



United States
Department of
Agriculture

Forest
Service

June
2009

Little Moffat Placer Mine Project

Environmental Assessment

Pintler Ranger District
Beaverhead-Deerlodge National Forest

Granite County, MT

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PURPOSE AND NEED, PROPOSED ACTION

Introduction

This Environmental Assessment (EA) discloses the potential impacts of approving a Plan of Operations submitted to the Forest Service on September 26, 2008, by Ms. Gail McIntyre. The Plan of Operations addresses placer mining for sapphires on public domain lands on the Beaverhead-Deerlodge National Forest (BDNF). The proposed placer mine site is located in the Pintler Ranger District, Little Moffat Gulch watershed, Granite County, Montana.

Purpose and Need

Gail McIntyre of Philipsburg, Montana has submitted a Plan of Operations (POO) to placer mine sapphires on unpatented mining claims located in T. 6 N., R. 16 W., sections 22 and 27, in the Little Moffat Gulch drainage approximately 15 miles southwest of Philipsburg (see attached map). Ms. McIntire proposes to placer mine an area approximately $\frac{3}{4}$ of an acre.

The role of the Forest Service is to ensure that mining activities minimize adverse environmental effects on National Forest System (NFS) resources and comply with all applicable environmental laws. Congress has not given the Forest Service authority to unreasonably circumscribe or prohibit reasonably necessary activities under the 1872 General Mining Law that are otherwise lawful.

Proposed Action

Ms. McIntire proposes to placer mine an area approximately $\frac{3}{4}$ of an acre in Little Moffat Gulch. Grasses, sedges, cinquefoil, rose bushes, and a few (less than 12) ponderosa pine and aspen trees would be removed. The area would be divided into 5 panels. Each panel would be approximately 20 feet wide and the length would vary from 120 feet to 480 feet due to the shape of the draw bottom, down to bedrock. Little Moffat Gulch has a small, non fish bearing intermittent stream that would need to be diverted around the project area until the completion of the mining project. This would allow the mine area to dry out so excavation could proceed without creating problems with mud due to saturated soils. The water would also be used to fill the production pond used in processing the sapphire bearing gravels. The stream would be diverted around the area by constructing an earthen diversion dam approximately 2 feet wide, 2 feet tall and 30 feet long across the draw bottom. The water would then enter a diversion ditch through a hole in the dam. The constructed diversion ditch would be approximately 2 feet wide, 1/2 foot deep and 880 feet long extending into Big Moffat Gulch. The end of the ditch would circle back for a short distance with multiple discharge points to disperse any water velocity and sedimentation prior to entering the vegetative filter in the wetlands. Water used in the operation would be pumped from the production pond. The pond is U shaped with the approximate dimensions of 20 feet wide, 240 feet long and 15 feet deep. Water pumped into the wash plant is used to clean the gravels. The wash plant consists of a trommel that is a combination of a screen and scrubbing unit, conveyor and sluice box. Pay gravels are placed in the trommel where they are washed with water while the trommel spins like a cement mixer. The screen in the trommel separates the material into desired sizes that are then further processed as they pass through the sluice box. The resulting concentrates would then be removed for further processing.

The approximate total area of disturbance, including the production pond, diversion ditch and area to be mined is less than 1 acre.

Excavating the panels would be accomplished with a rubber tired backhoe. The topsoil (6-8 inches of

growth medium) from panels 1 and 2 would be stripped, stockpiled on the east edge of panel 1 and seeded. The placer gravels would then be excavated from the panels in 40-ft segments. The placer gravel from panel 1 would be stockpiled on panel 2. From the stockpile, the placer gravel would be processed in the wash plant and the waste rock and fines would be returned back into the hole it came from.

After panel 1 is completed, it would be re-contoured and the topsoil from panel 3 would be stripped and stockpiled to the west. When panel 2 is completed and re-contoured, topsoil would be spread on panel 1 and seeded. This sequence would repeat for each subsequent panel 3, 4 and 5. When the last panel 5 is completed, the topsoil would be pushed over the re-contoured surface and seeded.

Production is not expected to exceed 200 loose cubic yards per day; however, the mining would occur seasonally on an intermittent basis, weekends, vacations and holidays. The project is expected to take 5 years to complete.

Access would be by existing road #5002. This road is within an area closure to motorized use from September 1 through June 15 for Hunting Recreation Opportunities, Big Game Winter Range, and Elk Calving. These closure dates would restrict her time of operations to 2½ months a year. Ms. McIntyre is requesting access to her operation beginning in April and ending in December or when winter weather stops placer operations due to freezing water and access problems.

Laws, Regulations, Policy, and Forest Plan Direction

The authority for the Forest Service to insure that NFS lands, including those under mining claim locations, are used only for purposes required for and reasonably incidental to mining and in a manner that minimizes adverse environmental impacts, falls under the agency's broad authorities from the following statutes and case law, specifically:

- (1) *The General Mining Act of 1872*
- (2) *The Organic Act of 1897 (16 USC 478, 551).*
- (3) *Multiple Use Mining Act of July 23, 1955 (30 USC 612).*
- (4) *U.S. v. Richardson, 599 F. 2d 290 (1979); Cert. denied, 444 U.S. 1014 (1980).*
- (5) *Title 36 Code of Federal Regulations, Part 228, Subpart A - Locatable Minerals.*

The General Mining Act of 1872 is a United States federal law that authorizes and governs prospecting and mining for economic minerals, such as gold and silver, on federal public lands. This law, approved on May 10th, 1872, codified the informal system of acquiring and protecting mining claims on public land, formed by prospectors in California and Nevada from the late 1840s through the 1860s.

