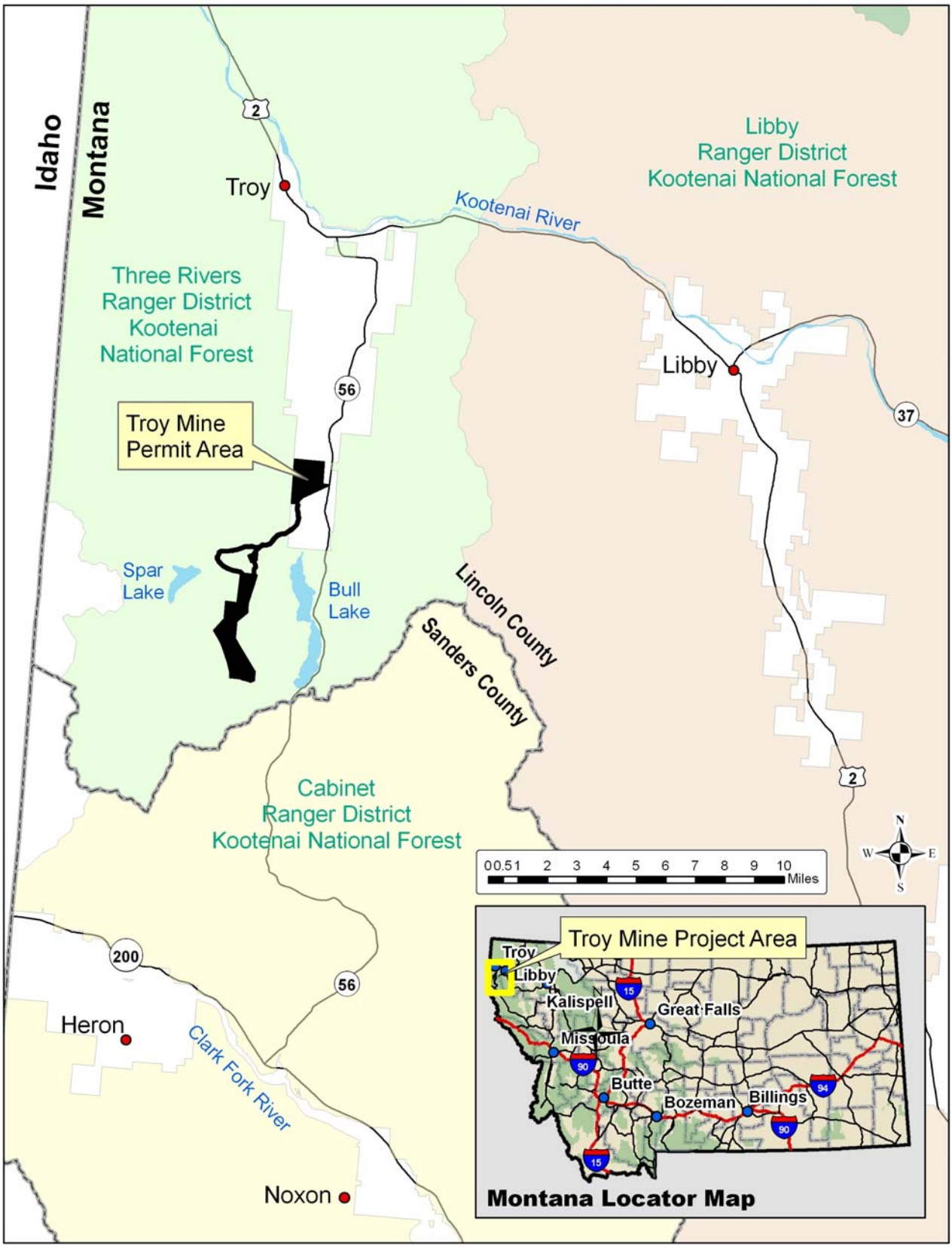
KNF and DEQ were joint lead agencies in the environmental review conducted in response to Troy Mine, Inc.'s applications to amend its state and federal approvals.

Project Area Description

The Troy Mine is located about 15 miles south of Troy, Montana, in Lincoln County (**Figure 1**). The nearest towns to Troy are Libby, Montana, located 18 miles to the east and Bonners Ferry, Idaho (ID), located 33 miles to the west. The project area lies within the KNF immediately west and north of Bull Lake and within the Stanley, Lake, and Ross creek drainages.

The Troy Mine is accessible from Montana Highway 56 (MT 56) by using National Forest System Road (NFSR) 4626. The mine permit area covers 2,782 acres of public, private, and patented land. Approximately 57 percent of the project area is on private and patented land, and approximately 43 percent is on National Forest Service Lands.

The mine facilities consist of the underground mine, the mill, and various office facilities; the tailings and reclaim water pipelines; a power line; a tailings impoundment; and associated support facilities. The tailings impoundment and associated disturbances are on approximately 430 acres of private land owned by Troy Mine, Inc. The tailings, reclaim water pipelines, and the power line are on National Forest System Lands, private, and patented land. The South Adit portal is located on patented land, while the North Adit portal and the mill and office/shop facilities are located on unpatented claims on National Forest System Lands. There are approximately 15.6 acres of disturbed land at the portal patios and 34 acres of disturbed lands at the mill site. Associated roads, pipelines, and other small disturbed areas exist throughout the project area.


Idaho
Montana
Troy
Kootenai River
Libby
Ranger District
Kootenai National Forest
Three Rivers
Ranger District
Kootenai
National Forest
Libby
Troy Mine
Permit Area
Spar
Lake
Bull
Lake
Lincoln County
Sanders County
Cabinet
Ranger District
Kootenai National Forest
0 0.5 1 2 3 4 5 6 7 8 9 10
Miles
N
W
E
S
Troy Mine Project Area
Troy
Libby
Kalispell
Great Falls
Missoula
Butte
Bozeman
Billings
Montana Locator Map
Heron
Clark Fork River
Noxon
2
56
200
37
15
90
94

Agencies' Roles and Responsibilities

DEQ and USFS have regulatory authority over the mining and reclamation activities at the Troy Mine. Regulatory authority involving National Forest Service Lands is jointly shared by DEQ and KNF. Regulatory authority involving private lands is exercised solely by DEQ.

KNF administers 36 Code of Federal Regulations (CFR) 228.8 that requires all mining operations to be conducted to minimize adverse environmental impacts on National Forest surface resources where feasible. KNF must also ensure that the selected alternative will assist in preserving and maintaining forest resources to meet the long-term management goals of the 1987 Land and Resource Management Plan (Forest Plan), as amended.

DEQ administers the Metal Mine Reclamation Act (MMRA), Title 82, Chapter 4, Part 3, Montana Code Annotated (MCA) and its associated administrative rules. Lands disturbed by mining must be operated and reclaimed consistent with the requirements and standards set forth in the MMRA, including compliance with the Montana Water Quality Act.

Purpose and Description of this Record of Decision (ROD)

KNF and DEQ must make a decision on Troy Mine, Inc.'s applications to amend its federal and state approvals. The purpose of the ROD is to document the decisions made and the rationale for those decisions. The ROD also documents the alternatives considered, including a discussion of preferences among alternatives based on relevant factors, and how those factors were balanced in reaching the decisions. These decisions are based on the analysis documented in the Final EIS, including project file information referenced in the Final EIS and the Agencies' consideration of public comments as set forth in the Final EIS. The decision is also based on how well the selected alternative meets the stated purpose and need for the project and complies with applicable state and federal laws, plans and policies.

Project Purpose and Need

The reclamation plan approved in 1978 does not meet state or federal requirements for mine water discharge. The reclamation plan needs to be revised to satisfy state and federal regulatory requirements, including the following:

- Protection of surface and groundwater quality;
- Protection of public health and safety;
- Minimization of environmental risk; and
- Restoration of productive land use.

Section 2 - Public Involvement

Public Involvement

At the beginning of the NEPA/MEPA process, the Agencies conducted scoping to solicit agency and public input on the purpose and need and the *2006 Revised Reclamation Plan*. A press release requesting agency and public input on the *2006 Revised Reclamation Plan* was published in area newspapers and announced on local TV and radio stations on October 11, 2007. The public scoping meeting was advertised in the *Western News*, *Sanders County Ledger*, *Daily Inter Lake*, and in the *Bonner County Daily Bee.*

Thirty-three people attended the scoping meeting conducted in October, 2007. The comment period extended from October 11, 2007, through December 28, 2007. The scoping process is described in a Scoping Report for the project. Based on the comments received during agency and public scoping, a number of major issues were identified that drove the development of the Agency Mitigated Alternative.

At the time of scoping, the project team determined that an environmental assessment (EA) would be produced to document the analysis. During the course of preparing an EA, several potential water quality issues were identified that were of sufficient significance to warrant the preparation of an EIS. These issues include the potential for mine water discharge to impact surface water and exceed aquatic life standards; the potential for the tailings pipelines to fail resulting in erosion and discharge of contaminants into Stanley and Lake creeks; and issues related to the long-term maintenance of the pipelines.

Given these potential impacts, KNF did not believe that it could conclude the EA process with a Finding of No Significant Impact under 40 CFR 1508.13 and FSH 1909.15(b). Therefore, KNF issued a Notice of Intent to prepare an EIS in the *Federal Register* on April 14, 2011. DEQ also believed that these potential impacts were sufficiently significant to trigger the need to prepare an EIS under the criteria set forth in ARM 17.4.608.

A Notice of Availability (NOA) for the Draft EIS was published in the *Federal Register* on May 20, 2011. The public meeting and the comment and review period was advertised in the *Missoulian*, the *Western News*, and the *Daily Inter Lake*. A public hearing was held in Troy, Montana, on June 8, 2011. One hundred and thirteen people attended the public hearing and four people took the opportunity to speak about the project.

The comment period began on May 20, 2011 and was extended through August 5, 2011 in response to requests for more review time from commentors. In addition to the four oral comments received at the public meeting, seven letters were received from agencies and elected officials and 282 letters were received from organizations and individuals. Comments received on the Draft EIS were summarized and responses to each summarized comment were developed (comment responses may be found in Appendix K of the Final EIS). Every comment received before the extended comment deadline of August 5, 2011 was compiled and may be found in Appendix L of the Final EIS.

Consultation and Coordination

KNF and DEQ consulted and coordinated with the following agencies and organizations throughout the NEPA/MEPA process. Consultation and coordination included both formal and informal consultation requirements as well as coordination with technical experts.

