

**MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
PERMITTING AND COMPLIANCE DIVISION**

RECORD OF DECISION

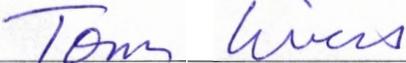
For Butte Highlands Joint Venture Mine

Operating Permit No. 00178

Butte - Silver Bow County, Montana

January 2015

The Final EIS on Butte Highlands Joint Venture's application for an operating permit can be obtained by contacting DEQ MEPA Coordinator Kristi Ponozzo at 406-444-2813 or from DEQ's web site (<http://deq.mt.gov/eis.mcpix>). Additional printed or electronic (compact disc) copies of this ROD and the Final EIS are available upon request. The supporting project record is available for review at the Department of Environmental Quality, Environmental Management Bureau, located at 1520 East Sixth Avenue, PO Box 200901, Helena, MT 59620-0901. For additional information concerning this decision, contact Kristi Ponozzo, Director's Office, DEQ, 1520 E. Sixth Avenue, Helena, MT, 406-444-2813.



Tom Livers, Director
State of Montana
Department of Environmental Quality



Date

Section 1 - Background

1.1 Introduction

In May 2010, Butte Highlands Joint Venture (BHJV) submitted to DEQ an application for an operating permit. The operating permit application underwent deficiency reviews and revisions prior to DEQ determining that the application was complete and complied with the substantive provisions of the Metal Mine Reclamation Act. DEQ issued a Draft Operating Permit in December 2012. Issuance of the Draft Operating Permit as a Final Operating Permit is a state action requiring DEQ to conduct an environmental review under the Montana Environmental Policy Act (MEPA). The Draft Environmental Impact Statement (Draft EIS) was published on October 8, 2013 and the Final Environmental Impact Statement (Final EIS) was published on December 18, 2014.

Prior Approvals

BHJV currently holds Exploration License No.00680 which authorizes BHJV to conduct exploration activities within its patented mining claims. BHJV submitted an amendment to its exploration license to obtain approval to construct a decline from which to conduct underground exploration. DEQ approved the exploration license amendment for this underground work in 2009 and BHJV began development of the underground exploration activities.

BHJV submitted an application for a Montana Pollutant Discharge Elimination System (MPDES) permit from DEQ. This application sought authorization for BHJV to discharge treated water to Basin Creek, Fish Creek, and Moose Creek. DEQ issued a Letter of Completeness on the MPDES application in July 2012 and the draft MPDES permit was issued in April 2013. The final MPDES permit was issued on August 1, 2013. BHJV's application for an MPDES permit was reviewed pursuant to MEPA and a copy of the final MPDES is included in Appendix A of the Final EIS.

An application to discharge mine dewatering water using an underground infiltration system under a Class V Underground Injection Control (UIC) Permit from the United States Environmental Protection Agency (EPA) Region 8 was submitted in January 2013. EPA deemed the application complete later that month and issued UIC Permit EPA MT52263-09862 on September 25, 2014.

BHJV held a Road Use Permit with the United States Forest Service (Forest Service) from 2009 to 2012. The Road Use Permit authorized BHJV to use Forest Service Road 84 to haul ore west from the mine to an ore-transfer facility to be constructed adjacent to Interstate 15. This portion of Forest Service Road 84 is known as Highland Drive. The Road Use Permit also authorized BHJV to use Forest Service Road 84 from the proposed minesite north to State Highway 2 for employee transportation and mine support traffic. This portion of the Forest Service Road 84 is known as Roosevelt Drive. The Road Use Permit expired in December of 2012. The Forest Service directed BHJV to submit a Plan of Operations for hauling ore along the proposed route. This Plan of Operations was submitted to the Forest Service in February 2013 and is currently under environmental review. The Forest Service is reviewing the Plan of Operations pursuant to the National Environmental Policy Act. The Final EIS issued by DEQ on December 18, 2014 discusses the

Forest Service's review of the proposed haul routes as part of the cumulative impacts assessment in Chapter 4.

1.2 Project Area Description

The proposed BHJV Mine is located near the Continental Divide south of Butte in Silver Bow County. The areas potentially affected by this decision include existing infrastructure related to the proposed BHJV Mine, areas within the proposed mine permit boundaries, adjacent land affected by the mine, and an area encompassing a proposed haul road for transporting the ore to a transfer facility near Interstate 15 (Figure ROD-1). The proposed mine permit area covers approximately 310 acres of patented mining claims within the Beaverhead-Deerlodge National Forest. The proposed haul route permit area covers approximately 347 acres of private land south of Highland Road near the Feely interchange on Interstate 15 south of Butte.

The BHJV Mine is accessible from Montana Highway 2 via Roosevelt Drive and from Interstate 15 via the Highland Road.