Provisions of the 1872 Mining Law were changed with the implementation of the Federal Land Policy Management Act of 1976 effective as of January, 1981. Many of the provisions of FLPMA revised the surface uses allowed on mining claims to halt by regulation or otherwise, unnecessary or undue degradation of the public lands allowed under the 1872 Mining Law. A portion of the FLPMA is the 43 CFR 3809 Surface Management regulations that were updated and published in December of 2001. These rules effectively replace many of the 1872 Mining Law provisions and require that mining reclamation, financial guarantees for reclamation to the Federal government, mining claim occupation permits, and detailed Mining Plans of Operations are to be submitted to the governing agencies prior to disturbing the surface.

The 1955 Multiple Use Mining Act (30 USC 612) restricts mining operators to using reasonable methods of surface disturbance that are appropriate to their stage of operation (U.S. v. Richardson (supra)). This

legal principle is reinforced by the Forest Service 36 CFR 228 Subpart A regulations, which provide procedures for authorizing operations on the National Forests that are reasonably incidental to mining, but requires that such operations be conducted so as to minimize adverse environmental impacts. For a use to be reasonably incident, the type and level of use must be justified as being appropriate to the stage of mining activity in which the operation is legitimately engaged (i.e., prospecting, exploration, development, production, abandonment, or reclamation). In turn, the stage of mining activity with the related use must be required, justified, and appropriate, based on the nature and extent of the mineral resource present.

The proposed placer mining lies within the West Fork Rock Creek Management Area of the Upper Rock Creek Landscape and is consistent with the 2009 BDNF Revised Land and Resource Management Plan (Revised Forest Plan). The applicable Forest-wide goal (page 27) is to ensure that locatable minerals are developed on all parts of the Forest not withdrawn from locatable mineral entry in accordance with the 1872 Mining Law, regulations, and national direction.

Public Involvement

A scoping letter dated February 18, 2009, describing the proposal was mailed to 166 interested individuals, organizations, and agencies. The letter requested comments on the proposal and requested comments be postmarked by March 20, 2009. In addition, the proposal was listed in the BDNF Schedule of Proposed Actions (SOPA). We received five responses to the scoping letter. Two respondents supported the proposal, one strongly opposed the proposal, one respondent raised concerns for fish and wildlife, and one expressed concerns with a sensitive plant species in the area.

- **One commenter suggested the Forest Service should prohibit this mining activity outright under the direction of the Forest Plan and other laws, regulations, and Forest Service requirements, and public desire to manage for recreation, wildlife, and wilderness. The commenter suggests Ms. McIntire should purchase private land containing sapphires. The commenter asks several questions about the stream, and suggests the Forest Service needs to prepare an EIS and ROD.** *There is no basis for prohibiting this mineral project under the Forest Plan or any laws or regulations. The land is open to mineral entry under the 1872 mining law. The Forest Service's role is to enable mining proponents to perform their work while protecting the surface resources. Reasonable mitigation measures are applied to address potentially adverse impacts. Descriptions of the streams are summarized in the Hydrology and Fish sections of the EA. As stated in the Decision Process and Administrative Review section, should the analysis determine significant impacts may occur, then an EIS will be prepared. Based on the anticipated impacts summarized in the EA from more detailed specialist reports contained in the project file, the analysis indicates significant impacts are not anticipated.*
- **Montana Fish, Wildlife & Parks (MFWP) expressed concern about potential downstream impacts on spawning for bull trout and westslope cutthroat trout. They also expressed concern about the timing of project operations and potential impacts to elk.** *Impacts to bull trout and westslope cutthroat trout are summarized in the Threatened, Endangered, Sensitive, and Proposed Fish and Amphibians section of the EA. Mitigation measures have been incorporated into the proposed action to minimize potential for downstream impacts. Forest Service personnel have been consulting with the MFWP area biologist and have developed mitigation measures designed to minimize impacts to elk. Impacts to elk and other wildlife are summarized in the Terrestrial Wildlife section of the EA.*

- **One commenter provided information about a sensitive plant and suggested the Forest Service survey the area carefully and make sure habitat for the plant is not compromised.**
Sensitive plant surveys have been conducted and no sensitive plants will be compromised; refer to the Vegetation section of the EA.

Decision Process and Administrative Review

This EA is not a decision document. It is a document disclosing the potential environmental impacts of implementing the alternatives. Based on the information in this analysis and consideration of public comments on the EA, the Responsible Official will document the decision. If the analysis finds no significant impacts to the human environment, the decision will be documented in a Decision Notice and Finding of No Significant Impact. If the analysis determines significant impacts may occur, an Environmental Impact Statement will be prepared to further analyze the significant issues.