Advisory Council on Historic Preservation
Bureau of Land Management
City of Libby
City of Troy
Coeur d'Alene Tribe
Confederated Salish and Kootenai Tribes
Environmental Protection Agency
Environmental Quality Council
Federal Aviation Administration
Federal Highway Administration
Kalispell Tribe
Kootenai National Forest Tribal Liaison

Kootenai Tribe of Idaho
Lincoln County Commissioners
Montana Bureau of Mines and Geology
Montana Dept of Commerce
Montana Dept of Natural Resources and Conservation
Montana Dept of Revenue
Montana Dept of Transportation
Montana Fish, Wildlife, and Parks
Montana Natural Heritage Program
Northwest Power Planning Council
Sanders County Commissioners
Montana State Historic Preservation Officer
U.S. Army Corps of Engineers
USDA APHIS PPD/EAD
USDA Natural Resources Conservation Service
U.S. Dept of Agriculture
USDI Office of Environmental Policy and Compliance
USCG Environmental Impact Branch Marine
U.S. EPA Office of Federal Activities
U.S. Fish and Wildlife Service
U.S. Geological Survey National Center
U.S. Navy Office of Chief of Navy Operations
Valley County Road Department
Wheatland County
Alliance for the Wild Rockies
AMEC
Athens Investments, Inc.
Cabinet Back Country Horsemen
Cabinet Resource Group
CDM Smith Inc.
Clark Fork Coalition
Earthworks
Troy Mine, Inc. (formerly Genesis, Inc.)
Lower Yellowstone Irrigation Project
Lincoln County Coalition
Lincoln County Delegation
Lincoln County Port Authority
Montanans for Multiple Use
Montana Chapter American Fisheries Society
Montana Environmental Information Center (MEIC)
Montana Historical Society
Montana Mining Association
Montana Mountain Valley, LLC
Montana Trout Unlimited
Montana Wilderness Association
National Wildlife Federation
Northwest Properties, LLC
Northwest Mining Association

Rock Creek Alliance
Scotchmans Peak Wilderness
Sierra Club
Society of American Foresters
The Lands Council
Troy Snowmobile Club
Western Environmental Trade Association (WETA)
Wildwest Institute
Yaak Valley Forest Council

Significant Issues

Issues were identified through the agency and public scoping process, through the Agencies' review of the *2006 Revised Reclamation Plan*, and through interagency discussions on the development of alternatives. Issues were evaluated to determine whether the Proposed Action or an alternative would result in significant impacts. The Council on Environmental Quality (CEQ) regulations define significant impacts in terms of both context and intensity (40 CFR 1508.27). MEPA also provides direction on determining the significance of impacts similar to the definitions used under NEPA (Section 75-1-201, MCA; ARM 17.4.608(1)). This section presents significant issues identified through the scoping process and public comments on the Proposed Action. These issues define the scope of the NEPA/MEPA analysis and alternatives considered.

The significant issues identified included:

Water Management

- *Adit closure and mine water distribution* – concerns were identified about the measures used to close the adits, the volume and destination of water from underground workings, and the methods of transporting mine water. These issues were analyzed to address concerns related to surface and groundwater quality.
- *Water treatment and disposal* – concerns were received regarding the use of the tailings impoundment area for treatment and about the need for long-term water treatment and disposal.
- *Groundwater quality* - comments were received on groundwater protection, which includes the natural attenuation process for copper and the length of time that natural processes could be sustained. The analysis in the Final EIS was based on several studies and an assessment of natural attenuation of metals in the decant pond disposal system.
- *Surface water quality* – concerns about the potential for mine water to reach surface waters including the potential for flows from underground workings and through seeps and groundwater discharge to reach Lake, Stanley, and Ross creeks were raised. Ground and surface water data and monitoring reports were reviewed and analyzed in the Final EIS.
- *Long-term monitoring of water quality* – concerns were raised about the need for and feasibility of long-term monitoring for copper and other metals potentially reaching surface waters. The Final EIS includes an analysis of the natural attenuation of metals in the decant pond disposal system.

Reclamation

- *Reclamation materials* – the volume, type, and source of materials needed to meet revegetation goals were identified as issues during scoping. The toe ponds intercept and contain seepage, and enough water is pumped back to the impoundment to prevent the ponds from overflowing.
- *Subsidence* – subsidence features have developed during operation and concerns about how future, post-closure occurrences would be addressed were raised.
- *Revegetation* – concerns related to revegetation included the composition of proposed seed mixes, compliance with current standards for the use of native seed sources, and the use of irrigation and revegetation for dust control.
- *Infrastructure* – concerns included how buildings and other structural materials would be removed or reclaimed.
- *Topography* – concerns were identified with respect to regrading at the decant ponds, borrow areas, and at the toe ponds.

Non-Significant Issues

As a preliminary step, issues identified through the agency and public scoping process, through agency review of the *2006 Revised Reclamation Plan*, and through interagency discussions on development of alternatives were screened for relevance in formulating alternatives. NEPA/MEPA analyses are intended to focus on potentially significant issues. Several issues were eliminated from further consideration because they were either outside the scope of the analysis; already decided by law, regulation, Forest Plan, or other higher level decision; irrelevant to the decision to be made; or they were conjectural and not supported by scientific or factual evidence. These issues included:

- fate and transport of iron;
- the stability of the impoundment;
- the potential effects of continued discharge of mine water;
- bond requirements;
- potential hazards from buried drums;
- replicating the decant ponds at the mill site to eliminate the tailings pipeline;
- the potential for contamination from Troy Mine operations upon the Northern Lights Dam; and
- leaving the area as-is for an educational/tourist attraction.

Detailed information pertaining to issues considered but not evaluated further is found in Chapter 2, Section 2.3.2 of the Final EIS.

Section 3 - Alternatives Considered

Alternatives Formulation

Section 102(2) (e) of the National Environmental Policy Act (NEPA) directs all federal agencies to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal

which involves unresolved conflict concerning alternative uses of available resources". An environmental assessment must "rigorously explore and objectively evaluate all reasonable alternatives" [40 CFR 1502.14(a)]. The courts have established that this direction does not mean that every conceivable alternative must be considered, but that selection and discussion of alternatives must permit a reasoned choice and foster informed decision making and informed public participation.

The range of alternatives may extend beyond the limits set by the Forest Plan goals and objectives under NEPA; however, the National Forest Management Act (NFMA) requires that the selected alternative fully comply with the Forest Plan unless the plan is amended in accordance with 36 CFR 219.10(f).

MEPA requires state agencies to consider alternatives to proposed actions (Section 75-1-201(1) (b) (iv) (C), MCA). State agencies are required "to consider only alternatives that are realistic, technologically available, and represent a course of action that bears a logical relationship to the proposal being evaluated" (ARM 17.4.603(2) (b)).

The range of alternatives presented in this chapter was determined by evaluating public and internal comments and the purpose and need for the project. Other influences included Forest Plan goals, objectives, desired condition, and standards and guidelines; federal and state laws, regulations, and policies; and economic viability. Within these parameters the alternatives display a reasonable range of outputs, treatments, costs, management requirements, mitigation measures, and effects on resources.

Significant issues were identified to help the Agencies establish the scope and provide the basis for identifying changes (alternatives and mitigation) that would be needed to avoid, eliminate, reduce, or minimize impacts. The scoping and public comment process included both agency and public concerns. It also considered environmental and project design elements. The Agencies developed an alternative that addressed the significant issues.

Finally, the Agencies screened alternatives to ensure that they met the project purpose and need. Each reasonable alternative must meet the purpose of, and need for, the project. Technical considerations include the feasibility of reclamation methods and operation. Environmental considerations include potential for significant impacts and the feasibility of successfully mitigating them.

Alternatives Considered in Detail

Three alternatives were evaluated in the EIS. The No Action Alternative consisted of the 1978 Reclamation Plan that was previously approved and the reclamation work that had been completed through August of 2010 by Genesis (now Troy Mine, Inc.). The Proposed Action Alternative described the Revised Reclamation Plan submitted by Genesis to the Agencies in March of 2006. The Agency-Mitigated Alternative was developed by the Agencies and was based on issues derived from interagency and public scoping comments on the Proposed Action.

No Action Alternative

The No Action Alternative consists of the reclamation plan approved by the Agencies in 1978 and includes reclamation activities that have already been completed. Under the 1978 reclamation plan, the adits are to be closed with concrete at mine closure. After mine closure, surface and groundwater is expected to enter the mine through factures, flooding the workings. Water would eventually exit the

mine, discharge onto the development rock fill patio, infiltrate into groundwater, and ultimately enter Stanley Creek.

Toe ponds were constructed at the base of the tailings impoundment in 1983 to capture seepage and contain storm water runoff. A sump and pumping system is currently used to capture groundwater that emerges downhill from the toe ponds. During operations, water is continuously pumped from the sump to toe pond 2.

Soil was salvaged from the west side of the tailings impoundment to a depth of 24 inches. The salvaged soil would be used to provide an average 12-inch cover over the mine development rock-patio at the mine and at those areas where buildings and facilities would be removed.

The surface of the tailings impoundment and the embankment would be covered with 18 inches of stockpiled soil and revegetated. The 1978 reclamation plan does not identify the source of these stockpiled soils. The soil would likely come from the soil stockpiled from the construction of the tailings facility. Approximately 162,000 cubic yards of soil were stockpiled just east of the tailings facility. In addition, 818,500 cubic yards were stockpiled outside the perimeter of the tailings impoundment between the toe ponds and Lake Creek for use in reclaiming the impoundment area. These stockpiles have been revegetated to prevent erosion. The stockpiled soil is composed of lacustrine and volcanic ash-derived soil material. Container grown tree seedlings would be planted on the resoiled impoundment and the area seeded with a grass and legume mixture.

The No Action Alternative requires removal of the tailings pipelines, the reclaim water line, and the 115kV transmission line.

The No Action Alternative would leave the main mine access road (NFSR 4626) open for public recreation access to Spar Lake and Mt. Vernon. KNF would have the final decision regarding the disposition of NFSR 4626. All other roads would be removed and reclaimed, pending approval of KNF.

The No Action Alternative does not address subsidence.

Proposed Action Alternative

The Proposed Action Alternative would seal all mine openings against entry by backfilling with mine development rock or with material obtained during regrading of the portal areas. Rock remaining after adit plugging would be graded against the side of the slope to form a wedge. A 12-inch growth medium from a local borrow source would be placed over the regraded surface. The Proposed Action Alternative recommends that non-hydraulic plugs installed at the Service and Conveyor adits include partial concrete dams or bulkheads that would allow water flowing down the adits to be collected and funneled into a pipe.

The Proposed Action Alternative would route mine pool water through the tailings pipelines to the decant pond where metals in the mine water would be naturally attenuated. The toe ponds would continue to be used to capture seepage and embankment runoff. After reclamation, snowmelt and runoff from toe ponds 2, 3, and 4 would be pumped to the impoundment to supply irrigation water for the newly reclaimed surface, if needed, or would be pumped directly to the decant ponds. The toe pond pumping system would be maintained post-closure until the quality of groundwater seepage is suitable for release.

The existing two tailings pipelines and the reclaim water line would be used until they wear out or until discharged water meets water quality standards. In the event that a pipeline is in need of repair, water would be diverted through the other pipeline until the first is repaired or replaced.

The Proposed Action Alternative would retain the toe ponds as permanent features to provide wildlife and wetlands habitat. After operations, the toe ponds would be connected by inter-pond channels.

The Proposed Action Alternative would not use the lacustrine and volcanic ash-derived soil from the reclaimed stockpiles to cover the tailings impoundment. Rather, reclamation materials for the tailings impoundment surface would be glacial outwash gravels obtained from borrow sites that are located east of the impoundment. Approximately 766,600 cubic yards of reclamation material would be needed to cover the tailings facility surface with an average of 18 inches of growth medium. The borrow sites would be regraded to reduce slopes to 2H:1V and revegetated.

The Proposed Action Alternative would cover development rock at the portal patios with a finer-grained material on the surface to promote revegetation. These areas would be covered with a 12-inch layer of growth medium from local borrow sources, including the USFS borrow area.

The mill site and other upper elevation disturbance areas would be seeded with an upper elevation forest seed mix, the tailings impoundment and borrow areas would be seeded with a lower elevation forest seed mix, and smaller areas peripheral to the tailings facility would be seeded with a native grass/forb seed mix. Trees and shrubs would be established on areas designated as forested areas. As necessary, all cover sources would be chemically fertilized to promote successful revegetation.