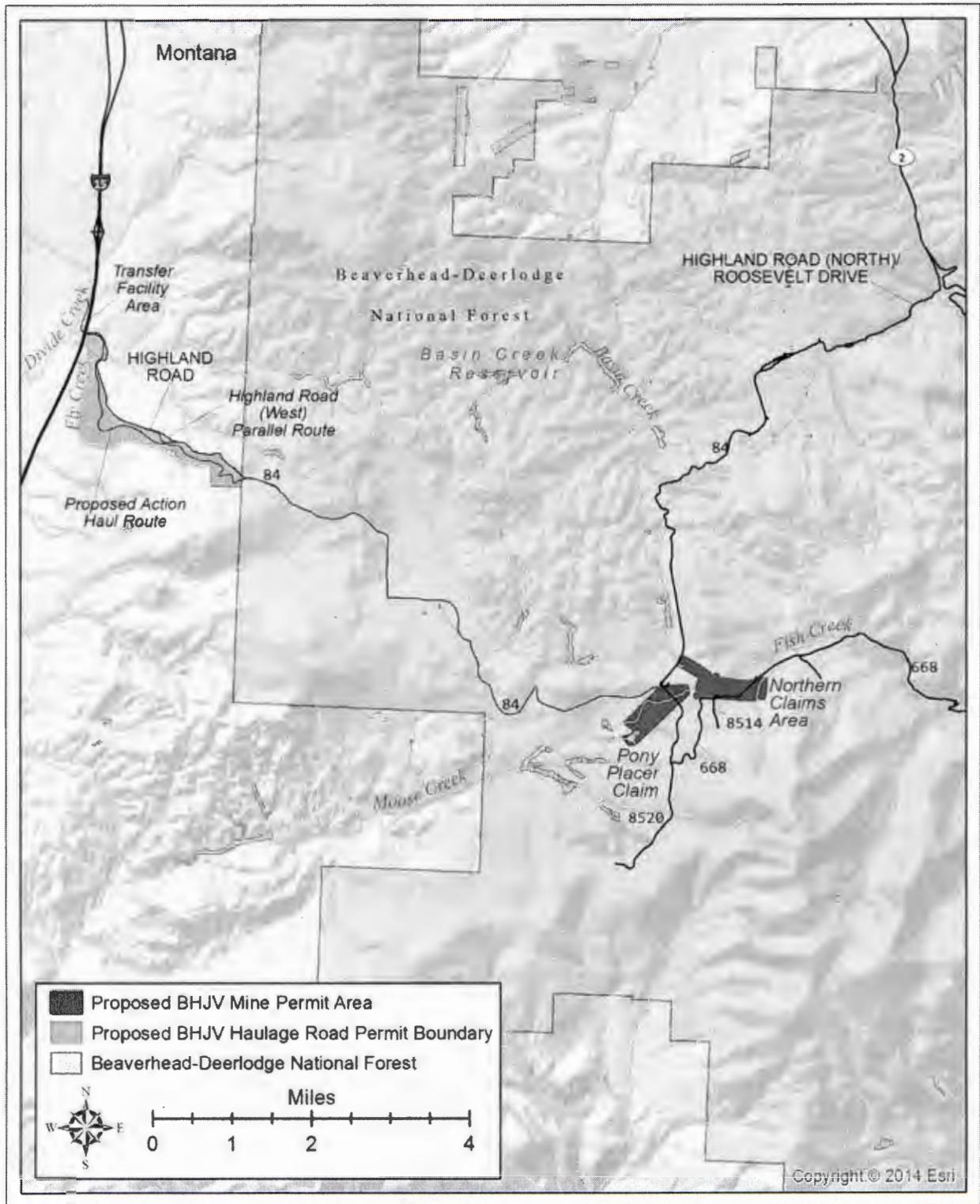


Figure ROD-1. Permit Boundaries for the Butte Highlands Joint Venture Mine and Proposed Private Haul Route, Silver Bow County, Montana.

1.3 DEQ's Responsibilities and Purpose of the ROD

The purpose of this Record of Decision (ROD) is to set forth DEQ's decision on BHJV's application for an operating permit and the reason for the decision. The ROD documents the alternatives considered, including a discussion of the advantages and disadvantages of the alternatives and DEQ's application of the decision criteria set forth in the Metal Mine Reclamation Act (MMRA).

DEQ administers the MMRA, Title 82, chapter 4, part 3, Montana Code Annotated (MCA) and its associated administrative rules. DEQ may not approve an operating permit, including the reclamation plan, unless the operating permit is consistent with the MMRA, including compliance with the Montana Water Quality Act.

In December of 2012, DEQ determined that BHJV's application for an operating permit was complete and complied with the substantive requirements of the MMRA. As a result of this determination, DEQ issued a draft operating permit pursuant to Section 82-4-337(1)(d), MCA. Pursuant to Section 82-4-337(1)(f), MCA, issuance of the draft permit as a final permit is the proposed state action subject to environmental review under the Montana Environmental Policy Act (MEPA).

MEPA requires an environmental review of actions taken by State agencies that may significantly affect the quality of the human environment. The environmental review, culminating in the issuance of the Final EIS on December 18, 2014, was conducted to fulfill MEPA.

Generally, the haul route alternatives discussed in the environmental review are alternatives over which DEQ does not have statutory authority to select or condition. Unlike a road that is constructed by the applicant to access the mine, DEQ does not have regulatory authority to direct an applicant to use one of two existing roads as a haul route (the Highland Road –West to Interstate 15 and Highland Road – North (Roosevelt Drive) to State Highway 2) when both roads are open for public use. The authority to select or condition the use of an existing road as the haul route lies with the governmental agency with regulatory authority over the road - the Forest Service in the case of a Forest Service road or Butte-Silver Bow County in the case of a county road.

DEQ does have jurisdiction to the extent that the road used to haul ore requires improvements or the applicant is proposing to construct a new road. The road improvements and new roads are properly considered as land disturbed by mining. Thus, DEQ has analyzed impacts associated with BHJV's proposed improvements to the Highland Road. DEQ has also analyzed two alternative road segments (the Proposed Action Haul Route and the Highland Road-West Parallel Route) to replace that segment of the existing Highland Road that BHJV does not propose to use. This segment lies between the Forest Service boundary and the proposed transfer facility adjacent to Interstate 15.

Section 2 - Public Involvement

2.1 Public Involvement

DEQ opened the scoping period for BHJV's application for an operating permit on March 8, 2013. DEQ conducted a scoping meeting in Butte on March 21, 2013. Comments made at the meeting and those received via postal mail or e-mail were collected by DEQ, reviewed, and entered into the administrative record. Comments received by DEQ focused on waste rock geochemistry, noxious weeds, water quality and effects on surface and groundwater supplies, air quality, dust, socioeconomic effects, haul route alternatives, land use and recreation, visual resources, fisheries and wildlife, and the MEPA process. Thus, the environmental issues addressed in the EIS include issues identified in the public scoping process, in addition to the issues identified by DEQ in its review of BHJV's application for an operating permit and issues identified in interagency discussions regarding the development of alternatives.

DEQ issued the Draft EIS on October 8, 2013, beginning the comment period. On October 21, 2013, DEQ conducted a meeting in Butte at the Copper King Convention Center to obtain comments on the Draft EIS. Approximately 80 members of the public attended the meeting. DEQ also received written comments from the public as well as county, state, and federal agencies. The comment period on the Draft EIS closed on November 12, 2013. DEQ responded to the comments in the Final EIS issued on December 18, 2014.

2.3 - Issues of Concern

The major issues identified include:

Water Management

- Adit closure and mine water distribution;
- Water treatment and disposal;
- Groundwater quality;
- Surface water quality and quantity;
- Long-term monitoring of water quality and quantity.

Haul Route

- Use of county and Forest Service roads;
- Alignment of haul route; and
- Potential impacts to wildlife and fisheries along proposed haul routes.

Section 3 - Alternatives Considered

Alternatives fully evaluated in the EIS include the No Action Alternative, the Proposed Action, the Agency Mitigated Alternative, and Haul Route Alternatives. Complete descriptions of each alternative are provided in Chapter 2 of the EIS.

No Action Alternative

Under the No Action Alternative, DEQ would not approve BHJV's operating permit application. BHJV currently holds Exploration License No. 00680 and has developed areas covering approximately 20 acres within the Pony Placer Claim and Northern Claims permit area boundaries (Figure ES-1). The No Action Alternative assumes that BHJV could continue any and all activities approved under its exploration license; therefore, the No Action Alternative is a "status quo" approach.