The Responsible Federal Official is the District Ranger for the Pintler Ranger District, BDNF. The decision will consider how best to accommodate Ms. McIntyre’s placer mining proposal while protecting the area’s resources through appropriate mitigation measures.

Ms. McIntyre could appeal the decision pursuant to either 36 CFR Part 215 or 36 CFR Part 251. Other parties could appeal the decision pursuant to 36 CFR Part 215. Following resolution of any appeal, Ms. McIntyre would need to change the Plan of Operations as described in the Decision Notice and resubmit it to the Forest Service along with any reclamation bond that is required. Once the Forest Service determines that the Plan of Operations has been changed as required, and that the bond instrument is acceptable, it would notify the proponent that the Plan of Operations is approved.

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ALTERNATIVES

Alternative 1—No Action

Development of this alternative is required by Forest Service Handbook 1909.15 (23.1) and the Council on Environmental Quality Regulations (40 CFR 1502.14(d)). In this alternative, the District Ranger would not approve the submitted Plan of Operations; no placer mining would occur. This alternative would result in no impacts to NFS resources.

The Forest Service has no legal right to deny exploration and mining proposals and would violate the claimant’s statutory right to prospect and mine on lands open to operations under the 1872 Mining Law, as amended; therefore, the No Action alternative is included as a base to reflect the current status of the project area.

Alternative 2—Proposed Action

The proposed action includes placer mining an area approximately $\frac{3}{4}$ of an acre in Little Moffat Gulch. Grasses, sedges, cinquefoil, rose bushes, and a few (less than 12) ponderosa pine and aspen trees would be removed. The area would be divided into 5 panels. Each panel would be approximately 20 feet wide and the length would vary from 120 feet to 480 feet due to the shape of the draw bottom, down to bedrock. Little Moffat Gulch has a small, non fish bearing intermittent stream that would need to be diverted around the project area until the completion of the mining project. This would allow the mine area to dry out so excavation could proceed without creating problems with mud due to saturated soils. The water would also be used to fill the production pond used in processing the sapphire bearing gravels. The stream would be diverted around the area by constructing an earthen diversion dam approximately 2 feet wide, 2 feet tall and 30 feet long across the draw bottom. The water would then enter a diversion ditch through a hole in the dam. The constructed diversion ditch would be approximately 2 feet wide, 1/2 foot deep and 880 feet long extending into Big Moffat Gulch. The end of the ditch would circle back for a short distance with multiple discharge points to disperse any water velocity and sedimentation prior to entering the vegetative filter in the wetlands. Water used in the operation would be pumped from the production pond. The pond is U shaped with the approximate dimensions of 20 feet wide, 240 feet long and 15 feet deep. Water pumped into the wash plant is used to clean the gravels. The wash plant consists of a trommel that is a combination of a screen and scrubbing unit, conveyor and sluice box. Pay gravels are placed in the trommel where they are washed with water while the trommel spins like a cement mixer. The screen in the trommel separates the material into desired sizes that are then further processed as they pass through the sluice box. The resulting concentrates would then be removed for further processing.

Excavating the panels would be accomplished with a rubber tired backhoe. The topsoil (6-8 inches of growth medium) from panels 1 and 2 would be stripped, stockpiled on the east edge of panel 1 and seeded. The placer gravels would then be excavated from the panels in 40-ft segments. The placer gravel from panel 1 would be stockpiled on panel 2. From the stockpile, the placer gravel would be processed in the wash plant and the waste rock and fines would be returned back into the hole it came from.

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Access would be by existing road #5002. This road is within an area closure to motorized use from September 1 through June 15 for Hunting Recreation Opportunities, Big Game Winter Range, and Elk Calving. These closure dates would restrict her time of operations to 2½ months a year. Ms. McIntyre is requesting access to her operation beginning in April and ending in December or when winter weather stops placer operations due to freezing water and access problems.

The following mitigation measures would become part of the approved Plan of Operations to minimize environmental impacts:

- All support structures such as trucks and campers will be located outside the Riparian

Conservation Area (RCA). The RCA for this project is 100' either side of Little Moffat Gulch riparian area.

- The entire project area will be fenced to exclude cattle use, including the diversion point and ditch, and the wetlands used as a filtering zone to capture any sediment delivered by the ditch. This will increase the filtering capability of the wetland by allowing full vegetative expression.
- As topsoil is removed to expose the area to be mined, the existing sod will be salvaged and used to revegetate the stock-piled topsoil to the extent practical.
- The dimensions of the diversion ditch will be a minimum of 18-20 inches wide (bucket width) by 15 inches deep to accommodate the 100 year flood event (10 cfs). When excavating the diversion ditch, every attempt will be made to maintain the sod mat intact and place it upright along the west side of the ditch, which will further increase ditch capacity. Ensure the diversion ditch does not have the capability to breach and flow directly into Big Moffat Gulch before flowing through wetland.
- In addition to normal administration of the project, the fish biologist and/or hydrologist will make periodic visits to the site to determine whether any changes to mitigation might be required.
- Site reclamation will follow guidelines set forth in Montana Placer Mining BMPs, Special Publication 106. Because the area has been previously disturbed, site potential has not been recorded. Reclamation will include a minimum of re-contouring the site to match general valley-bottom profiles, and apply any salvaged topsoil to the surface. No attempt will be made to create a channel system.
- Work will cease if soil ruts greater than 1 inch occur.
- The top 8-12 inches of soil will be removed and stored. The re-contoured panels will be covered with salvaged topsoil.
- Panels will be refilled with coarse materials on the bottom and fine materials on the top.
- Disturbed areas will be seeded with native seed if needed.
- Equipment will be cleaned and inspected for noxious weeds and the site will be monitored for the presence of noxious weeds after the project is completed; noxious weeds will be treated if they are found.
- Mining activity will be prohibited from May 15 through June 15, yearly.
- The gate will be signed with the seasonal closure information and will be locked to restrict public use during the September 1 through June 15 closure period.
- Individual ponderosa pine and aspen trees that need to be removed will be felled outside of the mid-May through end of July period.