The Proposed Action Alternative provides that any existing USFS roads would remain in place per USFS requirements. Roads would be left in their existing condition, and maintenance responsibility would be turned over to the USFS. The segment of NFSR 4626 that accesses the mill site would be left in its current paved condition.

Finally, under the Proposed Action Alternative, Northern Lights Inc., the owner of the 115-kV power line, would have the final decision on removal or preservation of all or portions of the power line.

The Proposed Action Alternative does not address subsidence.

Agency Mitigated Alternative

The Agency Mitigated Alternative is based on the Proposed Action Alternative, but includes additional mitigation measures and monitoring requirements that were developed to address issues identified during the scoping and environmental review process.

Under the Agency Mitigated Alternative, the Service and Conveyor Adits would be closed with development rock instead of non-hydraulic plugs. Concrete intake structures would be installed in the adits to capture mine water to funnel it to the collection pipelines. A closure device would be incorporated in the Service and Conveyor adits to prevent unauthorized access, to allow maintenance of the underground workings that lead to the intake structures, and to facilitate maintenance and cleanout of the intake structures in the adits.

At the time of closure, the reclaim water line would remain in place and be used as an emergency water conveyance line. The existing tailings pipelines would be used to transport mine water discharge to the decant pond if an engineering evaluation shows that they have sufficient structural integrity. If their condition is suitable, they would be retrofitted to enhance existing leak detection systems and to improve their integrity if that is determined to be necessary. If their condition is not suitable, the pipelines will be

replaced at closure. A new pipeline will also require a leak detection system. Additional remote safety measures will be installed and testing of the integrity of the pipeline will be required prior to use. The reclamation bond will include the estimated cost of replacing the pipeline. At this time, the Agencies anticipate that a replacement pipeline would follow the route of the existing tailings pipelines. The replacement pipeline would remain on the surface in locations where the existing pipelines are on the surface, and would be buried only where the existing pipelines are buried.

The decant pond will be maintained as a deep pond in order to maintain geochemical functions that facilitate metals attenuation (*e.g.* 10 to 15 feet deep and approximately 4 acres in size with a divider berm to provide for periodic cleanout of the pond). A berm will be created to prevent storm water runoff from the tailings impoundment surface from draining directly to the decant pond.

Additional monitoring of seeps and springs will be required to verify that water quality standards are met. In the vicinity of the decant pond, wells will be monitored for water quality annually to verify that geochemical conditions in the area of the mine water discharge are maintained.

The tailings impoundment would be covered with the lacustrine and volcanic ash-derived soil materials that were salvaged from the impoundment footprint and stockpiled for that purpose. Up to 90% of these stockpiled soil materials would be used. The lowest portion of the vegetated outer slopes of the stockpiles would be maintained to minimize water runoff and to prevent sediment from leaving the majority of the disturbed stockpile surfaces. Silt fences will be used during soil removal to protect water quality and to prevent western toads, a sensitive species, from entering the construction zone. The toe ponds will remain after mine closure.

The soils materials used to cover the tailings impoundment will be amended with an agency-approved, wood-based, organic amendment to raise the organic matter content in the upper six inches to achieve a long-term trend towards 1,100 lbs of nitrogen per acre before the reclamation bond can be released. Chemical fertilizers may be used to ensure adequate short-term available nitrogen based on site-specific soil testing.

At the mill site, the Agency Mitigated Alternative growth medium soil would be the same as the Proposed Action Alternative, but the USFS borrow area would not be used because of the presence of noxious weeds at that site. On the portal patios, the growth medium from the mine and mill area would be used first, and then if needed, rocky glacial material from the borrow area east of the impoundment would be used for the balance of the soil. Mine and millsite reclamation material would also be amended to achieve a long-term trend towards 1,100 lbs of nitrogen per acre by the end of reclamation activities. Chemical fertilizers may be used to ensure adequate short-term available nitrogen based on site specific soil testing. Twenty-five to thirty-three tons/acre of coarse woody debris (greater than six inches in diameter) will be scattered across reclaimed areas both at the mine portals and at the mill. The mine must comply with these requirements unless they propose to the agencies an alternative that meets the same objectives and is approved by the decision makers as a revision to the reclamation plan.

Plant species selection for revegetation under the Agency Mitigated Alternative will be based on the goal of re-establishing native species-dominated vegetation communities. Seed sources for native plant species should be from northwestern Montana to the extent that these species are commercially available at the time of reclamation.

Asphalt on NFSR 4626 would be pulverized and converted to gravel surfacing. Unneeded roads on National Forest System Lands (NFSL) would be removed from the NFSR system by either passive or active decommissioning. NFSRs within the Troy Mine permit area would be handled as specified by USFS in the Roads Analysis Report – Mt. Vernon/Troy Mine (as amended in March 2008). Private roads on Troy Mine, Inc. property at the tailings impoundment would be field reviewed by the Agencies to

decide if they are needed for post-mine land uses. Roads that are not needed would be ripped, covered with reclamation materials, and revegetated.

Under the Agency Mitigated Alternative, the reclamation bond would be increased to address the possibility of future subsidence. Troy Mine, Inc., with agency participation, would conduct an annual comprehensive ground inspection and once every five years conduct an aerial inspection of the area above the underground workings. Surveys would be conducted until bond release, and the subsidence portion of the reclamation bond would be held for a minimum of twenty years after the mine is decommissioned and the adits have been plugged.

Alternatives Not Considered in Detail

Several alternatives or mitigation options were presented and dropped from detailed analysis during the environmental review. Specific alternatives and mitigation measures and reasons for their elimination are listed below:

- Construction of an additional decant pond was discussed but eliminated. The Agencies evaluated the potential need for and sizing of an additional decant pond and decided that the existing decant pond would have the capacity to infiltrate discharged mine water. The Agency Mitigated Alternative does include a provision to keep stormwater out of the pond to prevent the pond from exceeding its capacity. In addition, the pond would be divided into two cells so that one can be cleaned out periodically to maintain infiltration capacity and geochemical conditions that are conducive to copper attenuation. A bond would be held for periodic cleaning of the pond cells.
- Construction of a retention pond at the Service Adit was discussed but eliminated. The Agencies evaluated the need for storage of mine outflow water and determined that the pipelines used to convey water from the mine to the impoundment area would have sufficient capacity to accommodate the expected mine drainage volume.
- Construction of a wastewater treatment system was considered but eliminated. Water quality studies were done on the attenuation of metals in mine water at the decant ponds. These studies showed that the natural attenuation process is sufficient and that active water treatment would not be necessary. Construction and operation of a wastewater treatment system would require installation of additional infrastructure and would also include additional costs to operate and maintain the system. Moreover, a wastewater treatment facility would create additional waste close to the treatment facility that would also need to be treated or hauled away from the site.
- The concept of installing hydraulic plugs in the adits was discussed but eliminated. Hydraulic plugs in the mine adits have the potential to stop water discharge from the adits, but they add the uncertainty of where water might then discharge and create the risk of adding mine water directly to Stanley Creek from seeps and springs. Overall, this alternative was determined to be impracticable.

Section 4 - Decision and Rationale for Decision

Decision

We, the Forest Supervisor of the Kootenai National Forest and Director of the Montana Department of Environmental Quality approve the amendment of the reclamation plan for the Troy Mine, selecting the Agency Mitigated Alternative. The reclamation and monitoring measures included in the Agency Mitigated Alternative are fully set forth in Attachment 1.

Rationale for Decision

Potential impacts to several resource areas under one or more of the alternatives provide the basis for the selection of the Agency Mitigated Alternative.

Hydrology

Under the No Action Alternative, the mine workings would be allowed to fill to the elevation where water would flow out of the Service and Conveyor adits both overland and subsurface to Stanley Creek. The discharge of mine water to Stanley Creek would alter the water quality of the stream because the mine water would contain elevated levels of nitrogen in the short-term and metals in the long-term, exceeding water quality standards for copper and antimony. Discharging mine water directly to Stanley Creek could potentially impact macroinvertebrates, amphibians, and fish and violate water quality standards.

The Proposed Action Alternative and the Agency Mitigated Alternative would route mine water discharge through pipelines to the decant pond at the tailings impoundment where metals would be naturally attenuated. The potential impacts would be less under the Agency Mitigated Alternative because additional measures would further decrease likely impacts, including the installation of a revegetated berm around the decant ponds to keep storm water and sediment out of the pond and maintaining infiltration capacity and geochemical conditions needed to attenuate copper.

Both the Proposed Action Alternative and the Agency Mitigated Alternative use the existing tailings pipelines to transport the mine water to the decant ponds. These pipelines are thirty years old and have the potential to leak, allowing adit water and sediment to reach Stanley Creek and/or Lake Creek. The Agency Mitigated Alternative mitigates this potential effect by requiring the pipelines to be evaluated by a qualified engineer to determine their remaining service life. If their condition is suitable, the pipelines would be retrofitted to enhance existing leak detection systems and to improve their integrity if that is determined to be necessary. If the condition is not suitable, the pipeline will be replaced. The bond will include costs to replace the pipeline. Thus, there is a greater risk of short-term water quality violations under the Proposed Action Alternative because of the higher risk of accidental discharge of mine water from failure of the tailings pipelines to Stanley or Lake creeks. The likelihood of surface water quality impacts is reduced under the Agency Mitigated Alternative.

Stanley and Lake creeks are listed on the Section 303d list as impaired streams that do not or are not expected to meet water quality standards. Probable causes of impairment of Stanley Creek are copper and nutrients. Probable causes of impairment of Lake Creek are nutrients, sediment, and heavy metals. Because nitrate concentrations would decrease after blasting ceases, closure and reclamation of the mine would reduce nutrient loading to surface water under all alternatives. After mine closure, there would be reduced risk of spills of mine tailings into surface water under all alternatives. The No Action Alternative would result in increased copper loading from mine water discharge to Stanley Creek and would not accomplish the goals of the TMDL program. Both the Proposed Action and the Agency Mitigated Alternative would reduce the potential for loading of copper to Stanley Creek.

Cover Materials

1. Mill Site and Mine Portals

Under the No Action Alternative, stockpiled lacustrine and volcanic ash-derived soil materials from the tailings impoundment would be used to reclaim the mill and mine areas. These reclamation materials potentially improve soil function enough to support vegetation. These reclamation materials, however, are susceptible to compaction and crusting. The cover material at the mine site would be compacted after spreading which would make it difficult for forbs, shrubs, and trees to establish and grow well. Noxious

weeds and non-native grasses would likely become the dominant vegetation under the No Action Alternative. In addition, the lacustrine and volcanic ash-derived materials are fine-grained and susceptible to erosion and would not be stable on slopes over eight percent in the mine and mill area. Thus, the No Action Alternative would not restore comparable stability at the mill site and mine portals, in accordance with the MMRA.

The Proposed Action Alternative and Agency Mitigated Alternative use rocky glacial material to reclaim the mill and mine areas. These rocky materials existed at the mine and mill areas before the mine was developed. Use of the rocky glacial growth media would improve infiltration and reduce compaction and erosion as compared to the No Action Alternative. Thus, the Proposed Action Alternative and Agency Mitigated Alternative restore comparable stability. Concerning comparable utility, use of the rocky glacial material should produce vegetation similar to that growing on adjacent areas as long as the material is not excessively compacted in the process of placement. The Agency Mitigated Alternative has additional measures to assure proper vegetation of the mine and mill site. These measures, in part, prohibit use of material from the USFS borrow site that is infested with a noxious weed species and require ripping of the ground surface prior to spreading the cover material to improve infiltration, adding an organic amendment to the cover material, mulching the sites to prevent soil crusting, and distributing coarse woody debris across the sites. Native shrub and forb cover would be greater under the Agency Mitigated Alternative as compared to the Proposed Action due to better initial soil conditions.