Proposed Action

The Proposed Action would allow underground mining at the proposed BHJV Mine, adding approximately 12 acres of new disturbance. The haul route would follow Forest Service Road 84 (Highland Road) west to the Forest Service boundary. A new road would be constructed across private property from the Forest Service boundary to near the proposed transfer facility adjacent to Interstate 15 (Figure ES-1). During active mining, large ore trucks would make approximately 20 round trips per day, five days per week (BHJV, 2013). The portion of the haul route on private land would be closed to public traffic.

The operating facilities would essentially remain the same as those approved under the existing exploration license. The changes that would occur under the Proposed Action relate to the extent of mine excavation underground, the amount of waste rock removed and ore extracted for processing, the need for mine waste water treatment and disposal, the haul route used to transport ore off site, and the development of a transfer facility to accommodate moving the ore to a processing plant off site.

Agency Mitigated Alternative

The Agency Mitigated Alternative includes modifications to some aspects of the Proposed Action. Under the Agency Mitigated Alternative, DEQ would require additional water quality monitoring, mitigations for reductions in flows during groundwater recharge after mining ceases, and flow augmentation in Fish Creek. Details of this alternative are outlined below in table ROD-1.

Table ROD-1. Stipulations and Components of the Agency Mitigated Alternative.

Resource Area	Issues or Comments Addressed	Mitigation	Duration	Location
Water Quality	Request for expansion of water quality monitoring	BHJV would expand its proposed water quality monitoring plan and add four monitoring wells. ^a	Throughout active mining and continuing post closure until DEQ approves discontinuing monitoring	Please see Figure 3.6-1 for water quality monitoring locations
Water Treatment	Remove the need to maintain access to the	The water treatment facility, originally planned to be housed underground in the	Throughout active mining. Treatment would cease	At existing portal pad (Figure 2.4-1)

Resource Area	Issues or Comments Addressed	Mitigation	Duration	Location
	inner workings of the mine after mine closure. Desire for more frequent assessment of the water treatment equipment.	mine workings, would be relocated to a structure adjacent to the mine portal near the other support facilities on the existing portal pad.	after pumps are shut off.	
Stream Channel Stability	Concern that increases in flows from mine water discharge may destabilize the channels of Basin Creek and Moose Creek	BHJV would monitor stream channel dimensions and bed composition near mine discharge outfalls on an annual basis, in June or July after peak run-off. ^b	Beginning once discharge occurs at an outfall and continuing until data are conclusive or for duration of discharge.	Basin Creek, Moose Creek, Fish Creek
Fish Creek				
Groundwater	Concern that the groundwater pumping and the resulting cone of depression as modeled may result in dewatering of Fish Creek	BHJV would install two additional monitoring wells in the upper Fish Creek basin. ^a These wells would provide an early indication of groundwater drawdown that might influence streamflow, allowing for timely implementation of mitigations (flow augmentation).	Wells would be installed before mining commences and be monitored throughout mining and recharge	Well 1: east of the mine on private land (Stratton family-Humbug claim) Well 2: on private land (Stratton family-Highland flume claim) near WS-3
Stream Flow Supplementation: Fish Creek	Concern that mine dewatering may affect base flow conditions in Fish Creek.	BHJV would secure up to 25 gpm of water from the Butte-Silver Bow Emerald Lake aqueduct that crosses Fish Creek. BSB will complete a change	During mining and post closure until the groundwater recharges to elevation of historic	A short pipeline would be built on patented land near WS-3 to carry water from the

Resource Area	Issues or Comments Addressed	Mitigation	Duration	Location
	Dewatering is predicted to reduce flows in Fish Creek by 14 gpm and 12 gpm at stations WS-3 and WS-5, respectively.	application to request this POU from DNRC. The water would be used to augment flows in Fish Creek if reductions occur. ^a	Highland adit at 7,339 ft (Estimated at 7 to 8 years post-closure)	aqueduct to Fish Creek
Basin Creek				
Groundwater	Need for information on how mine dewatering will affect groundwater in the vicinity of Basin Creek	Installation of well BHMW-13-001 and monitoring of groundwater levels and periodic water quality sampling. ^c	New well is currently in place. During mining and post closure until the groundwater recharges to elevation of historic Highland adit (Estimated at 7 to 8 years post-closure)	NW corner of the Northern Claims parcels
Stream Flow in Basin Creek	Concern that installing the hydraulic plug in the historic Highland adit will reduce surface flows in Basin Creek in the upper Basin Creek drainage.	Compensatory mitigation on Blacktail Creek along Roosevelt Drive would include improving three to five stream crossings to reduce sediment input and three crossings to provide aquatic organism passage. ^{a,d} BHJV would install one monitoring flow weir on Basin Creek. ^a	Stream crossing and sediment control structures would be designed as permanent features of the roadway. Weir would be monitored per the water quality monitoring plan throughout life of the mine.	Please see Figure 2.8-1 for culvert and stream crossing improvement locations. Weir would be installed one mile downstream of the historic Highland Adit on patented land
Moose Creek				
Groundwater impacts to	Concern that mine	Installation of one additional monitoring	During mining and post closure	Immediately below the

Resource Area	Issues or Comments Addressed	Mitigation	Duration	Location
Moose Creek	dewatering may affect base flow conditions in Moose Creek	well to verify groundwater compartmentalization due to the Range Front Fault. ^a This would provide an early indication of groundwater drawdown that might influence streamflow	until the groundwater recharges to elevation of historic Highland adit at 7,339 ft. (Estimated at 7 to 8 years post-closure)	mine surface facilities, on east side of Fish Creek Road (FSR 8520), west of the Range Front Fault.
Potential impacts to Surface Water in Moose Creek	Concern that mine dewatering may affect the extent of the Moose Creek wetlands in the upper Moose Creek basin.	Compensatory mitigation. BHJV would replace five stream crossings along the Highland Road within the broader Moose Creek basin. Two crossings would increase stream connectivity and aquatic organism passage, while three would maintain wetland integrity. ^{a,d}	Improvements to the Highland Road would become permanent.	Please see Figure 2.8-2 for culvert locations.
		Outfalls 003 and 004 may release as much as 60 gpm and 140 gpm, respectively during mine dewatering per the MPDES permit. ^b	During mine dewatering	Outfall 003 is on Middle Fork of Moose Creek and Outfall 004 is on a tributary to the Middle Fork of Moose Creek

Documentation:

^a BHJV Proposed Mitigation Memo October 7, 2014

^b MPDES permit MTQ031755

^c BHJV Flow Mitigation Memo July 22, 2014

^d Letter from FWP September 16, 2014

Haul Routes Alternatives

Proposed Haul Route – Highland Road – West to Interstate 15

BHJV has proposed to haul ore west to Interstate 15. Ore trucks would leave the mine site on Forest Service Road 84 (Highland Road) and travel west approximately eight miles to the Forest Service Boundary. West of the Forest Service boundary, Highland Road becomes a county road that crosses several private parcels. BHJV proposes to construct a new haul road beginning at the Forest Service boundary. The new haul road would be located generally to the south of the Highland Road across private ranches and be approximately three miles long. The haul road would rejoin the Highland Road approximately one-third of a mile south of the transfer facility located adjacent to Interstate 15.