ENVIRONMENTAL IMPACTS

This section provides a summary of environmental impacts of the alternatives considered in detail. Further analysis and conclusion about the potential impacts are available in detailed reports for each resource and other supporting documentation cited in those reports. The detailed specialist reports are contained in the project file and are available on request.

Past, Present, and Reasonably Foreseeable Activities

Resource specialists considered (as appropriate) the following actions or activities in their analyses.

Past/Present/Ongoing Activities

- Mining and mineral exploration on private and NFS administered lands, timber harvest, and road

construction associated with these activities.

- Continuation of livestock grazing activities on the West Fork Butte Allotment.
- Continuation of recreation activities such as ATV riding, snowmobiling, camping, and trapping/hunting, firewood gathering.
- Routine Forest Service management activities, including road and trail maintenance, noxious weed control, special uses administration, fire management, etc. will continue within the analysis area.

Reasonably Foreseeable Activities: Other than the continuation of the present/ongoing activities, there are no other reasonably foreseeable activities planned within the project area.

Summary of Cumulative Effects

No negative cumulative effects to watersheds/water quality, fisheries, amphibians, terrestrial wildlife species, sensitive plant species, soil, or heritage resources are anticipated from the project when combined with other past, present, and reasonably foreseeable activities.

Resources

Hydrology

The proposal is located within the Little Moffat Gulch watershed, a tributary to Big Moffat Gulch, which feeds the West Fork Rock Creek. The West Fork combines with the Middle Fork and Ross Forks to form Rock Creek, a tributary of the Clark Fork River. Little Moffat Gulch watershed is 260 acres, and drains the south side of the West Fork Buttes. The West Fork Rock Creek is a 5th field HUC. It is a category 5 Total Maximum Daily Load (TMDL) stream, with impairments due to mercury from unknown sources. Many of the streams draining the West Fork Buttes have been placer mined, including Little Moffat Gulch. Livestock use has occurred in the vicinity for about 100 years, with notable effects to wetlands and stream channels.

This proposal for a placer operation exists within the valley bottom of Little Moffat Gulch. Little Moffat Gulch and Big Moffat Gulch are both considered intermittent streams. Defined channels exist in limited portions of these gulches, while other reaches exhibit wetland characteristics or dry meadows with no defined flow. During the dry season (late summer through early fall), some portions of these gulches exhibit saturated soil conditions without surface flow. Many reaches do not exhibit site potential natural channel/wetland characteristics due to past disturbances from mining and livestock. The site constitutes a Category 4 Riparian Conservation Area (RCA) as described on page 300 of the Revised Forest Plan. This establishes an RCA that extends 100 feet from each side of the wetland or channel in Little Moffat Gulch. The project area constitutes less than an acre, and is entirely within the RCA.

Alternative 1: No Action

Direct, Indirect, and Cumulative Effects

There would be no direct, indirect, or cumulative effects to hydrology with the No Action Alternative.

Alternative 2: Proposed Action

Direct, Indirect, and Cumulative Effects

The following features of the operation would affect water resources: Capture and ditch all water in Little Moffat Gulch around the area planned to be placer mined in strips. The ditch water would be discharged onto a wetland that exists at the junction of Little Moffat and Big Moffat. The pond that provides process water would initially fill using runoff from Little Moffat during spring-time, and then be maintained with

the spring that lies just to the east of pond via an underground pipe. Any excess water in the pond would flow out the emergency overflow channel and disperse into the wetland. The disturbance associated with the strips would be separated from flow in Little Moffat by rerouting natural flow via the ditch, and by building a berm built from topsoil (overburden) derived from the strips, which would encapsulate the disturbed area.

Potential direct effects would occur during the construction of the ditch. Potential indirect effects would occur if a storm event or snowmelt resulted in sediment delivery from any of the proposed activities. Cumulative effects evaluate whether or not the direct and indirect effects, considered with all past, present and reasonably foreseeable future effects would result in a change in stream channel function/stability. Cumulative effects must be evaluated on the West Fork Rock Creek, as this is the first stream system with an established channel system potentially affected by the project area.