2. Tailings Impoundment

The soils in the impoundment areas prior to mine development were deep lacustrine fine-grained soils covered with a top soil layer of four to fourteen inches of ash-influenced loess. These soils developed for thousands of years and were highly productive, supporting western cedar and western hemlock habitat types. The excellent soil productivity was the result of high moisture holding capacity and high organic inputs. These soils were salvaged and stockpiled for use during reclamation at mine closure. Because the lacustrine fine-grained soils have been stockpiled for 30 years, the organic matter content in the stockpiled material is minimal, and its fertility is also minimal.

The No Action Alternative covers the regraded tailings impoundment with lacustrine and volcanic ash-derived soil materials that were salvaged and stockpiled when the tailings impoundment was originally built. While the material would have adequate productivity to support revegetation, the level of compaction, crusting, and lack of organic matter would compromise soil function, making it difficult for forbs, shrubs, and trees to become established and grow well. Noxious weeds and non-native grasses would likely become the dominant vegetation. Thus, the No Action Alternative would not restore comparable utility.

The Proposed Action Alternative would use glacial outwash gravels for the growth media. The glacial outwash gravels have a large and varying rock fragment content. The high rock content does not meet DEQ guidelines for reclamation material. In addition, the glacial outwash gravels have no organic matter, resulting in low fertility. While chemical fertilizers would be used to enhance the fertility of the growth medium, this treatment would provide only a short-term boost in fertility. Using glacial outwash gravels would reduce the site productivity, resulting in a less productive vegetation community than existed prior to mine development. Thus, use of the glacial outwash gravels would preclude the tailings impoundment area from achieving comparable utility with respect to soil function and quality.

Like the No Action Alternative, the Agency Mitigated Alternative uses the lacustrine and volcanic ash-derived soil materials that were salvaged to facilitate construction of the tailings impoundment and stockpiled for use as cover material when the tailings impoundment is reclaimed. At least 10 percent of

the lower slopes of the stockpiles would be left to act as erosion control berms to prevent sediment deliverery to Lake Creek and the toe ponds. The Agency Mitigated Alternative addresses the lacustrine and volcanic ash-derived soil materials tendency to compact and crust and its lack of organic matter by requiring ripping, and organic amendment and mulching to prevent soil crusting. The use of organic, wood-based amendments would improve nitrogen content of the soil and provide for long-term nitrogen needs. Under the Agency Mitigated Alternative, site-specific soil testing would be conducted to identify other needed amendments, such as chemical fertilizers, to ensure that there would be adequate short-term available nitrogen. Thus, reclamation of the tailings impoundment under the Agency-Mitigated Alternative restores comparable utility in terms of soil quality as required by the MMRA.

Revegetation

Potential issues and differences between alternatives with respect to revegetation include differences in soil quality, the seed and plant mixes proposed, the use of soil amendments to promote plant growth, the use of various borrow materials that have differing amounts of noxious weed seed, and the treatment of invasive, noxious weeds.

The Proposed Action Alternative and the Agency Mitigated Alternative include five different seed/planting mixtures of native grasses, forbs, shrubs, and trees proposed for site-specific use on the basis of pre-mine species occurrence, establishment potential, growth characteristics, borrow stabilization qualities, commercial availability, experience gained from previously completed reclamation activities, and post-mine land use objectives. Seed and plant mixes would be used with consideration for differences in plant communities based on elevation and aspect. Under the Agency Mitigated Alternative, these seed and plant mixes would be required to use seed sources native to northwestern Montana if commercially available.

Use of the USFS borrow source (which contains rush skeletonweed, a new noxious weed species) under the Proposed Action would not comply with the KNF noxious weed Memorandum of Understanding (MOU) with Lincoln County. The No Action Alternative would use the lacustrine and volcanic ash-derived soil materials from near the tailings impoundment to reclaim the mine and mill areas, but another new invader species, meadow knapweed, is found in those materials. The Agency Mitigated Alternative would better comply with the regulatory framework because it would not use the USFS borrow area containing rush skeletonweed and it would include performance standards with respect to noxious weeds that would need to be met over time.

The No Action Alternative includes clover in the seed mix, which could create human-grizzly conflicts. The Proposed Action and Agency Mitigated Alternatives avoid such conflicts because the use of native seed is required.

Infrastructure

NFSR 4626 and spurs were constructed for timber harvesting. NFSR 4626 serves as the main access road to the mine and is paved up to the millsite. The remaining roads on NFSL and private roads on Troy Mine, Inc. patented property were primarily constructed for mining-related purposes.

Under the No Action Alternative, Troy Mine, Inc. would remove and revegetate all roads associated with the mining project except NFSR 4626. Under the Proposed Action, Troy Mine, Inc. would not decommission any roads and the responsibility for road maintenance would be turned over to the USFS. Under the Agency Mitigated Alternative, a portion of the asphalt on NFSR 4626 would be converted to gravel surfacing. This would be done by milling the asphalt and the underlying gravel surfacing together,

and adding an additional two inches of aggregate depth to create a gravel surface. Continuous curbing would be installed along the outside shoulder where the road is adjacent to the stream to prevent sediment from entering the stream. Unneeded roads on NFSL would be removed by either active or passive decommissioning. Private roads on Troy Mine, Inc. property would be field reviewed by the Agencies to determine if they are needed for a post-mine land use. Roads not needed would be reclaimed. Reclamation of mine roads on National Forest Service Land would reduce sedimentation and siltation in Lake Creek over the long-term.

The No Action and Agency Mitigated alternatives would reduce road maintenance costs. The Agency Mitigated Alternative would reduce long-term road maintenance costs to a greater extent because the gravel surface on NFSL 4626 would have less long-term maintenance costs than the paved surface which would be left under the No Action Alternative.

Under the Proposed Action Alternative, NFSL 4626 would present a low risk of sediment delivery to surface water because it would remain paved, provided the USFS maintains the road into the future to prevent deterioration. On all other roads, however, there would be greater sediment delivery and siltation to streams in the Lake Creek watershed over the long-term from surface erosion and stream culvert failures under the under the Proposed Action Alternative because the roads are not reclaimed. In addition, there would continue to be a moderately high risk of steep road fill failures during storm events in both the Stanley and Ross creek watersheds under the Proposed Action Alternative because the roads are not reclaimed. In addition, sediment would also originate from stream erosion across the mill site under the Proposed Action. Any additional sediment from untreated roads and stream erosion across the mill site would add to the already elevated sediment load that currently exists in Stanley Creek and would adversely impact beneficial uses for an extended period. Some of this sediment would also be expected to reach Lake Creek, which is listed as impaired for sediment.

Reclamation of mine roads on NFSL under the No Action Alternative and the Agency Mitigated Alternative would reduce sediment and siltation in Lake Creek over the long-term. The Agency Mitigated Alternative would convert the existing paved surface of NFSR 4626 to gravel. Continuous curbing would be installed along the outside shoulder where the road is adjacent to the stream to prevent gravel from being accidentally sidecast into the stream during blading operations. The decommissioning of roads under the No Action and Agency Mitigated alternatives would decrease the risk of fill failures and washouts.

The reduction in long-term sediment delivery to Stanley, Ross and Lake creeks would improve fish habitat over the long-term. The Agency Mitigated Alternative would introduce the smallest amount of sediment to stream channels due to design features and mitigation measures such as timing restrictions with Riparian Habitat Conservation Areas. Reclamation of most roads under the No Action and Agency Mitigated alternatives would improve habitat for grizzly bear. The Agency Mitigated Alternative includes seasonal restrictions on road reclamation to minimize further effects on grizzly bear. The Proposed Action would maintain current road densities.

Monitoring

The Agency Mitigated Alternative would include long-term maintenance of the water treatment/management system and monitoring of seeps and springs to detect potential water quality issues in a timely manner. The Agency Mitigated Alternative would avoid potential surface water impacts by using only rock with little or no potential for near-neutral metal leaching in reconstructed stream channels.

Western Toad

All alternatives could potentially adversely affect western toad individuals and breeding/metamorphosis habitat in the toe ponds at the tailings impoundment area during reclamation material excavation and by alterations to the toe ponds. The No Action Alternative and the Agency Mitigated Alternative would excavate the stockpiled soil material near the toe ponds. The Proposed Action would result in substantially less excavation and traffic near the toe ponds.

Only the Agency Mitigated Alternative includes a variety of mitigation measures to avoid and minimize potential impacts to western toads. The Montana Natural Heritage Program has concluded that the persistence of this population of western toads would not be threatened by actions under the Agency Mitigated Alternative.

Subsidence

After mine closure, another subsidence event could occur regardless of the alternative selected. Only the Agency Mitigated Alternative includes an adequate range of practicable mitigation measures to address potential subsidence events.

Other Rights and Permits

The Troy Mine is currently covered by Montana Air Quality Permit #1690-02 – Genesis – Troy Mine, which requires that Troy Mine, Inc. install, operate, and maintain two air quality monitoring sites in the vicinity of their tailings impoundment after closure of the mine and reclamation of the tailings impoundment. No modifications to this permit have resulted from this decision.

Troy Mine, Inc. is responsible for obtaining any other local, state, or federal permits, licenses, or reviews that might be necessary to implement the selected alternative.

Any proposed change to the reclamation design or mitigation measures will be reviewed by the agencies and accepted if the change would provide resource protection equal to or greater than the original requirement and would not result in significant impacts not identified in the EIS. Proposed changes that would not achieve the same level of resource protection, or would result in previously undisclosed significant impacts, would require supplemental analysis under the National Environmental Policy Act (NEPA) and the Montana Environmental Policy Act (MEPA) prior to determining their acceptability.

Implementation

These decisions are effective upon signing this ROD. Troy Mine, Inc. is required to submit any increase in their reclamation bond resulting from these decisions. The reclamation bond must be in a form acceptable to DEQ and USFS in the amount to be established as discussed below. Troy Mine, Inc. must submit an updated Plan of Operations and other final design plans consistent with this decision within one year of publishing this ROD.

An additional stipulation will be attached to the Operating Permit/Plan of Operations, which will require that within one year of the decision implementation date, Troy Mine, Inc. must submit to the agencies a consolidated Plan of Operations. This Plan of Operations will incorporate and consolidate all previous operating, reclamation, mitigations/stipulations, and monitoring requirements into a single document for the mine. All other mitigations/stipulations previously attached to the Operating Permit/Plan of Operations remain in full force and effect. Troy Mine, Inc. is required to comply with previous mitigations/stipulations, as they are enforceable provisions of the Operating Permit/Plan of Operations.

Reclamation Financial Guarantee

Troy Mine, Inc. is required to post and maintain a reclamation bond that will be jointly held by DEQ and KNF. The bond may not be less than the estimated cost to ensure compliance with Troy Mine, Inc.'s state operating permit, federal plan of operations, and applicable state laws and administrative rules and federal laws and regulations.

The need to modify Operating Permit No. 00093 was identified during an annual bond review conducted by DEQ and KNF in the fall of 1999. Because of the need to modify Operating Permit No. 00093 identified in the bond review, Troy Mine, Inc. submitted the application to amend its operating permit that is the subject of this decision. Given the modifications to Troy Mine, Inc.'s state and federal approvals reflected in this decision, DEQ and KNF have determined that an increase in Troy Mine, Inc.'s bonding level will likely be necessary. DEQ and KNF will use DEQ's bond review procedures set forth in Section 82-4-338(3) (a), MCA, to determine the amount of the reclamation bond Troy Mine, Inc., is required to submit.