Highland Road (North)/Roosevelt Drive

Under this alternative, highway-legal dump trucks would proceed north on Highland Road for approximately nine miles to Roosevelt Drive. This segment of the Highland Road is part of Forest Service Road 84. The haul route would continue to the northeast on Roosevelt Drive to Highway 2. This portion of Roosevelt Drive is a county road. The smaller capacity of the highway-legal dump trucks would necessitate increasing the number of haul trips to approximately 30 round trips per day, five days per week (Tetra Tech, 2013a). The haul route would follow publicly accessible roadways.

The Highland Road – West to Interstate 15 Alternative and the Highland Road (North)/Roosevelt Drive Alternative are alternatives over which DEQ does not have statutory authority to select or condition. DEQ does not have regulatory authority to direct an applicant to use one of these alternative haul routes when Highland Road is open for public use in either direction. The authority to select the haul route or condition BHJV's use of the haul route lies with the government agency with regulatory authority over the road - the Forest Service in the case of a Forest Service Road or Butte-Silver Bow County in the case of a county road. Thus, DEQ did not identify either the Highland Road – West to Interstate 15 Alternative or the Highland Road (North)/Roosevelt Drive Alternative in the Draft EIS as the preferred alternative. While DEQ does not have regulatory authority to select or condition use of either of these alternatives, the impacts of each of the alternatives are disclosed in the final EIS.

Highland Road (West) Parallel Route

DEQ does have jurisdiction over the use of haul routes to the extent that BHJV proposes to construct a new road over which to haul ore. Thus, DEQ has developed the Highland Road (West) Parallel Route as an alternative to that segment of the Highland Road – West to Interstate 15 route that BHJV proposes to construct from the Forest Service Boundary to one-third of a mile south to the transfer facility located adjacent to Interstate 15.

Beginning at the Forest Service Boundary, a new haul route would be constructed that closely parallels the existing Highland Road. The haul route would rejoin Highland Road approximately one-third mile south of the proposed transfer facility located adjacent to Interstate 15. DEQ has identified the Highland Road (West) Parallel Route as the preferred alternative for hauling ore west of the Forest Service Boundary to the transfer facility located adjacent to Interstate 15.

Section 4 - Decision and Rationale for Decision

DEQ may deny a proposed hard rock operating permit application if it fails to meet the requirements of the Metal Mine Reclamation Act, the Montana Air or Water Quality acts, or the Montana Public Water Supply Act. DEQ may not withhold, deny, or impose conditions on any permit based on the provisions of MEPA. MEPA, however, allows a permit applicant and DEQ to mutually develop measures that may be incorporated into a permit.

Pursuant to Section 82-4-337, MCA, DEQ determined that BHJV's permit application was complete and complied with the requirements of the Metal Mine Reclamation Act, including compliance with the Montana Air and Water Quality acts. As a result, DEQ issued a Draft Permit. Issuance of the Draft Permit as a Final Permit is the proposed state action subject to an environmental review under MEPA. The Metal Mine Reclamation Act requires DEQ to consult with a permit applicant before placing stipulations in the Draft or Final Permit. Permit stipulations in a Draft or Final Permit may, unless the permit applicant consents, address only compliance issues within the substantive requirements of the Metal Mine Reclamation Act.

DEQ has selected the Agency Mitigated Alternative, authorizing BHJV to construct and operate the proposed underground gold mine. A detailed description of the Agency Mitigated Alternative is set forth on pages 51 through 62 of the Final EIS. This alternative meets the purpose and need for the proposal and complies with the substantive requirements of the Metal Mine Reclamation Act, the Montana Air or Water Quality acts, and the Montana Public Water Supply Act. The Agency Mitigated Alternative includes reasonable mitigation measures addressing compliance issues associated with protecting water resources as required by Section 82-4-336(10), MCA. While some of these mitigation measures were not included in the Draft Permit, they were developed in consultation with BHJV and are included in the Final Permit with the consent of BHJV.

BHJV will be required to add two additional surface water quality monitoring sites downgradient of MPDES outfalls, one in Fish Creek and the other in Moose Creek. While changes in ambient surface water are not predicted because BHJV is discharging treated water, the additional monitoring would be used to verify this prediction.

BHJV will also be required to add three stream flow monitoring sites, one in Basin Creek and two in tributaries to Fish Creek. The stream flow monitoring site in Basin Creek will be used to determine the change in base flow in Basin Creek after the discharge from the historic Highland Mine adit ceases. If the stream flow monitoring sites in the tributaries to Fish Creek document a reduction in flow greater than 10%, BHJV will be required to augment the flow in Fish Creek by tapping into the Emerald Lake aqueduct.

Finally, BHJV will be required to add four additional monitoring wells to monitor the effects of mine dewatering on groundwater elevations and stream flows.

BHJV will be required to monitor seeps and springs post closure for at least one year after water levels have returned to pre-mining water levels (estimated to take about 8 years). DEQ will evaluate water

quality data at downstream monitoring sites to determine whether streams show degradation compared with baseline water quality data. If streams do not show degradation, monitoring would cease. If the streams show degradation, monitoring would continue and BHJV will direct water from the mine into the subsurface land application disposal (LAD) system which would allow attenuation of any elevated parameters via flow through soils within the LAD area.

BHJV will construct the water treatment plant on the surface rather than underground. This location will facilitate access to the plant during mine operation and post-closure.

To compensate for potential flow reductions in Basin Creek after mining ceases, BHJV will be required to replace three culverts and improve sediment control at two other culverts along Roosevelt Drive. These improvements would benefit aquatic organism passage and reduce sediment impacts to Blacktail Creek, of which Basin Creek is a tributary. The culverts and road improvements would have long-term benefits for the fishery in Blacktail Creek.