Mitigation described above would minimize or prevent direct and indirect effects in terms of sediment delivery to West Fork Rock Creek. With the exception of the construction of the ditch, disturbance at the site is designed to be contained within the panel area, meaning there is very limited potential for sediment to leave the immediate site area. Because the flow path between the site area and West Fork Rock Creek can be characterized as wetland complexes interspersed with dry meadows without defined flow, the risk for sediment delivery to West Fork Rock Creek is very low. About ½ mile of filtering is afforded by the wetland complex and dispersed flow of Big Moffat Gulch. Because the risk of any sediment reaching the West Fork Rock Creek is so low, no cumulative effects are expected.

Because the wetland complex is already disturbed, any additional disturbance would not further degrade wetland function at the site level. When the project is complete, reclamation would allow recovery of wetland function above the existing condition.

Consistency with the Revised Forest Plan, Clean Water Act, Executive Order 11988 (Floodplains) and Executive Order 11990 (Wetlands): Consistency takes into account that site disturbance to the wetland is allowed under the 1872 Mining Law. The listed mitigation during the activity and reclamation planned after completion will ensure the proposal will be consistent with Revised Forest Plan standards and the Clean Water Act including the TMDL status. Planned reclamation of the wetland means that long-term wetland function would be restored based on its capability. No effects to floodplains or municipal watersheds are expected.

Threatened, Endangered, Sensitive, and Proposed Fish and Amphibians

The following information is summarized from the detailed analysis documented in the Biological Assessment and Biological Evaluation contained in the project file.

Little Moffat Gulch has a small, non fish-bearing intermittent stream that is in the West Fork Rock Creek watershed. It is one of ten 5th field watersheds that make up the Rock Creek sub-basin.

Both bull trout and westslope cutthroat trout are present throughout the West Fork Rock creek 5th field watershed. This local population of bull trout is functioning at risk. Westslope cutthroat trout are genetically pure and are considered a conservation population. Rainbow trout and eastern brook trout are presumed absent. Brown trout were first documented in the lowest subwatershed in 1994.

The design of the project and it's distance (0.6 miles) to the nearest fish-bearing stream – the West Fork Rock Creek – make sediment delivery to this stream very unlikely. Portions of Big Moffat Gulch have a

defined channel. The presence of a defined channel increases the risk of sediment delivery if a large-scale release of sediment-laden water should occur at the mine site, as channelized flow has been documented to flow much greater distances than non-channelized flow (Belt, et al, 1992). Given the design criteria in the project - proper sizing of the diversion ditch, excavation of the pond below ground level, livestock exclusion from the site, revegetation of the berms to reduce potential failure, and strict administration of the project, the potential for a failure at the site is low. The distance (0.6 miles) and gradient (4%) between the mine site and the West Fork Rock Creek reduce the potential for even channelized flow to reach the West Fork.

Alternative 1: No Action

Direct, Indirect, and Cumulative Effects

There would be no direct, indirect, or cumulative effects to aquatic TES species with the No Action Alternative.

Alternative 2: Proposed Action

Effects of this project are evaluated at two scales. Physical effects of the action, on habitat pathways and indicators are evaluated at the 6th field watershed scale. Potential effects to the population are evaluated at the *local population* scale, which is the West Fork Rock Creek 5th field watershed.

The potential effects of permitting this project are primarily related to the risk of sediment delivery to the West Fork Rock Creek, the nearest stream containing bull trout. Release of toxicants, from a fuel leak or spill or other fluids used in the machinery, is the other pathway by which this project could adversely effect bull trout or their habitat.

The potential for adverse effects to threatened fish species in the West Fork Rock Creek is very low since the project area is located approximately one-half mile from the West Fork and no direct, perennial flow connects the project site and the West Fork. An intermittent channel, in some places scoured and others not, exists in Big Moffat Gulch (the receiving drainage of Little Moffat Gulch) and connects to the West Fork.

Mining activity may occur between April and December. The actual timing of permitted operation may include the entirety of this period or only a portion of it. Springtime operation is most likely as the operator plans to capture the run-off flow from Little Moffat Gulch to use in processing the gravel. Spring is also the time period with the greatest risk of sediment delivery to the West Fork Rock Creek if erosion of exposed disturbed areas occur, because it is the time period when Big Moffat Gulch has the highest potential to be carrying surface flow to the West Fork.

The plan of operations calls for diverting all streamflow from Little Moffat Gulch around the mining operation by constructing a small earthen dam across the valley bottom and a ditch to transport around the mining operation. Water would be drafted from the ditch to fill the production pond. Water from the pond would be pumped into pits that serve as the wash operation in each exposed strip.

Erosion from the mined site

The plan calls for exposing two strips at any one time period. Exposing the strips entails removing the topsoil from the strips and using it to form a berm between the Little Moffat diversion ditch, the production pond, and the exposed strips. The berm would be revegetated to stabilize it. A total of about ½ acre of ground (2 strips @ 20' W each x 480' L) would be devoid of topsoil and vegetation during the life of the operation. The area encompassing the active mining site would be surrounded by this earthen berm

on all down-gradient sides, reducing the potential for erosion from the exposed area during precipitation events and spring run-off.