The bond calculations and supporting details will be on file and available at DEQ and KNF upon request.

Section 5 - Findings

U.S. Forest Service

National Environmental Policy Act (NEPA)

NEPA declares a national environmental policy and promotes consideration of environmental concerns by federal agencies in decision-making. Procedures and regulations issued by the CEQ, as authorized under NEPA, direct implementation of NEPA by federal agencies. The CEQ's regulations are promulgated at 40 CFR Parts 1500–1508. The USFS direction pertaining to implementation of NEPA and CEQ's regulations is contained in Chapter 20 of USFS Handbook 1909.15 (Environmental Policy and Procedures). To meet the requirements under NEPA and the 1987 Forest Plan, the KNF has prepared the Troy Mine Revised Reclamation Plan Final EIS jointly with DEQ. We find that the Troy Mine Revised Reclamation Plan Final EIS is fully compliant with the procedural and analytical requirements of NEPA.

National Forest Management Act (Forest Plan)

The National Forest Management Act (NFMA) requires that USFS "provide for the diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives, and within the multiple-use objectives of a land management plan adopted pursuant to this section, provide, where appropriate, to the degree practicable, for steps to be taken to preserve the diversity of tree species similar to that existing in the region controlled by the plan" (16 USC 1604(g)(3)(B)). The KNF 1987 Plan's goal is to promote a balance of multiple uses on KNF lands, including timber management, resource extraction, recreation, and maintenance of natural values. The KNF Forest Plan requires "the maintenance of viable populations of existing native and desirable non-native vertebrate species, as monitored through indicator species, will be attained through the maintenance of a diversity of plant communities and habitats" (Forest Plan Volume 1, page II-22). Promoting recreational opportunities is a primary goal of the plan within the portion of the KNF that includes the permit area.

The Agency Mitigated Alternative would comply with the KNF Plan because it would restore disturbed lands and return public, private, and patented lands to a balance of uses including timber management, resource extraction, recreation, and maintenance of natural values. By closing the mine and reclaiming

the land, a large local disturbance would be removed, and the land would be revegetated, thereby increasing the potential for big game hunting and recreational use of public lands, which would comply with a primary land use goal for this part of the KNF under the Forest Plan.

On NFSL, the Agency Mitigated Alternative would comply with the Forest Plan and associated regulations to shape, stabilize, revegetate, or otherwise treat the affected lands in order to achieve a safe and ecologically stable condition and land use that is consistent with the long-term forest land and resource management plans and local environmental conditions. Measurable performance standards would be incorporated into the Plan of Operations for all reclamation requirements. Revegetation of disturbed areas, including timing, kind, and amount would be specified. The Agency Mitigated Alternative takes steps to restore soil function by decompaction and addition of organic material.

The Inland Native Fish Strategy (INFS) amended the Forest Plan in 1995. INFS established standards and guidelines to protect riparian and aquatic resources on NFSL. The Agency Mitigated Alternative would be consistent with the Forest Plan as amended by INFS because it would design and implement reclamation activities to promote the long-term ecological integrity of ecosystems, conserve the genetic integrity of native species, and contribute to attainment of Riparian Management Objectives. The Agency Mitigated Alternative would comply with INFS by requiring that roads that are in riparian habitat conservation areas (RHCAs) and are no longer need for mineral or land management activities be closed, obliterated, and revegetated.

The KNF Forest Plan outlines a number of transportation-specific goals. These goals are further implemented through the final National Forest System Roads Management Rule in January of 2001 and USFS policies. The Agency Mitigated Alternative would implement BMPs on 12.9 miles of road needed for long-term access (including stored service work), decommission 6.5 miles of road on NFSL, and decommission or store 0.7 miles of road on private land, thereby reducing long-term maintenance costs. The Agency Mitigated Alternative further reduces long-term road maintenance costs by replacing the 6 miles of paved surface on NFSR 4626 with gravel.

The Agency Mitigated Alternative would comply with Forest Plan visual quality objectives, because reclamation would restore disturbed areas to more natural appearing conditions that would be consistent with the visual quality objectives for each management area within the permit area.

The Agency Mitigated Alternative would comply with NFMA direction to provide for diverse populations of plant and animal communities by compliance with Forest Plan standards and guidelines for a variety of sensitive plant and animal species, management indicator species, and migratory birds.

Clean Water Act

The Agency Mitigated Alternative would comply with the Federal Clean Water Act. The specific findings are detailed under the Water Quality Act section below.

The Agency Mitigated Alternative would comply with the Clean Water Act with respect to discharging dredged or fill materials into water or wetlands. No activities are proposed that would discharge fill materials into water bodies or that would impact wetlands.

Executive Order 11990 Protection of Wetlands

The Agency Mitigated Alternative would comply with Executive Order 11990, which directs agencies to minimize impacts to wetlands. No activities are proposed that would discharge fill materials into water bodies or that would impact wetlands.

Endangered Species Act

Section 7(a)(2) of the Endangered Species Act (ESA) requires federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service, as appropriate, to ensure that their actions do not jeopardize the continued existence of species listed as threatened or endangered under ESA, or destroy or adversely modify their critical habitat.

A biological assessment was submitted to USFWS on February 28, 2012, for concurrence with the effects determinations of KNF concerning impacts to federally listed species and designated critical habitat. KNF determined that the action "*May Affect, but is Not Likely to Adversely Affect*" grizzly bear, Canada lynx, bull trout, and designated bull trout critical habitat. The determination of "*Not Likely to Adversely Affect*" is made when effects to listed species or critical habitat are expected to be discountable or insignificant. KNF determined that the action would have "*No Effect*" on lynx designated critical habitat, as there is none within the action area. During informal consultation, USFWS concurred with the effects determinations for grizzly, Canada lynx, and Canada lynx critical habitat on March 21, 2012, and with the effects determinations for bull trout and bull trout critical habitat on May 15, 2012. Therefore, the consultation process is concluded and no further action is necessary (50 CFR 402.13).

National Historic Preservation Act

The National Historic Preservation Act (NHPA), as amended in 1992 (16 United States Code (USC) 470), establishes the federal government's policy to protect and preserve significant cultural resources. Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties, which are defined to include cultural resources affiliated (culturally affiliated) with American Indian use and traditional cultural properties (TCP).

KNF sent scoping letters and copies of the Draft EIS and Final EIS to the Confederated Salish and Kootenai Tribes, Kalispell Tribe, Kootenai Tribe of Idaho, and Coeur d'Alene Tribe. No comments were received from any tribe.

Reclamation and closure activities would primarily occur on or within areas that were previously disturbed during mining activities. The preferred alternative would comply with the NHPA because no cultural resources would be affected by the proposed activities.

Executive Order 12898 (Environmental Justice)

No disproportionate impacts to minority and low-income populations are anticipated. The project area does not contain minority and/or low income groups who were excluded from the environmental analysis and/or decision-making process. No minority and/or low-income groups were subject to a disproportionate impact from one or more environmental hazards, and no minority and/or low-income groups will experience a disparate implementation of environmental regulations, requirements, practices, and activities in their communities as a result of implementing the reclamation plan. The Agency Mitigated Alternative would comply with Executive Order 12898 on environmental justice because no alternative would have any adverse impacts to minorities or low-income populations.

Migratory Bird Treaty Act

On January 10, 2001, President Clinton signed an Executive Order outlining responsibilities of federal agencies to protect migratory birds. Upon review of the effects analysis regarding neotropical migratory birds in the Draft EIS, page 3-94 and Final EIS Appendix 4, we find that the selected alternative complies with this Executive Order.

Department of Environmental Quality

Montana Environmental Policy Act (MEPA)

MEPA requires the State of Montana to conduct an environmental review when making decisions or planning activities that may have a significant impact on the environment. MEPA and its rules define the process to be followed when preparing an environmental assessment (EA) or an Environmental Impact Statement (EIS). To meet the requirements under MEPA, DEQ prepared the Final EIS jointly with KNF. The Troy Mine Revised Reclamation Plan Final EIS complies with the procedural requirements of MEPA.

Metal Mine Reclamation Act (MMRA)

The Montana Metal Mine Reclamation Act (MMRA) sets forth reclamation standards for lands disturbed by mining. Generally, lands disturbed by mining must be reclaimed to comparable stability and utility as that of adjacent areas (Section 82-4-336(9) (a), MCA). The Agency Mitigated Alternative reclaims the mill, mine portal sites, and the tailings impoundment to comparable stability and utility as that of adjacent areas. Under the Agency Mitigated Alternative, rocky glacial material would be used to reclaim the mine and mill areas and lacustrine and volcanic ash-derived soil materials would be used to reclaim the tailings impoundment. These cover materials are similar to that which existed at the respective sites prior to mining. The Agency Mitigated Alternative also requires additional measures including, but not limited to, the ripping of the ground surface prior to spreading the cover material and the addition of organic amendments to all areas, and the distribution of large woody debris across the mill and mine sites. With these additional measures, the cover material will have comparable utility as that of adjacent areas to support healthy, native vegetation.

Under the MMRA, the reclamation plan must provide sufficient measures to prevent the pollution of water and to prevent objectionable postmining ground water discharges. As discussed below, the Agency Mitigated Alternative complies with the Montana Water Quality Act.

Under the MMRA, the reclamation plan must provide for permanent landscaping and contouring to minimize the amount of precipitation that infiltrates into disturbed areas that are to be graded and covered. The Agency Mitigated Alternative provides for appropriate grading, covering, and revegetation of the mine portal sites, the mill site, and the impoundment to minimize the amount of precipitation that infiltrates into these areas.

Under the MMRA, the reclamation plan must provide sufficient measures to prevent the degradation of adjacent land. The Agency Mitigated Alternative provides sufficient measures to monitor for surface subsidence above the underground workings. A portion of the reclamation bond is to be retained by the Agencies for at least twenty years after the mine is closed to ensure reclamation of any subsidence features that develop.

Water Quality Act

The Agency Mitigated Alternative complies with the Montana Water Quality Act. Mine water discharged to the decant pond will be treated by natural attenuation in the soils and aquifer beneath the tailings impoundment. Copper is attenuated within the upper foot of soil primarily through the precipitation of copper minerals and through the adsorption of copper onto organic matter. Natural attenuation also effectively removes other metals including antimony from groundwater within a relatively short flow path. The mineral precipitation and co-precipitation mechanisms are expected to last indefinitely or in perpetuity as long as geochemical conditions remain similar to current conditions. The adsorption mechanisms are conservatively estimated to last a minimum of 600 years.

Secondary removal mechanisms of copper and other metals will occur in the event that the primary mechanisms become less effective. These additional, secondary processes will occur downgradient of the decant ponds in response to mixing the relatively oxygen-rich decant pond water with oxygen-poor and iron-rich natural groundwater. Between 98 and 100 percent of the iron would precipitate in response to mixing of the waters, and 73-98 percent of the copper and 11-59 percent of the antimony would be removed at the same time.

Taken together, the primary removal mechanisms (precipitation and adsorption) and the secondary precipitation processes that occur downgradient of the tailings impoundment ensure that copper and antimony will be largely removed from mine water discharged into the decant ponds before water from the decant ponds that enter the groundwater reaches Lake Creek.

Replacing the paved surface of NFSR 4626 with gravel will increase the risk of sediment delivery from the road surface as compared to the existing paved condition. Installation of a sediment barrier along NFSR 4626, however, will mitigate this impact. Decommissioning and treatment of all other NFSRs will result in minor, short-term sediment delivery during the first year following treatment. Over the long-term, however, decommissioning and treatment of the other NFSRs will result in less sediment delivery from surface erosion and stream culvert failures to Ross and Stanley creeks than under existing condition.