Although flow reductions in Moose Creek are not predicted by the groundwater model, there is some potential for reduced flow during the groundwater recovery phase. BHJV will be required to improve five stream crossings along lower Moose Creek on Highland Road to compensate for the potential changes to wetland extent and duration during the period of recharge. Two crossings would increase stream connectivity and aquatic organism passage, while three would maintain wetland integrity. These improvements would benefit the streams by reducing sediment input and improving aquatic organism passage.

The improvements to the stream crossings and culverts on Blacktail Creek and Moose Creek would benefit the streams beyond the period of active mining by passing floods more effectively and managing sediment input more effectively. These required mitigations have been developed in consultation with Montana Fish, Wildlife and Parks and should benefit westslope cutthroat trout and other aquatic species in the vicinity of the project.

Table ROD-1. Stipulations and Components of the Agency Mitigated Alternative.

Resource Area	Issues or Comments Addressed	Mitigation	Duration	Location
Water Quality	Request for expansion of water quality monitoring	BHJV would expand its proposed water quality monitoring plan and add four monitoring wells. ^a	Throughout active mining and continuing post closure until DEQ approves discontinuing monitoring	Please see Figure 3.6-1 for water quality monitoring locations
Water Treatment	Remove the	The water treatment	Throughout	At existing

Resource Area	Issues or Comments Addressed	Mitigation	Duration	Location
	need to maintain access to the inner workings of the mine after mine closure. Desire for more frequent assessment of the water treatment equipment.	facility, originally planned to be housed underground in the mine workings, would be relocated to a structure adjacent to the mine portal near the other support facilities on the existing portal pad.	active mining. Treatment would cease after pumps are shut off.	portal pad (Figure 2.4-1)
Stream Channel Stability	Concern that increases in flows from mine water discharge may destabilize the channels of Basin Creek and Moose Creek	BHJV would monitor stream channel dimensions and bed composition near mine discharge outfalls on an annual basis, in June or July after peak run-off. ^b	Beginning once discharge occurs at an outfall and continuing until data are conclusive or for duration of discharge.	Basin Creek, Moose Creek, Fish Creek
Fish Creek				
Groundwater	Concern that the groundwater pumping and the resulting cone of depression as modeled may result in dewatering of Fish Creek	BHJV would install 2 additional monitoring wells in the upper Fish Creek basin. ^a These would provide an early indication of groundwater drawdown that might influence streamflow, allowing for timely implementation of mitigations (flow augmentation).	Wells would be installed before mining commences and be monitored throughout mining and recharge	Well 1: east of the mine on private land (Stratton family-Humbug claim) Well 2: on private land (Stratton family-Highland flume claim) near WS-3
Stream Flow Supplementation: Fish Creek	Concern that mine dewatering may affect	BHJV would secure up to 25 gpm of water from the Butte-Silver Bow Emerald Lake	During mining and post closure until the groundwater	A short pipeline would be built on patented land

Resource Area	Issues or Comments Addressed	Mitigation	Duration	Location
	base flow conditions in Fish Creek. Dewatering is predicted to reduce flows in Fish Creek by 14 gpm and 12 gpm at stations WS-3 and WS-5, respectively.	aqueduct that crosses Fish Creek. BSB will complete a change application to request this POU from DNRC. The water would be used to augment flows in Fish Creek if reductions occur. ^a	recharges to elevation of historic Highland adit at 7,339 ft (Estimated at 7 to 8 years post-closure)	near WS-3 to carry water from the aqueduct to Fish Creek
Basin Creek				
Groundwater	Need for information on how mine dewatering will affect groundwater in the vicinity of Basin Creek	Installation of well BHMW-13-001 and monitoring of groundwater levels and periodic water quality sampling. ^c	The new well is currently in place. During mining and post closure until the groundwater recharges to elevation of historic Highland adit (Estimated at 7 to 8 years post-closure)	NW corner of the Northern Claims parcels
Stream Flow in Basin Creek	Concern that installing the hydraulic plug in the historic Highland adit will reduce surface flows in Basin Creek in the upper Basin Creek drainage.	Compensatory mitigation on Blacktail Creek along Roosevelt Drive would include improving three to five stream crossings to reduce sediment input and three crossings to provide aquatic organism passage. ^{a,d} BHJV would install one monitoring flow weir on Basin Creek. ^a	Stream crossing and sediment control structures would be designed as permanent features of the roadway. Weir would be monitored per the water quality monitoring plan throughout life of the mine.	Please see Figure 2.8-1 for culvert and stream crossing improvement locations. Weir would be installed one mile downstream of the historic Highland Adit on patented land

Resource Area	Issues or Comments Addressed	Mitigation	Duration	Location
Moose Creek				
Groundwater impacts to Moose Creek	Concern that mine dewatering may affect base flow conditions in Moose Creek	Installation of one additional monitoring well to verify groundwater compartmentalization due to the Range Front Fault. ^a This would provide an early indication of groundwater drawdown that might influence streamflow	During mining and post closure until the groundwater recharges to elevation of historic Highland adit at 7,339 ft. (Estimated at 7 to 8 years post-closure)	Immediately below the mine surface facilities, on east side of Fish Creek Road (FSR 8520), west of the Range Front Fault.
Potential impacts to Surface Water in Moose Creek	Concern that mine dewatering may affect the extent of the Moose Creek wetlands in the upper Moose Creek basin.	Compensatory mitigation. BHJV would replace five stream crossings along the Highland Road within the broader Moose Creek basin. Two crossings would increase stream connectivity and aquatic organism passage, while three would maintain wetland integrity. ^{a,d}	Improvements to the Highland Road would become permanent.	Please see Figure 2.8-2 for culvert locations.
		Outfalls 003 and 004 may release as much as 60 gpm and 140 gpm, respectively during mine dewatering per the MPDES permit. ^b	During mine dewatering	Outfall 003 is on Middle Fork of Moose Creek and Outfall 004 is on a tributary to the Middle Fork of Moose Creek

Documentation:

^a BHJV Proposed Mitigation Memo October 7, 2014

^b MPDES permit MT0031755

^c BHJV Flow Mitigation Memo July 22, 2014

^d Letter from FWP September 16, 2014

Haul Route

If the Forest Service requires BHJV to haul ore west to Interstate 15, DEQ has selected the Highland Road (West) Parallel Route Alternative. Beginning at the Forest Service Boundary, a new haul route would be constructed that closely parallels the existing Highland Road. The haul route would rejoin Highland Road approximately one-third mile south of the proposed transfer facility located adjacent to Interstate 15. Haul truck traffic would be separated from public traffic on the portion of Highland Road west of the Forest Service boundary. BHJV would construct approximately three miles of roadway for use by the mine haul trucks. Road access would be gated, and public traffic would not be allowed on this section of roadway.