The other primary way by which erosion could occur from the active mining area is if the diversion dam and channel, designed to carry the flow of Little Moffat Gulch around the workings, fails during a time period when the draw is flowing. The diversion dam and ditch would be sized, constructed, and maintained adequately to ensure that all flows can be carried in the ditch without overtopping or cutting through the ditch wall and cause erosion. The risk of failure of the diversion dam and ditch, and subsequent erosion and sediment movement down Little and Big Moffat gulches is very low if these structures are properly designed, constructed, and maintained. The minerals administrator would ensure compliance with these provisions.

The entire area encompassed by the mining operation would be fenced to exclude livestock. This would ensure cattle do not damage the diversion and ditch or the earthen berm surrounding the stripped area, thus reducing potential failure of these structures and minimizing potential erosion from disturbed areas. The second function the fence provides is an improved vegetative buffer down-gradient of the workings if erosion from the site occurs.

Production pond failure

The production pond is the water supply for the mining operation. Capacity would be approximately 540,000 gallons, or 1.66 acre-feet. The capacity of the pond would be entirely below the natural ground surface. It would be excavated, with the material removed placed around the three sides, forming a berm. An overflow ditch would be constructed to the west of the pond. The bottom of this ditch would be at the natural ground level. The pond would be filled by pumping water from the Little Moffat diversion ditch into the pond.

The pond has virtually no chance of failure if it is constructed as described above. Some erosion of the berm could occur if vegetation is not established on it. Eroded material from the berm could be transported downslope during precipitation events, but this material should be filtered out by the herbaceous vegetation in this area.

Risk of contaminant delivery to the West Fork

No fuel or other toxicants would be stored in the RCA of Little Moffat Gulch. Refueling of small and/or movable (water drafting pumps/ wheeled or tracked machinery) equipment would not be permitted within the RCA. The operator is required to place containment aprons under any equipment being refueled in the RCA. These design features would essentially eliminate the potential for fuels or other toxicants from entering any waterway.

Proximity of bull trout

Redd surveys (1996, 1997) of the stream reaches located downstream of the potential sediment delivery point indicate bull trout **may** use these reaches for spawning. This older data is consistent with results of a redd survey conducted by MFWP downstream of the mouth of Little Moffat Gulch in 2008. Both surveys documented suitable spawning substrate, but no redds below the mouth of Moffat Gulch.

Past electrofishing surveys (MFWP 1985 & USFS 1997) conducted downstream of the project have documented juvenile and sub-adult sized bull trout within two kilometers of the mouth of Big Moffat Gulch. The presence of these size classes of fish indicates that bull trout use this portion of the stream to rear and may also spawn here.

Introduction of Aquatic Nuisance Species

The Little Moffat placer mining project poses a very low risk of introducing aquatic nuisance species (ANS) to the streams in the West Fork Rock Creek watershed for the following reasons:

- The project location is not located on a perennial stream.
- Most use of machinery would occur in a dry environment.
- All equipment would be washed with a high-pressure washer to remove invasive weeds, reducing the potential for aquatic nuisance species to be transported to the site.
- Water used during the mining operation is contained on-site. It does not flow to a fish-bearing stream, reducing potential introduction of ANS to the West Fork.

Foreseeable Future Actions

Little of this 6th field watershed is privately owned. The portion of the watershed that is privately owned is used mostly for livestock grazing and sapphire mining. These activities are ongoing and may continue at the same pace, or either increase or decrease in scale. Most mining activity is associated with placer mining for sapphires and mostly occurs in the intermittent/ephemeral drainages north of the West Fork. Livestock grazing occurs along the West Fork, Beaver Creek, and Emerine Gulch. Much of this activity occurs along perennial, fish-bearing streams.

Summary of Conclusion of Effects (from 4/15/09 Biological Assessment and Biological Evaluation)

Listed Fish Species	Determination of Effects	Potential for Incidental Take?
Bull Trout	May Affect - Not Likely to Adversely Affect	No

Sensitive Species	No Impact	MIIH
Westslope cutthroat trout		X
Boreal toad		X
Northern leopard frog	X	

MIIH = May Impact Individuals or Habitat, but Will Not Likely Result in a Trend in Federal Listing or Reduced Viability for the Population or Species

Compliance with Forest Plan Standards

This project complies with Revised Forest Plan direction. All applicable standards related to this project will be applied. Riparian Management Objectives currently not being met will be unaffected by this project.

The Little Moffat mining project lies in a Fish Key Watershed, as identified in the Revised Forest Plan. The project will comply with Forest Plan Goals (page 15), Objectives (page 17), and Standards (pages 18-21) by fully implementing the project design criteria listed in the “Project Description” section of the biological assessment (contained in the project file) and incorporated into the proposed action. The applicable standards are listed on pages 21-22 of the biological assessment.

Terrestrial Wildlife

Wildlife species considered in this analysis include those designated by the US Fish and Wildlife Service as Threatened or Endangered, and those designated by Region 1 of the Forest Service as Sensitive (TES);

and those designated as Management Indicator Species (MIS) by the BDNF. The gray wolf, North American wolverine, and flammulated owl are the TES species potentially affected by the mining proposal or disturbance associated with the activity. The MIS for the BDNF that are carried forward in this analysis are elk and wolverine. The following information is summarized from the April 9, 2009, Biological Assessment/Biological Evaluation contained in the project file.