Clean Air Act

The Troy Mine is currently covered by Montana Air Quality Permit #1690-02, which requires that Troy Mine, Inc. install, operate, and maintain two air quality monitoring sites in the vicinity of their tailings impoundment after closure of the mine and reclamation of the tailings impoundment. The Agency Mitigated Alternative will comply with the Clean Air Act of Montana because air emission loads would return to pre-operational levels after reclamation. Reclamation activities will not exceed the National Ambient Air Quality Standards and will not cause the Troy Mine Permit Area to become a nonattainment area.

County Noxious Weed Management Act

The Montana County Noxious Weed Management Act requires property owners to control noxious weeds and to prevent their spread. Under the authority of this Act, KNF has entered into an agreement with Lincoln County in the form of a Memorandum of Understanding (MOU) to control invasive and noxious weeds on NFSL. The Agency Mitigated Alternative will comply with the KNF noxious weed MOU with Lincoln County because it will not use material from sites contaminated with rush skeletonweed and meadow knapweed on NFSL.

Section 5 - Administrative Review and Appeal

U.S. Forest Service

Copies of the Troy Mine Revised Reclamation Plan Final EIS are available for review at the USFS Supervisor's Office, Kootenai National Forest in Libby; the Three Rivers Ranger Station in Troy; the Montana Department of Environmental Quality, Lee Metcalf Building in Helena; the Montana State Library in Helena; the Mansfield Library, University of Montana in Missoula; the Lincoln County Library in Libby; the Troy Public Library in Troy; and the Montana Tech Library in Butte. It may also be accessed on the worldwide web through the Montana Department of Environmental Quality web page at http://deq.mt.gov/eis.mcpx; and the USFS website at http://www.fs.fed.us/r1/kootenai/projects/projects/project.shtml?project=22452.

Additional printed or electronic (on compact disc) copies of this ROD and the Final EIS are available upon request. The supporting project record is available for review at the Forest Supervisor's Office for the Kootenai National Forest, 31374 U.S. 2, Libby, Montana 59923 or from the Montana Department of Environmental Quality, Environmental Management Bureau located at 1520 East Sixth Avenue, PO Box 200901, Helena, MT 59620-0901.

USFS decisions documented in this ROD are subject to appeal pursuant to the regulations at 36 CFR 215. A written appeal must be submitted within 45 days following the publication date of the legal notice of these decisions in the *Missoulian* (Missoula, Montana), the *Western News* (Libby, Montana), and the *Daily Inter Lake* (Kalispell, Montana). It is the responsibility of the appellant to ensure their appeal meets the content requirements and is received in a timely manner. The publication date of the legal notice of these decisions in the newspapers of record is the exclusive means for calculating the time to file an appeal. Appellants should not rely on date or timeframe information provided by any other source.

Paper appeals must be submitted, or delivered in person between 7:30 a.m. to 4:00 p.m., to either of the following locations:

USDA Forest Service, Northern Region
ATTN: Appeal Deciding Officer
P.O. Box 7669
Missoula, Montana 59807

USDA Forest Service, Northern Region
ATTN: Appeal Deciding Officer
200 East Broadway
Missoula, Montana 59802

If an appellant chooses to file an electronic appeal, it must be submitted to appeals-northern-regional-office@fs.fed.us. In electronic appeals, the subject line should contain the name of the project being appealed, in this case, Troy Mine Revised Reclamation Plan Final EIS. An automated response will confirm your electronic appeal has been received. Electronic appeals must be submitted in MS Word, WordPerfect, or rich text format.

It is the appellant's responsibility to provide sufficient project or activity-specific evidence and rationale, focusing on the decision, to show why the decision should be reversed. The appeal must be filed with the Appeal Deciding Officer in writing. At a minimum, the appeal must meet the content requirements of 36 CFR 215.14, and include the following information:

- The appellant's name and address, with a telephone number, if available,
- A signature, or other verification of authorship upon request (a scanned signature for electronic mail may be filed with the appeal),
- When multiple names are listed on an appeal, identification of the lead appellant and verification of the identity of the lead appellant upon request,
- The name of the project or activity for which the decision was made, the name and title of the Responsible Official, and the date of the decision,
- The regulation under which the appeal is being filed,
- Any specific change(s) in the decision that the appellant seeks and the rationale for those changes,

- Any portion(s) of the decision with which the appellant disagrees, and explanation for the disagreement,
- Why the appellant believes the Responsible Official's decision failed to consider the substantive comments, and,
- How the appellant believes the decision specifically violates law, regulation, or policy.

Pursuant to 36 CFR 215.9, if no appeal is received, implementation of the decision may occur on, but not before, five business days from the close of the appeal filing period. When appeals are filed, implementation may occur on, but not before, the fifteenth business day following the date of the last appeal disposition.

If an appeal is received on this project, there may be informal resolution meetings and/or conference calls between the Responsible Official and the appellant. These discussions would take place within 15 days after the closing date for filing an appeal. All such meetings are open to the public. If you are interested in attending any informal resolution discussions, please contact the Responsible Official or monitor the following website for postings about current appeals in the Northern Region of the Forest Service: http://www.fs.fed.us/r1/projects/appeal_index.shtml."

For additional information concerning these decisions or the USFS appeal process, contact Lynn Hagarty, Project Coordinator, Kootenai National Forest, 31374 U.S. 2, Libby, MT 59923-3022 406-283-7642.

Montana Department of Environmental Quality

Any action or proceeding alleging a failure by DEQ to comply with a requirement of the Montana Environmental Policy Act must be brought within 60 days after issuance of this ROD pursuant to Section 75-1-201(5)(a)(ii), MCA.

Any action or proceeding seeking review of DEQ's decision under the Metal Mine Reclamation Act to approve amendment of Troy Mine, Inc.'s operating permit must be filed within 90 days after issuance of this ROD pursuant to Section 82-4-349(1), MCA.

An applicant for a permit amendment may request an administrative hearing on a denial of the application by submitting a written request for a hearing within 30 days of receipt of this Record of Decision pursuant to Section 82-4-353(2), MCA. The request must state the reason that the hearing is requested.

For additional information concerning these decisions, contact Kristi Ponozzo, Director's Office, DEQ, 1520 E. Sixth Avenue, Helena, MT, 406-444-2813.

OPERATING PERMIT
STIPULATIONS

STIP #	BEGIN DATE	END DATE	STIPULATION/MITIGATION
00093 Permit Approval	05-14/76	11/27/78	1. Prior to being covered with tailing, areas of gravel bottom within the tailing impoundment will be pre-slimed. **(Completed)** 2. Prior to Construction, ASARCO will submit for DSL's approval the location of the following: the slurry pipeline, the water return line, and the water diversion system for controlling surface runoff at the mill site. Approval or disapproval will be based on compliance with applicable statutes and regulations. **(Completed)** 3. Prior to construction of roads and facilities, ASARCO will submit to DSL: slope stability studies for the locations of the slurry pipeline, the water return line and the access road. **(Completed)** 4. ASARCO will construct a tailing impoundment structure at the base of Mount Vernon in the Stanley Creek drainage capable of containing a tailing spill from a pipeline failure. The structure will be located in Section 24 between the middle switchback in the ESFA Road #384 and Stanley Creek. The structure is intended to catch any tailing spill that might result from a failure on the steep portion of the descent on Mount Vernon. **(Ongoing)** 5. Revegetation of areas disturbed during construction and not a working part of the mine operation will be done within one year after construction is completed . **(Completed)** 6. The tailing pond, mill facilities, and pipeline will be designed to accommodate seismic activity of the magnitude and duration that can reasonably be expected in the area. **(Completed)** 7. As determined by the department, ASARCO will construct sumps at the stilling-well sites that are near stream crossings. Such sumps shall be capable of retarding overland flow of spilled slurry. **(Completed)** 8. Within 90 days, ASARCO will submit to the Department, a detailed plan for the surface management of the tailings pond. The surface management plan's purpose will be to prevent air pollution by fugitive dust. **(Completed)** 9. ASRCO shall coordinate with the Department of Health and Environmental Sciences

			and the Department of State Lands to establish and/or continue a satisfactory water quality monitoring program for Lake Creek. **(Ongoing)** 10. ASARCO shall construct an experimental tailings pond within their permit area. The experimental area shall be utilized by ASARCO to research alternate revegetation methods (seeding, surface preparation, etc.) for their mill tailings. **(Completed)**
00093 Amendment 001-001	02/10/83	07/14/83	Installation of a permanent pumpback system to return impoundment water to the plant water circuit. **(Completed)**
00093-MR04-001-001	10/07/04	11/10/2004	Loadout Facility: ASARCO must supply sample results from past ore concentrate sampling to quantify the metal content of the concentrate that is hauled to the Libby loadout. The agencies need to know the content of copper, silver, lead, cadmium, nickel, zinc, iron, and any other elements found in the concentrate such as barium, manganese, and magnesium. ASARCO must supply the analyses on or before November 7, 2004. **(Completed)**
00093-MR04-001-002	10/07/04	1/20/2005	Loadout Facility: ASARCO must provide a water monitoring plan for the monitoring well for the agencies' approval before concentrate arrives at the site. The well must be installed and sampled before the concentrate arrives at the site. The water monitoring data from all wells at the site must be submitted With the Troy annual reports to the agencies. The wells must be sampled for all metals contained in the concentrates as listed in 00093 MR04-001. **ASARCO provided a water monitoring plan for the monitoring wells for the agencies' approval. Two new wells were installed and sampled before concentrate arrived at the site. ASARCO committed to sample all wells per the plan. (Ongoing)**
00093-MR04-001-003	10/07/04	11/9/2004	Loadout Facility: ASARCO must sample the ore concentrate monthly over the remaining mine life for the metals listed in MR04-001. The analyses must be submitted to the agencies monthly and summarized in the annual reports to the agencies. **ASARCO committed to sample the ore concentrate monthly. (Ongoing)**
00093-MR04-001-004	10/07/04	11/9/2004	Loadout Facility: ASARCO must describe the actual method used to cover the concentrate as it is being hauled to and through Libby. ASARCO must describe in the coverage plan how the proposed covers comply with Department of Transportation requirements for silver and copper concentrates. The coverage plan must be submitted for agency review and approval on or before November 7, 2004. **ASARCO provided a description of the method used to cover the concentrate in transit. (Completed)**
00093-MR04-	10/07/04	11/9/2004	Loadout Facility: ASARCO must remove contaminated soil and install the concrete seal

001-005			along the railroad tracks before concentrate arrives at the site. **ASARCO sampled the soil along the loadout track, included the results of the analysis in the submittal, and committed to remove surface soil and trash prior to installing the concrete seal.**
00093-MR04-001-006	10/07/04	11/9/2004	Loadout Facility: ASARCO must remove all concentrate from the site and sweep and power vacuum the floor and railroad track area at closure to prepare the site for the next use after concentrate loadout is complete. ASARCO must submit a detailed cleanup and verification sampling plan on or before November 7, 2004. **ASARCO provided a description of the procedure to be used at closure to assure that the site is left clean. Wipe samples were proposed to sample the loadout facility walls and floor. ASARCO committed to comply with all OSHA construction standards (1925.62 or MSHA equivalent). (Ongoing)**
00093-MR04-001-007	10/07/04		Loadout Facility: ASARCO must remove concentrate from the loadout when the mill is shut down for periods of over 30 days. ASARCO must clean out the loadout facility per the closure plan when the mill is shut down for periods over six months. **ASARCO committed to comply with this requirement on November 9, 2004. (Ongoing)**
00093-MR04-001-008	10/07/04		ASARCO must submit replacement pages for the operating and reclamation plan for the loadout facility minor revision 00093-MR04 that include commitments to perform these stipulations (00093- MR04-001-001 through 00093-MR04-001-007) attached to minor revision approval. **ASARCO submitted on November 9, 2004 the replacement pages to the Operating Plan and committed to comply with this requirement when the revised Reclamation Plan is finalized. (Completed)**
00093-MR05-002-001	6/23/05		Genesis must add an aggressive reseeding program to the plan. This reseeding plan will require that all miscellaneous areas disturbed during mine life will be reseeded immediately to limit noxious weed invasion. The seed mix will be the approved seed mix for the operating and reclamation plan. **ASARCO submitted on April 7, 2008 an updated Weed Management Plan that committed to reseeding and weed control by use of KNF approved herbicides.**
00093-MR05-002-002	6/23/05		Genesis must utilize a licensed applicator to control weeds. The agencies will allow Genesis to use non-licensed applicators for the 2005 season until an applicator is licensed on staff. Genesis must use a licensed applicator in 2005 if restricted use herbicides are needed to control a noxious weed.