The Highland Road (West) Parallel Route moves the haul route away from relatively undisturbed pasture lands (compared to the Proposed Action) to an area that is set aside as a road right-of-way. This would decrease the level of disturbance to native vegetation and may reduce the overall likelihood of the spread of weeds. The parallel haul route moves the roadway farther from the wetlands and Fly Creek and would decrease the potential for impacts to these areas as well. Moving the haul route away from the channel of Fly Creek to an area that is set aside as a road right-of-way would decrease the level of disturbance and may reduce the overall likelihood of sediment or pollutants entering the stream and nearby wetlands. The fields would not be bisected by the haul road and truck traffic would be a lower hazard to wildlife and livestock, as it would be located adjacent to the county road.

The Highland Road (West) Parallel Route will closely parallel the existing Highland Road, potentially decreasing the level and extent of secondary impacts to fisheries and aquatic resources from those anticipated due to the development of the haul route described under the Proposed Action. The alignment adjacent to the existing road would keep the road disturbance away from Fly Creek and could reduce the potential for impacts due to sediment input and pollutants to the creek and nearby wetlands.

The Highland Road (West) Parallel Route alternative would reduce the level or extent of secondary impacts to vegetation resources from the impacts anticipated due to the development of the haul route as described under the Proposed Action. The parallel haul route moves the roadway farther from the wetlands and would decrease the potential for impacts to these areas. Moving the haul route away from the relatively undisturbed native rangeland to an area that is set aside as a road right-of-way would decrease the level of disturbance to native vegetation.

Moving the haul route to parallel the existing Highland Road could reduce impacts to cultural resources. This alternative haul route is adjacent to the existing county Highland Road, primarily within the existing right-of-way for that county road. This right-of-way has previously been disturbed and construction of the new sub-parallel road would be unlikely to encounter cultural resources that were not previously detected during construction or the ongoing maintenance of the county road. The short sections where the route deviates outside of the existing right-of-way are placed to avoid exposed bedrock or private property where an easement couldn't be secured. Where this occurs, BHJV should conduct a survey

prior to road construction to determine if cultural resources are present. Any cultural resources discovered during surveys should be reported to SHPO.

Section 5 - Findings Required by Laws and Policies

Montana Environmental Policy Act (MEPA)

MEPA requires State agencies to conduct an environmental review when making decisions or planning activities that may have a significant impact on the environment. MEPA and the administrative rules promulgated under MEPA define the process to be followed when conducting an environmental review. The Draft and Final EIS that DEQ prepared in regard to BHJV's proposed operating permit comply with the procedural requirements of MEPA.

Metal Mine Reclamation Act (MMRA)

The Metal Mine Reclamation Act recognizes that mining is a basic and essential activity that contributes to the economy of the state and nation. Section 82-4-301(2), MCA. Although both the need for and the practicality of reclamation control the type and degree of reclamation in any specific instance, the basic objective is to establish, on a continuing basis, the vegetative cover, soil stability, water condition, and safety condition appropriate to any subsequent use of the area Section 82-4-302(2), MCA. DEQ may not approve a reclamation plan unless it requires disturbed land to be reclaimed consistent with the requirements and standards set forth in Section 82-4-336, MCA.

Water run-off from the waste rock pile and other mine facilities will be captured in diversion ditches and routed to sedimentation and recycle ponds for use in mine processes or discharged to the approved LAD system. During mine production, run-off stored in ponds would be routed to the treatment system.

BHJV will reclaim the mine-site to support grazing, logging, recreation, wildlife habitat and other similar forest land uses. BHJV will remove all minesite facilities with the exception of those that would be retained to support private land use after mine closure. The facilities to be retained include access roads to the surface facilities, a geologic core shed building, water wells, a water tank, a septic system and leach field, and fencing. While the access road to the LAD sites will also be retained, it will be lightly scarified and revegetated in order to provide a two-track road after reclamation. BHJV will also be required to remove the dewatering pumps, all mobile equipment, unused supplies, explosives and other similar items from the mine workings

Once the buildings and equipment have been removed, BHJV will be required to regrade the waste rock dump, the portal pad, and the sediment and recycle ponds. The majority of regrading will occur on the waste rock dump. BHJV would use a cut and fill mining method in which horizontal slices of ore are removed and the void left is filled with waste material. Backfilling of the underground workings would be necessary to provide structural support as development proceeds. The backfill would consist of cemented rock fill using Portland cement with waste rock aggregate. The cut and fill mining method is anticipated to consume the majority of the waste rock generated during mining operations; waste rock

that is not required to be backfilled to support ore extraction would likely be disposed of in the underground voids.

After mining is completed, the side slopes of the waste rock dump would be reduced from a 2:1 to 2.5:1 slope. The surface of the pad will be graded and sloped away from the regraded waste rock dump slopes to prevent storm water from running on to the slopes.

Additional regrading will occur at the sediment and recycle ponds location. The liners within the ponds will be cut and buried so as not to retain water. Culverts will be removed and hauled off-site. The ponds will be regraded to eliminate their ability to store water, and regrading will blend and match the reclaimed area with adjacent topography.

The yard area and laydown areas will be scarified to eliminate soil compaction and will receive minor regrading to preserve the generally flat topography of the area for future post-mining land use. Once all regrading is completed, BHJV would be required to cover the regraded areas with salvaged soil and to seed the area with an approved seed mix.

Unless requested by the private landowner, the covered building at the ore-transfer facility will be dismantled and removed from the site. The concrete foundation and pad will be broken and buried on site. The area will be regraded to original contour, salvaged soil reapplied, and a DEQ approved seed mix will be used to revegetate the site.

BHJV will begin removal of the buildings and equipment promptly after completion of mining. BHJV must complete regrading and seeding of areas within two years of completion of mining, unless reclamation of an area would preclude or interfere with monitoring or mitigation measures required to address water quantity and quality concerns addressed below.

During clearing of the laydown area, the ore-transfer facility, and the haul road located on private property, BHJV will salvage approximately 35,400 cubic yards of topsoil and growth media. The salvaged material will be used to reclaim these areas. The haul road located on private property will be regraded to original contour and reseeded with an approved seed mix.

BHJV will not depart from these approved reclamation requirements, or those discussed below, without previously obtaining from DEQ written approval for the proposed change.

Water Quality Act

The operating plan, reclamation plan, and water management plan approved under the Agency Mitigated Alternative will effectively control the discharge of pollutants. BHJV will use dewatering wells to lower the groundwater table in advance of mining. The predicted dewatering rate is estimated to be about 750 gallons per minute throughout the first 4 ½ years of the mine life and about 500 gallons per minute thereafter to maintain the depressed water level. Water from the dewatering wells would be pumped either to settling sumps for use in mining processes or directly to a treatment facility. The water treatment plant would be located on the surface rather than underground as proposed by BHJV.