Alternative 1: No Action

Direct, Indirect, and Cumulative Effects

There would be no direct, indirect or cumulative effects to wildlife TES species and MIS species with the No Action Alternative.

Alternative 2: Proposed Action

Gray wolf

Direct, Indirect, and Cumulative Effects

There would be no direct effects from this proposal. Wolves use a wide variety of habitats and are not dependent of specific forest conditions. Indirect effects would be a result of disturbance. The project area is in close proximity to a primary road (Skalkaho Highway) and is not in a security area. If wolves did move through the area while activities are occurring, some shift in movements could be predicted. There would be no measurable effect on prey species. No cumulative effects to wolves are anticipated. The project as proposed would have “no effect” on listed wolves or habitat. Delisting of wolves in Idaho and Montana became effective on May 4, 2009, so the determination is “no impact” to gray wolves or habitat.

Wolverine

Direct, Indirect and Cumulative Effects

Direct effects to breeding wolverines are not anticipated as there are no high elevation areas with persistent snow in the analysis area, modeled habitat is over 12 miles away, and there are no proposed activities during the winter.

To manage wildlife secure areas the Revised Forest Plan (pages 45-46) includes direction to manage density of open motorized roads and trails (OMRTD) by landscape, year round outside of fall hunting season. The analysis area lies in the Upper Rock Creek Landscape. The maximum OMRTD for this landscape is 0.9 mi/sq mi. The existing OMRTD for this landscape is currently 0.9 mi/sq mi and meets Revised Forest Plan direction. No new access is needed and there would be no effect on OMRTD over the landscape.

Due to the proximity to the Skalkaho Highway and private lands suitability is low during all seasons. The project area does not lie in a secure area (at any time of year) and while there could be a subtle shift in movements if a wolverine passed through the area no long-term or measurable effects are predicted.

The project as proposed would have “no impact” on the viability of the population or species. The probability of disturbing even one individual is low. Modeled denning habitat is over 12 miles away, the project area is adjacent to a major road (Skalkaho Highway), and no activities are proposed during the winter (breeding period) when they might move through winter range. Implementation of this proposal would not affect viability of wolverine populations or distribution of habitat across the planning area.

Flammulated Owl

Direct, Indirect and Cumulative Effects

At the time of the field visit, insect mortality was low and the area does not provide great numbers of standing dead trees. There are a few individual ponderosa pine and aspen trees down in the lower area that are proposed for project activities and these would be expected to be removed. No cavities were noted in these trees during field review on 10/16/2008. However, there is always the possibility that new cavities could be excavated during the life of this project or that there was one that was not visible from the ground.

If there was an occupied cavity and the trees were felled during the nesting season (mid-May through end of July), there could be a loss of eggs or nestlings. If tree removal occurred outside of this time period, there would be no potential direct effects to flammulated owls.

If owls were nesting in the adjacent ponderosa pine in the uplands, activities could disturb nesting owls. However, these owls have been found to be very tolerant of humans, nesting close to occupied areas and tolerant of observation by flashlight all night while feeding young. Nest abandonment is rare. The effects of mechanical disturbance have not been assessed, but moderate disturbance may not have an adverse impact on the species (Verner 1994). It is predicted that if there were owls in the area, there would be no measurable effect from disturbance.

The project as proposed “may impact individuals or habitat but will not affect the viability of the population or species”. The area is not known to be used and individuals are fairly tolerant of disturbance. The recommendation to reduce potential effects would be to fell individual ponderosa pine and aspen trees that need to be removed outside of the mid-May through end of July period.

Elk

The project area lies in identified elk winter range and spring calving habitat. The project area is in the West Fork Rock Creek Management Area of the Upper Rock Creek Landscape (Revised Forest Plan). This area is to be managed for native fish conservation, dispersed recreation and secure winter wildlife habitat. Winter motorized travel is generally not allowed on winter ranges from December 2 through May 15 (Plan definition). The most current BDNF Travel Plan Map (2008) includes the project area in a September 1 through June 15 area restriction (includes bow and rifle hunting seasons and spring calving period).

Forest Service personnel have visited the site numerous times over the years and documented substantial elk use of the area in the spring each time the site was looked at (in project record). For the previous three seasons, the proponent has been allowed to operate from mid-May to early June (dates vary by year) and then from June 15 to December 1.

The proponent is requesting access to her operation beginning in April and ending in December or when winter weather stops placer operations due to freezing water and access problems. In the past (since 2006), she has been allowed to operate through December 1.

The project area is located outside of the elk security area and little change in fall security would result from allowing her to operate through the fall hunting season until December 1. Activities would occur behind a gate (approximately 500 feet).

The recommendation for hunting season/winter range/calving season is to sign the gate with the seasonal closure information and lock the gate to restrict public use during the September 1 to June 15 closure.

The recommendation for May 15 to June 15 is to restrict project activities to maintain suitability for use by elk calving in the area.

Direct, Indirect, and Cumulative Effects

Implementation of this proposal would not affect viability of elk populations across the planning area. Habitat and security areas would remain well-distributed.

Consistency with Forest Plan Direction

This proposal is consistent with applicable Revised Forest Plan direction for wildlife secure areas and elk security. The remaining standards are not applicable as they are tied to vegetation management, and species or other actions that are not proposed under this proposal.