			ASARCO submitted on April 7, 2008 an updated Weed Management Plan that committed to reseeding and weed control by use of KNF approved herbicides.
00093 MR10-001-	02/09/10	03./26/10	DEQ conditioned the approval on installation of two new wells and a piezometer. **Genesis has subsequently revised the monitoring plan to eliminate the conditional approval by adjusting the location of the monitoring sites. (Completed)**
00093 MR 10-005-001-	10/04/10	12/21/10	MSHA road safety modifications. DEQ and the FS conditioned the approval. Changed proposed placement of an earthen barrier to a concrete barrier. Installation of barrier is **ongoing.**
00093 MR10-005-002	10/04/10		A map must be provided that shows the location of the berms in relation to the mill facilities once the work is completed.
00093 MR10-005-003	10/04/10		Follow terms and standards in the USFS letter dated October 6, 2010 for installation f proposed signage along Stanley Creek road.

Component		Mitigation/Stipulation
Adit Closure - Service and Conveyor Adits		1) Concrete plugs will not be installed. 2) In the Service and Conveyor adits, a concrete structure will be installed to capture mine water and funnel it to the collection pipes. 3) Additional monitoring of seeps and springs will be required to verify whether state water quality standards have been met. 4) Closure devices installed to prevent unauthorized access to the Service and Conveyor adits and to allow cleanout of the intake structures. 5) Concrete intake structures inspected regularly and repaired if needed.
Mine Site and Closure of Other Adits	Adits (North-3, South-1, East-2, West-1)	1) Development rock at the portal patio to plug the South Adit. The South Adit plug will extend approximately 130 feet into the adit; Development rock that has accumulated in stream channels adjacent to the mine site will be removed from channels and included in the backfill materials for the South and West adits.
Outflows from Adits		1) The reclaim water line will be used as a secondary water conveyance line. Inspection of the reclaim water line will be required prior to use. 2) Mine water discharge conveyed to the decant pond via the existing above ground tailings pipeline, if its condition is determined to be suitable. 3) Additional remote safety measures installed and testing of the integrity of the line will be required prior to use. 4) The intake structure will be designed to collect water from both the Conveyor and Service adits. 5) A channel will be constructed from the Service and Conveyor adits to the mill site stream channels for emergency overflow from the adits in case the design capacities are ever exceeded.

Component		Mitigation/Stipulation
Tailings Pipelines	Two 8-inch steel Tailings Pipelines	At the time of mine closure, the existing tailings lines and reclaim water line will be evaluated by a qualified engineer to determine their remaining service life. If their condition is suitable, they will be retrofitted to enhance existing leak detection systems and to improve their integrity if that is determined to be necessary (for example, inner sleeves can be inserted into the pipelines to reduce the risk of leaks developing). The replacement line will follow the route of the existing tailings lines, and will remain on surface in locations where the existing lines are on the surface, and will be buried only where the existing lines are buried.
Reclaim Water Line and Pump Stations	One 10-inch steel pipeline	The reclaim water line will be used as an emergency water conveyance line. Inspection of the reclaim water line will be required prior to its use and remote safety measures will be installed as in the tailings pipeline. When the mine water is of sufficient quality for direct discharge to Stanley Creek, the installed pipelines less than three feet deep will be removed, and the pipeline corridor and decant pond will be reclaimed.
Mill Site and Office and Shop Areas	Drainages	1) Both drainage channels combined into one channel. 2) The channel will be lined with an impervious liner. 3) Development rock will not be used to construct the drainage channel unless testing showed the rock to not be mineralized. 4) Rock structures in the channel angular and sized for the 100-year flow. 5) The new channel routed across the mill site and down the fill slope to the pre-existing channel location (**Figure 3-3**). Channel will be reconstructed and stabilized with rock weirs to prevent stream migration and downcutting.
Tailings Impoundment Surface		Modifications to the Proposed Action include construction of berms to prevent storm water run-on from entering the decant ponds.
Decant Ponds		In order to maintain existing geochemical conditions, the decant ponds will be maintained as deep ponds (10 to 15 feet deep and approximately 4 acres in size with a divider berm to provide for periodic cleanout of the pond).

Component		Mitigation/Stipulation
Tailings Impoundment Surface	Cells 1, 2, 3	Modifications to the Proposed Action include: 1) Final permitted elevation of the tailings is 2,420 for Cells 1, 2, and 3. 2) A berm created to prevent storm water runoff from the impoundment surface from draining directly to the decant ponds.
Surface Water Quality		Monitoring of surface water in Lake Creek has been conducted since 1979. Monitoring of Fairway and Stanley creeks has been conducted since 1986. The program included bioassay testing, macroinvertebrate monitoring, and water quality and flow monitoring three times per year (Genesis 2006, Appendix F, page 5). The twelve water quality monitoring stations listed in Table 2.3 will continue to be sampled post-reclamation for flow and water quality three times per year until the Agencies agree that monitoring is no longer necessary.
Water Quality Monitoring		Monitoring of surface waters including seeps and springs to verify whether state water quality standards have been met. In addition to the two Ross Creek springs RCT1 and RCT2 currently in the 2006 monitoring plan, this alternative adds all three sites at SC-15 on upper Stanley Creek. In the vicinity of the decant ponds, wells will monitor water quality annually to verify geochemical conditions in the area of the mine water discharge are maintained. These wells are MW-01-15, MW-01-16, MW 95-7, and MW 95-8. The Agencies will require Troy Mine, Inc. to submit a long-term monitoring plan based upon guidance specified in this EIS.

Component		Mitigation/Stipulation
Stockpile at Toe Ponds	Troy Mine, Inc. indicates that a volume of 818,500 cubic yards (cy) of soil is stockpiled at/around impoundment with 162,000 cy at Cell 3 soil stockpile	Up to 90% of the soil stockpiled west of the toe ponds will be removed and used for reclamation. BMPs will be used during removal to protect water quality and the western toad. Soil will be amended with an agency-approved, wood-based, organic amendment to add 1,100 lbs of nitrogen per acre. The soil remaining in the stockpile will be configured so surface water is protected from sediment and the toe pond berm is maintained.
Tailings Impoundment Surface	2006 bond calculation assumes 766,600 cy will be needed to cover impoundment surface with 18 inches of soil	Up to 90% of the stockpiled soil west of the toe ponds will be used first, then borrow east of the impoundment will be used for the balance of soil, if needed. The soil will be placed in one 18-inch soil lift to minimize compaction. The soil will be ripped before seeding. Soil will be amended with an agency-approved, wood–based, organic amendment to add 1,100 lbs of nitrogen per acre. Any materials originating in borrow pits to be used in reclamation will be in accordance with Agencies' growth media specifications.
Mill Site and Office and Shop Area	2006 bond calculation assumes 43,560 cy will be needed to cover the 27 acre mill and office/shop area with 12 inches of cover	Growth medium from the mine and mill area will be used first, then rocky glacial borrow east of the impoundment will be used for the balance, if needed. The mill site and office and shop areas will be covered with 12 inches of growth media. The USFS borrow site and stockpiled soil west of the impoundment will not be used to minimize spread of noxious weeds. The soil will be ripped prior to planting. Growth material will be amended with an agency-approved, wood-based, organic amendment to add 1,100 lbs of nitrogen per acre. Woody material greater than 6 inches in diameter will be scattered at the rate of 25 – 33 tons tons per acre. Any materials originating in borrow pits to be used in reclamation must be in accordance with Agencies' growth media specifications.

Component		Mitigation/Stipulation
North and South Portal Patios	15.28 acres total, 11.6 acres to be left as talus and cut slopes; 3.7 acres to be reclaimed @ 12 inches of cover = 5,969 cy cover growth media needed	Growth medium from the mine and mill area will be used first, then rocky glacial borrow east of the impoundment will be used for the balance, if needed. The soil will be ripped prior to planting. Growth material will be amended with an agency-approved, wood-based, organic amendment to add 1,100 lbs of nitrogen per acre. Woody material greater than 6 inches in diameter will be scattered at the rate of 25-33 tons per acre.
Subsidence	Existing surface expression of subsidence totals less than 1 acre.	Troy Mine, Inc. will operationally repair the existing surface subsidence feature that has not achieved a level of stability and utility comparable to the pre-disturbance condition.
Subsidence Monitoring		Troy Mine, Inc., with agency participation, will conduct an annual comprehensive ground inspection and once every 5 years conduct aerial inspections of the area above the underground workings. Surveys will be conducted until bond release, and the subsidence portion of the reclamation bond will be held for a minimum of twenty years after the mine has been decommissioned and the adits have been plugged. Aerial inspections will not be permitted between April 1st and June 15 for grizzly bear protection.
General		Seed sources for native plant species should be from northwestern MT, if available at the time of reclamation. Organic amendments will be used to provide long-term nitrogen needs. Chemical fertilizer will be used if site-specific soil testing identifies a need for short-term available nitrogen.
Tailings Impoundment Surface	303 acres	1) The wetland mix will not be used on the tailings impoundment. 2) The seed sources for native plant species should be from northwestern MT, if available at the time of reclamation.

Component		Mitigation/Stipulation
Tailings Embankment Slopes and Benches	42 acres	The Agencies will perform a field review of previously reclaimed areas on the embankment to determine if additional areas need covering with soil, revegetation, or reseeding. If areas are reseeded, the seed sources for native plant species should be from northwestern MT, if available at the time of reclamation.
Troy Mine, Inc. Borrow Sites	East Borrow and NE Borrow areas, Cell 3 borrow	Seed sources for native plant species should be from northwestern MT, if available at the time of reclamation.
Reclaim Water Pump Station		Seed sources for native plant species should be from northwestern MT, if available at the time of reclamation.
Mill Site and Office and Shop Areas		Seed sources for native plant species should be from northwestern MT, if available at the time of reclamation. Disturbed ground will be mulched with an agency approved organic amendment and plants will be inoculated with appropriate mycorrhizal fungi if available. Organic amendments will be used to provide long-term nitrogen needs. Chemical fertilizer will be used if site-specific soil testing identifies a need for short-term available nitrogen.
North and South Portal Patios		Seed sources for native plant species should be from northwestern MT, if available at the time of reclamation. Disturbed ground will be mulched and plants will be inoculated with appropriate mycorrhizal fungi if available. Organic amendments will be used to provide long-term nitrogen needs. Chemical fertilizer will be used if site-specific soil testing identifies a need for short-term available nitrogen.
USFS Borrow Source		1) The seed sources for native plant species should be from northwestern MT, if available at the time of reclamation. 2) The USFS borrow area will not be used in order to prevent the spread of rush skeletonweed. USFS will be responsible for reclamation of this borrow area.

Component		Mitigation/Stipulation
Smaller disturbed areas	Tailings pipelines and reclaim line, roads, power line corridors, storage areas, etc.	Seed sources for native plant species should be from northwestern MT, if available at the time of reclamation.
Wetlands		1) The seed sources for native plant species should be from northwestern MT, if available at the time of reclamation. 2) The decant ponds and tailings impoundment surface area will not be reclaimed with a wetland seed mix.
Revegetation Monitoring		Long-term monitoring of noxious weeds, including meadow knapweed and rush skeletonweed. Compliance with revegetation performance standards will be required.
Noxious Weed Management		Equipment will be washed prior to coming on site and other weed prevention BMPs will be required.
Air Quality		Monitoring until vegetation is established to maintain air quality.
Storm Water Collection and Diversion		1) The gunite liner will be removed from existing collection/diversion ditches and the surface will be re-graded to slope to a ditch on the uphill side of the access road. This ditch will drain to the large, natural drainage across the mill pad. 2) An approved Storm Water Pollution Prevention Plan (SWPPP) will be required for all reclamation activities.
Mill Site and Office and	Asphalt (parking lots, etc)	Asphalt from paved areas will be pulverized and used for NFSR 4626 road gravel.
	Concrete from buildings	Concrete foundation material may be buried on NFSL under certain conditions specified in this EIS (**Section 2.4.3.2 – Infrastructure**). All other building materials must be removed and disposed of at a proper waste facility off of NFSL in compliance with the MT Solid Waste Act.
	Metal, glass, plastic, and wood from buildings	All materials will be disposed of in appropriate disposal areas off NFSL in compliance with the MT Solid Waste Act.

Component		Mitigation/Stipulation
Shop Areas	Water diversion culverts	Both ends of the culverts will be plugged with concrete.
Fuel/Other tanks	Surface diesel fuel tank, two large and numerous small propane tanks	Removed from site.
Water Tank	300,000 gallons	The water tank will be removed from site.
Water Supply Lines		When no longer needed for mine closure, any water supply lines will be removed from NFSL.
Domestic Water Well		The domestic water well may be used for irrigation during the first growing season after reclamation if needed, then abandoned/plugged according the Montana state standards.
Large-Capacity Make-up Wells Near Stanley Creek		Plugged/abandoned according to Montana state standards.
Small Pump Buildings		Reclaimed
Surge Pond		Reclaimed
Sewage Treatment Facility		Removed and salvaged.
Tailings Irrigation System		The tailings irrigation system will be left in place to assist in reclamation and then removed.
Reclaim Water Pond		Buried liner will be covered with 3 feet of soil.
Quonset Hut		Left in place for storage and office space
Fences		The fence surrounding the USFS borrow area will be left in place to avoid use and subsequent spreading of rush skeletonweed.
Access Roads	#4551, 4628A	Roads will be converted to a trail.
	# 4624	Road to be reclaimed as follows: 1) The first 800 feet of the road will be partially recontoured. 2) Culvert at first stream crossing will be removed and crossing fully recontoured. 3) Grade control structures will be installed. 4) Waterbars will be installed over the next 1,000 feet of road at 200-foot spacing up to the private land/NFSL boundary. Work will be done according to State of Montana specifications. 5) From the private land/NFSL boundary onward, waterbars will be installed at 200-foot spacing for the next 1,600 feet. 6) The remaining 1,600 feet of road will be recontoured and one intermittent stream crossing will be constructed according to USFS specifications.

Component		Mitigation/Stipulation
	Main access # 4626 to mill site	1) Asphalt surface will be pulverized and ripped in place. 2) A 4-inch lift of aggregate will be placed on the pulverized surface. 3) Approximately 300 feet of asphalt will be repaired and maintained on the Stanley Creek bridge approaches. Guardrails and safety berms will be removed. The Stanley Creek Bridge will be left in good condition meeting current safety standards and capable of supporting legal highway loads.
	# 4626 from mill site to junction with #4629	Implement BMPs on any segments or stream crossings at risk of contributing sediment to streams.
	# 4626C	Road fully recontoured; all culverts removed; stream crossings reconstructed; seeded and planted according to USFS specifications.
	# 4626D	Road fully recontoured; all culverts removed; stream crossings reconstructed; seeded and planted according to USFS specifications.
	# 4626E	Fill will be removed and intermittent stream channel near the beginning of the road will be reconstructed. The crossing will be armored or a rock grade control structure will be constructed to USFS specifications. Waterbar past this drainage if road is opened up for drilling purposes.
	# 4626F	Road fully recontoured; all culverts removed; stream crossings reconstructed; seeded and planted according to USFS specifications.
	# 4626G	An intermittent stream channel crossing will be constructed where the scour channel is intercepted by the road. Waterbars will be installed every 300 feet from this point back to the beginning of the road.
	# 4628	Stabilize road for intermittent stored service; install water bars; upsize culverts or construct armored overflows to pass 100-year flows; remove unstable sections of road fill. Road work will not be permitted until after June 15 for grizzly bear protection.
	# 4628C	Road fully recontoured; all culverts removed; stream crossings reconstructed; seeded and planted according to USFS specifications.
	# 4629	From MP 0.0 to 0.8: Stabilize road for intermittent stored service; install water bars; upsize culverts or construct armored overflows to pass 100-year flows; remove unstable sections of road fill. From MP 0.8 to 1.34: Implement BMPs on segments at risk of contributing sediment to streams.

Component		Mitigation/Stipulation
	# 4630A	No action is currently planned in order to avoid entering grizzly bear core, however if grizzly bear habitat requirements change, the road will be reviewed for potential drainage work.
	# 9003	Scarify; seed and plant according to USFS specifications.
Mining Related Roads on NFSL	# 4624B,# 4626H, # 4626I, # 4628, # 4628B, # 4628D, # 4628F, # 4628G, # 4628J, # 4642, # 4642A, # 4642B, # 4645, # 14391, # 14993	Decommission by Abandonment.
Private Roads on Patented Lands	# 4624, # 4626 (private portion), # 4626J, K and L; # 4628D, E, F, G, H, I, J ; # 4629A, B, C; # 4642 # 4645 # 14386 # 14387 # 14398 # 14398A # 54628 # 54628A # 54628B # 54629	Roads will be field reviewed by the Agencies to identify reclamation needs. Roads will be waterbarred or otherwise reclaimed as needed to reduce adverse impacts to water quality.
	# 4624A	First 200 feet of the road will be partially recontoured and waterbars will be installed on the remaining 900 feet of road at a 200-foot spacing. The work will be conducted according to State of Montana specifications.

Component		Mitigation/Stipulation
	# 4624C	Waterbars will be installed in the first 900 feet of road at 200-foot intervals. The last 300 feet of road will be fully recontoured including the stream crossing. Grade control structures will be installed in the stream crossing. The work will be done according to State of Montana specifications.
Private Roads on Troy Mine, Inc. Land by Tailings Impoundment	Various roads used for access to tailings impoundment	Roads will be field reviewed by the Agencies to decide if they are needed for the proposed post-mine land use. Roads not needed will be reclaimed.
Transmission Line	115 kV	Consideration of the needs for routing and disposal long-term. The transmission line will be maintained in place until no longer needed for reclamation. On NFSL, Northern Lights Inc. will be required to follow the terms and conditions of their Special Use permit issued by KNF.
Substation		Left in place for future use by Northern Lights.
Maintenance Sump		Re-graded to blend with surrounding topography. Remove remaining contaminants and restore to original floodplain contours. Any tailings or contaminated soil will be removed before re-grading.
Tailings Impoundment Geotechnical Monitoring		A qualified professional engineer will annually monitor and verify the stability of the embankment for a minimum of five years after reclamation is completed. The engineer's report will be submitted to the Agencies. The Agencies will be consulted for concurrence before monitoring ceases.

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Component		Mitigation/Stipulation
Mine Site	North and South Portal Patios	The slopes would be re-graded by pulling edges up and filling against the cut slope/roadway, covered with growth medium (coarse fraction from patios, field-reviewed for adequacy of volume and placement). Flat areas would be covered with 12 inches growth medium, if available, from patios, then ripped and seeded. 1) All growth medium for the mine and mill area will be salvaged from the mill site fill. 2) If there is not enough material at the mill site, rocky glacial borrow east of the impoundment will be used. 3) A stream channel will be constructed at the west ventilation adit portal.
Mill Site and Office and Shop Areas	Entire Area	1) Concrete foundation material may be buried on NFSL under certain conditions specified in this EIS (**Section 2.4.3.2 – Infrastructure**). 2) All other demolition materials will be disposed of off NFSL in appropriate disposal areas in compliance with the MT Solid Waste Act. 3) Development rock fill will be minimized. 4) The area will be regraded and fill will be at least 3 feet deep over debris.
Tailings Embankment		All eroded or bare areas on the embankment will be repaired by spreading 12 inches of the stockpiled growth medium. The areas will be seeded and/or planted with agency-approved mixes.
Toe Ponds		Connected by inter-pond channels with armored outfall (installed as safety measure). MT Department of Fish, Wildlife and Parks (FWP) will survey the ponds for non-native fish species and determine whether removal of the fish is recommended; if so, FWP will issue a permit for this activity. Inter-pond channel construction and fish removal will not begin until September or when juvenile western toads are no longer observed at the breeding site.
Borrow Sites	Borrow sites (USFS)	The USFS borrow area will not be used in order to prevent the spread of rush skeletonweed. KNF will be responsible to reclaim this borrow area. The fence surrounding the USFS borrow area will be left in place to avoid use and subsequent spreading of rush skeletonweed.

Component	Mitigation/Stipulation
Troy Mine, Inc. Borrow Sites (East Borrow and NE Borrow Areas and Cell 3 Borrow Pit)	The borrow sites will be graded to 3:1 slopes. The upper layers of soil will be salvaged and stockpiled. Once the borrow site was used, the salvaged soils will be replaced and seeded/revegetated. Troy Mine, Inc. will provide the Agencies with a quantification of the volume of borrow to be removed and location(s) for the soil stockpile(s).
Mobile Equipment	All mobile equipment will be removed from mine, if possible. If abandoned in place, all fluids will be drained and disposed of properly.
Jaw Crusher	The jaw crusher components on NFSL will be removed; other components will be removed as necessary to close the adits and remaining equipment may be abandoned in place or removed from the mine. A final agency inspection of the workings will be required.
Conveyor	The conveyor components on or that extend onto NFSL will be removed; other components will be removed as necessary to close the adits and remaining equipment may be abandoned in place or removed from the mine. A final agency inspection of the workings will be required.
Ventilation System	Any ventilation system components at the surface and at least 100 feet back into the adits will be removed. Components further underground will be abandoned in place or removed from the mine. A final agency inspection of the workings will be required.
Loadout Facility	The former concentrate loadout facility burned down in 2010. A new covered facility was approved in 2011 in Libby. Cleanup of the former loadout will be per the approved reclamation plan. Any monitoring wells will be plugged and abandoned per ARM 36.21.810.
Plan of Operations	Within one year of the decision, submit consolidated plans of operation.