This location would facilitate access to the water treatment plant during mine operation and post-closure.

BHJV would be required to treat the water to meet nondegradation criteria in order to discharge it directly to surface water. BHJV would discharge the treated water to Basin Creek, two tributaries of the Middle Fork of Moose Creek, and Fish Creek under MPDES permit MT0031755.

Water run-off from the waste rock pile and other mine facilities would continue to be captured in diversion ditches and routed to sedimentation and recycle ponds or use in mine processes or discharged to an approved LAD system. The LAD system is planned to be used only as a back-up to the discharge pipelines and water treatment system.

The Final EIS predicts a reduction in surface flow to Fish Creek of 12-14 gpm at WS-3 and WS-5 monitoring sites (near the confluence of Wood Creek and Fish Creek). This would constitute a reduction in flow of more than the 10-15 percent threshold for degradation. A reduction of this magnitude will require BHJV to augment flows. BHJV will augment flows in Fish Creek using water from the Emerald Lake aqueduct to mitigate for potential reductions in flow due to groundwater drawdown. BHJV has secured an agreement with Butte Silverbow County (BSB) to augment flows in Fish Creek using water from the BSB Emerald Lake aqueduct. This would mitigate projected reduced groundwater contributions to streamflow due to mine dewatering until the water table fully recovers post-mining and would provide consistent flows throughout the year and may benefit winter survival of fish in Fish Creek. These required mitigations have been developed in consultation with Montana Fish, Wildlife and Parks and should benefit westslope cutthroat trout and other aquatic species in the vicinity of the project.

As discussed above, the Agency Mitigated Alternative requires BHJV to add two additional surface water quality monitoring sites, plus three stream flow monitoring sites and four additional monitoring wells for the purpose of monitoring the effects of mine dewatering on groundwater elevations and stream flows. The additional monitoring during mining will indicate whether the groundwater model used in the Final EIS accurately predicted the extent of drawdown and whether additional mitigation measures may be required.

After mining is completed, the dewatering pumps would be turned off, removed, and the workings permitted to flood. The voids and pore spaces in the cemented waste rock backfill in the mined out workings are expected to be filled by regional groundwater. The water level in the mine is expected to rise to an elevation of 7,339 feet over a period of seven to eight years. The water may not meet nondegradation standards with respect to pre-mining water quality because of chemical changes resulting from grouting of mine inflows, backfilling of portions of the mine workings using cemented mine wastes, and nitrogen compound residues resulting from explosives used during mining. The flow of water from the historic Highland Mine adit will be controlled by the installation of a water-tight hydraulic plug in the upper end of the adit. Any groundwater flowing directly into the historic adit between the plug and the surface would still discharge to Basin Creek. The two new adits constructed by BHJV to access the ore would also be plugged, although using either a cemented rock fill or conventional cement plug.

BHJV will conduct post-closure surveys within one mile of the new mine portals and additional areas within the headwaters of Fish Creek to detect the formation of springs and seeps that may develop following groundwater level recovery. BHJV will conduct the surveys for at least one year after water levels have returned to pre-mining levels (estimated to take about 8 years). DEQ will evaluate water quality data at downstream monitoring sites to determine whether streams show degradation. If streams do not show degradation, monitoring would cease. If streams show degradation, monitoring would continue and water would be directed to the subsurface LAD system which would allow attenuation of elevated parameters via flow through soils with the LAD area.

Although flow reductions in Moose Creek are not predicted, there is some potential for reduced flow during the groundwater level drawdown and recovery phases. BHJV will improve five stream crossings along lower Moose Creek on Highland Road to compensate for the potential changes to wetland extent and duration during the period of groundwater drawdown. These improvements would provide long-term benefits to wetland habitat and potentially improve aquatic organism passage.

Basin Creek Stream Flow Reduction Nonsignificance Determination

Prior to development of the historic mine, perennial stream flow in upper Basin Creek likely did not begin until 0.2 to 0.4 mile downhill from the mine portal. The Highland Mine was developed during the 1930s and presently discharges water into the Basin Creek watershed at an average annual rate of approximately 105 gallons per minute. This discharge has formed a steep gradient channel for approximately 0.5 mile prior to entering the valley bottom containing upper Basin Creek.

BHJV's underground gold mine would intercept the historic workings of the previous mining operation. To prevent a direct discharge of water from the new mine workings into Basin Creek after closure of the proposed mine, BHJV will install a hydraulic plug underground to seal off the upper end of the historic Highland Mine adit to isolate it from modern mine workings and also from the historic workings which currently are the source of the majority of water that discharges from the portal. Therefore, a decrease in flow in upper Basin Creek is expected.

After mining and mine dewatering ceases, it is likely that flows may be reduced in upper Basin Creek by approximately 105 gpm on average until the groundwater level recovers to the elevation of the historic Highland Mine adit. The interim period between cessation of mine dewatering and recovery of groundwater levels to their present levels is projected to last between 7 and 8 years. However, after groundwater level recovery, some renewed inflow of shallow groundwater into the adit is expected below the plug, which would result in renewed discharge from the collapsed portal, projected to be 22 gpm or greater. The reduction of flow from the historic Highland Mine adit is expected to be a permanent change.

Under the Montana Water Quality Act, the Department may not permit an activity that would cause significant degradation of high quality water unless the Department has issued an authorization to degrade. The act does not define significance. Instead, it mandates that the Board adopt criteria for determining what level of degradation is significant. To meet this requirement, the Board of Health and Environmental Sciences in 1994 adopted a rule setting criteria for the non-significance determination.

Under this rule, there is a two-step process for determining whether an activity would cause significant degradation. First, as applied to changes in flow, ARM 17.30.715(1) provides that a change in flow is non-significant if the change is less than 15% of the mean monthly flow and less than 10% of the lowest stream flow for seven consecutive days that would be expected to occur once in ten years (7Q10). Second, if an increase or a decrease in flow exceeds either of these criteria, DEQ may review the significance under ARM 17.30.715(3). It provides that DEQ may evaluate the flow change under criteria set out in Section 75-5-301(5)(c), MCA, and, based on those criteria, determine a change to be nonsignificant. Those criteria are: (1) potential harm to human health, beneficial use, or the environment; (2) the quantity and strength of the pollutant; (3) the length of time the degradation will occur; and (4) character of the pollutant, giving greater significance to carcinogens and toxins that bioaccumulate or biomagnify.

Based on these criteria, DEQ issued a proposed non-significance determination on December 18, 2014, regarding the change in flow in Basin Creek as a result of BHJV's plugging of the historic Highland Mine under ARM 17.30.715(3). DEQ solicited public comment on the proposed determination until January 17, 2015. DEQ received comments in the proposed determination. One area resident was concerned about groundwater drawdown and impacts to their well. DEQ determined, in the Final EIS, that groundwater drawdown would not extend into the Blacktail Creek watershed in which the subdivision is located. No effects on well yields or water levels in the subdivision are predicted. All other comments were non-substantive or not related to the non-significance determination.

After consideration of the comments, DEQ makes a final determination that the flow decrease in Basin Creek would not cause significant degradation and that an authorization to degrade is not required.

As the mine floods to an elevation higher than the historic Highland Mine adit, historic springs and seeps could be reestablished. The position of the mine beneath Nevin Hill, a triple divide between the Basin Creek, Fish Creek, and Moose Creek watersheds, complicates predicting where the groundwater would discharge after the adit is plugged and groundwater levels fully recovered. The water table is projected to re-establish approximately 125 feet above the elevation of the proposed plug in the historic Highland Mine adit. This would restore the groundwater flow regime to a state similar to that which existed prior to development of the mine during the 1930s. Although the pre-mining groundwater flow patterns cannot be predicted with certainty, geologic data and hydrogeologic modeling indicate that the 105 gpm that currently discharges from the Highland adit would be redistributed into the Fish Creek, Basin Creek, and Moose Creek watersheds, with Fish Creek likely to receive the greatest amount of additional flow and Moose Creek the least.

Considering the renewed discharge from the adit and the re-establishment of springs and seeps in the Basin Creek drainage, long-term flow reduction in upper Basin Creek would likely be in the 60 to 80 gpm range on average. These flow reductions may result in decreased fish habitat within this tributary to upper Basin Creek above the Upper Reservoir. A small streamside wetland area located downslope from the historic Highland Mine adit would receive less water than it presently does and may become reduced in area.

Existing stream flow depletion in upper Fish Creek, likely a result of development of the historic Highland Mine, would be reversed by the proposed closure plan and would likely benefit the fishery in Fish Creek. The anticipated reduction in stream flow in the upper Basin Creek watershed that would result from cessation of the mine discharge is substantially less in volume than the ongoing stream flow augmentation which results from the diversion of water into Basin Creek from Fish Creek via the Emerald Lake Aqueduct.

Plugging of historic adits to re-establish groundwater levels and prevent direct discharges of mine drainage into surface water is an important method of remediating the impacts of historic mining and is generally not considered by DEQ to constitute significant degradation, regardless of the resultant redistribution of groundwater discharges that support stream base flows. Restoration to pre-mining condition is usually of greater benefit to the environment than maintaining the non-natural flow redistribution.

To compensate for potential flow reductions in Basin Creek after mining ceases, BHJV would be required to replace three culverts and improve sediment control at two other culverts along Roosevelt Drive (Figure 2.8-1). These improvements would benefit aquatic organism passage and reduce sediment impacts to Blacktail Creek, of which Basin Creek is a tributary. The culvert replacements and road improvements would have long-term positive benefits for the fishery in Blacktail Creek.

BHJV holds historic water rights on the Highland Mine adit discharge dating from the era of the original mine's activity. If these water rights are still valid, then the change in flow resulting from plugging of the adit may be exempt from nondegradation review. Regardless, due to the mitigations proposed/required and the anticipated beneficial restoration of base flow in Fish Creek, DEQ concludes that the impact of reduced stream flow in upper Basin Creek that would result from plugging of the historic Highland Mine adit does not constitute significant degradation. While the decreased flow in Basin Creek would exceed the criteria in ARM 17.30.715(1), the decreased flow would not harm human health, beneficial use, or the environment. Therefore, the decreased flow is not significant under the first and third criteria of ARM 17.30.715(1). Decreased flow is not a pollutant and, therefore, the second and fourth criteria do not indicate significance. Based on this analysis, the Department determines that the flow decrease will not cause significant degradation and that an authorization to degrade is not required.

Montana Pollutant Discharge Elimination System

BHJV submitted an application for a Montana Pollutant Discharge Elimination System (MPDES) permit from DEQ. This application sought permission to discharge treated mine dewatering water to Basin, Fish, and Moose creeks located in the vicinity of the mine. DEQ issued a Letter of Completeness on the MPDES application in July 2012 and the draft permit was issued in April 2013. The final MPDES permit MT0031755 was issued August 1, 2013.

Clean Air Act of Montana

DEQ issued DEQ-ARMB Permit #4449-00 in October 2009. The air quality permit has two permit modifications from October 2009 and October 2011. Modifications in the permit included changes to

generators, an addition of a compressor, and a crushing and screening plant. BHJV will be required to submit an application for a Title V Operating Permit within 12 months of startup of the new equipment referenced in the current permit.

Montana Hard Rock Mining Impact Act

Under the Montana Hardrock Impact Act, an entity that proposes large scale mineral development and applies for a hardrock operating permit under the Metal Mine Reclamation Act is required to submit an impact plan to affected counties and the Hard-Rock Mining Impact Board. The impact plan must identify the increased need for services and facilities, the increased revenues, and increased capital, operating and net operating costs expected to occur within each affected unit of local government as a result of the mine. The plan must also require the large scale mineral developer to pay all increased capital and net operating costs identified in the plan.

Large scale mineral development is defined in Section 90-6-302(4), MCA, to mean the construction or operation of a hard-rock mine and the associated facility for which a permit is applied under the Metal Mine Reclamation Act and for which the average number of persons on the payroll of the mineral developer and of contractors at the mineral development exceeds or is projected to exceed 75 for any consecutive 6-month period. The average number of persons on the payroll of BHJV and of contractors at the site is not projected to exceed 75. Because BHJV is not a large scale mineral developer, BHJV is not required to submit an impact plan to affect counties and the Hard Rock-Mining Impact Board under the Montana Hardrock Mining Impact Act.

Private Property Assessment Act

A taking or damaging checklist has been prepared, and it has been determined that modifications and mitigations contained in the Agency Mitigated Alternative do not have taking or damaging implications.

Section 6 – Appeal of DEQ’s Decision

This decision is subject to a court appeal by the applicant and other parties for 90 days after issuance of the Record of Decision under Section 82-4-349(1), MCA. Any action or proceeding challenging a final agency decision alleging failure by DEQ to comply with or inadequate compliance with a requirement of MEPA must be brought within 60 days after issuance of the Record of Decision pursuant to Section 75-1-201(5)(a)(ii), MCA. An applicant for a operating permit 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.