Vegetation

The project area lies in a forested area, with lodgepole pine, ponderosa pine, Douglas-fir, and aspen on the uplands. The area where the activities are proposed is an open area with grasses, sedges, cinquefoil, rose, and some ponderosa pine and aspen trees.

Much of the area has been previously excavated by past placer mining and exploration. Prior field visits to the area in response to past plans of operations have found no occurrences of sensitive plant species.

The proposed project was surveyed for Region 1 sensitive plants and sensitive plant habitats on August 26, 2003. No Region 1 sensitive plant species or sensitive plant habitats were observed in the project area during the field survey.

Pintler Ranger District records indicate no threatened, endangered, or sensitive plant occurrences in the project area. The closest known occurrences of sensitive plant species are:

- *Allotropa virgata* (candystick) occurs 1-3 miles west and northwest of the project area;
- *Lesquerella paysonii* (Payson’s bladderpod) and *Phlox kelseyi* var. *missoulensis* (Missoula phlox) occur 1 mile east-southeast of the project area in the West Fork Buttes Special Interest Area.

The project area does not provide habitat for these three sensitive plant species.

No direct, indirect, or cumulative impacts to Region 1 sensitive plants and sensitive plant habitats are expected.

Alternative 1: No Action

Direct and Indirect Effects

There would be no direct or indirect effects to vegetation with the No Action Alternative. The existing vegetative condition would remain the same.

Cumulative Effects

Although noxious weed populations near the project area are currently low, there is a risk that noxious weed spread could continue with the No Action Alternative.

Alternative 2: Proposed Action

Direct and Indirect Effects

Direct impacts would include removal of individual plants through ground disturbance of approximately 3/4 acre. Grasses, sedges, cinquefoil, rose bushes, and a few (less than 12) ponderosa pine and aspen trees would be removed.

An indirect effect of soil disturbance can be the introduction and spread of noxious weeds, which can compete with native plants. Mitigation measures to reduce the spread of noxious weeds can limit their spread, but would not totally eliminate risk. Topsoil would be removed from these locations and replaced when the project is completed to help revegetate the area. Equipment would be cleaned and inspected for noxious weeds and the site would be monitored for the presence of noxious weeds after the project is completed and treated if they are found. No federally proposed, threatened, or endangered plant taxa occur in the proposed project area. No effects to proposed, threatened, or endangered plant species would occur as a result the proposed action.

Cumulative Effects

With the above mitigation measures, the proposed action should have no cumulative impacts.

Soil

Soils in the project area are very deep, well drained soils developed from sandstone and shale (south end) and andesite (north end). Surface textures are predominately loams with coarse fragment content (rocks greater than 2 mm in diameter). Generally, the soils in the project area are stable, erosion resistant, and productive.

Previous mining activities have occurred within the proposed project area. The disturbance from these activities is still visible today.

This project is in compliance with the standards for soil set forth in the Region 1 Soil Quality Standards (USDA Forest Service, 1999), which are referenced in the Revised Forest Plan (page 34).

Alternative 1: No Action

Direct, Indirect, and Cumulative Effects

There would be no direct, indirect, or cumulative effects to soils with the No Action Alternative. The soils would remain as described above; recovery from previous disturbances would continue.

Alternative 2: Proposed Action

Direct and Indirect Effects

Soil impacts would consist of productivity reductions within the disturbed area stemming from the loss of fines due to the mining process and the potential mixing of the nutrient rich topsoil with subsoil. These reductions are expected to be temporary. Mitigating measures include salvaging the top 8 to 12 inches of soil for reclamation and re-filling excavated panels with coarser fragments on the bottom and finer fragments on the top when possible. This will help ensure that reductions in soil productivity are not permanent, but temporary effects that will be regained over time.

Cumulative Effects

Cumulative effects occur on the soil only when an action affects an area of soil that has already been affected in the past. The area to be mined has been previously disturbed during prior mining activities, some of which are very recent. Cumulative effects include possible soil displacement and low organic

matter content of the disturbed soils due to the loss of fines during the mining process.

Heritage Resources

A field inventory was completed on October 16, 2008 and there were no heritage resource sites located in the proposed project area. The specialist report is contained in the project file and available on request.

Alternative 1: No Action

Direct, Indirect, and Cumulative Effects

There would be no direct, indirect, or cumulative effects to heritage resources with the No Action Alternative.

Alternative 2: Proposed Action

Direct, Indirect, and Cumulative Effects

There would be no direct or indirect effects to heritage resources with Alternative 2; there are no known or expected cumulative effects to heritage resources from Alternative 2.

AGENCIES OR PERSONS CONSULTED

The following people participated in the analysis:

Steve Kelley – ID Team Leader

Steven Gerdes – Zone Fisheries Biologist

Dave Salo – Hydrologist

Carley Gibson – Ecologist

Sara Rouse – Soil Scientist

Tammy Cherullo – Archeologist

Betsy Hamann – Wildlife Biologist

Other agencies contacted include:

Montana Fish, Wildlife, and Parks

Montana Department of Environmental Quality

Montana State Historic Preservation Office

Project Map:

