

**Final Environmental Assessment
Montana Tunnels Mining Inc.
(MTMI)
Reclamation Plan Update**

**PREPARED BY
MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
HARD ROCK MINING BUREAU**

JULY 24, 2020

Contents

Section 1. Project Overview	4
1.1 Introduction	4
1.2 Purpose and Need	6
1.3 Proposed Action	6
1.4 Authorization Action	7
1.5 Permit Boundary and Disturbed Area Description	9
1.6 Mining Method and Pit Description	10
1.7 Project History	11
1.7.1 Permit History	11
1.8 Public Involvement	14
1.9 Issues and Concerns	14
Section 2. Alternatives	15
2.1 No Action Alternative	15
2.1.1 Waste Rock Storage Areas	15
2.1.2 Cap Rock and Low-Grade Stockpiles	16
2.1.3 South Pond and Associated Ponds and Tailings Dam Top	16
2.1.4 Tailings Storage Facility	16
2.1.5 Pit Perimeter	17
2.1.6 Facilities	17
2.1.7 Gravel Pit Area	18
2.1.8 Soil and Gravel Stockpiles	18
2.1.9 Miscellaneous (roads, air monitoring station, scale)	18
2.1.10 Mine Pit	18
2.1.11 Clancy Creek	18
2.1.12 Facilities (Shop Building)	18
2.2 Proposed Action Alternative	18
2.2.1 Clancy Creek -	19
2.2.2 Shop Building	22
2.2.3 Summary of Resulting Site-wide Reclamation Plan	24
2.3 Expedited Pit Fill Alternative	25
2.4 Alternative Considered but Dismissed from Further Detailed Analysis	25
2.4.1 No Action Alternative	26
2.4.2 Expedited Pit Fill Alternative	27
Section 3. Affected Environment and Environmental Consequences	28
3.1 GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE	28
3.2 WATER QUALITY, QUANTITY, AND DISTRIBUTION	29
3.3 AIR QUALITY:	31
3.4 VEGETATION COVER, QUANTITY AND QUALITY:	31
3.5 TERRESTRIAL, AVIAN AND AQUATIC LIFE AND HABITATS:	32

3.6	UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES:	33
3.7	HISTORICAL AND ARCHAEOLOGICAL SITES:.....	34
3.8	AESTHETICS:	34
3.9	DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR OR ENERGY:	34
3.10	IMPACTS ON OTHER ENVIRONMENTAL RESOURCES:	35
3.11	HUMAN HEALTH AND SAFETY:.....	35
3.12	INDUSTRIAL, COMMERCIAL AND AGRICULTURAL ACTIVITIES AND PRODUCTION:.....	36
3.13	QUANTITY AND DISTRIBUTION OF EMPLOYMENT:.....	36
3.14	LOCAL AND STATE TAX BASE AND TAX REVENUES:	36
3.15	DEMAND FOR GOVERNMENT SERVICES:.....	37
3.16	LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS:	37
3.17	ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES:.....	37
3.18	DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING:	38
3.19	SOCIAL STRUCTURES AND MORES:	38
3.20	CULTURAL UNIQUENESS AND DIVERSITY:	38
3.21	PRIVATE PROPERTY IMPACTS:.....	39
3.22	OTHER APPROPRIATE SOCIAL AND ECONOMIC CIRCUMSTANCES:	39
3.23	PUBLIC INVOLVEMENT:.....	39
3.24	OTHER GOVERNMENTAL AGENCIES WITH JURSDICTION:.....	40
3.25	CUMULATIVE EFFECTS:	40
Section 4.	Contributors	40
Section 5.	Need for Further Analysis and Significance of Potential Impacts	41
Attachment 1:	Response to Comments.....	42

SECTION 1. Project Overview

1.1 Introduction

Montana Tunnels Mining, Inc. (MTMI) currently has two mining operations/scenarios that have been analyzed for environmental impacts: the “L-Pit” (analyzed in 1986) and the “M-Pit” (analyzed in 2008). The “L-Pit” includes the current “on the ground” disturbance and represents the site conditions of today. The “M-Pit” was analyzed as a potential mine expansion. However, because the corresponding “M-Pit” bond was never posted, the “M-Pit” expansion was never contained/approved in a final permit. In the “L-Pit” analysis/approval DEQ staff never analyzed potential impacts to Clancy Creek, while in the “M-Pit” analysis, DEQ staff specifically did analyze the impacts to, and corresponding movement of, the Clancy Creek channel. Development of the “M-Pit” would result in expansion of the pit through the Clancy Creek valley, necessitating the construction of a permanent diversion. Clancy Creek was impacted by instability within the “L-Pit” highwall beginning in the Spring of 2011 when a loss of stream flow due to infiltration into the subsurface was observed. The flow of water from Clancy Creek was initially diverted into a lined channel intended to maintain streamflow, but this channel was irreparably damaged by a major pit wall failure during the Summer of 2013, resulting in the creek being routed into a pipe to convey the water past the pit wall and downstream to the lower reaches of the Clancy Creek channel. The flow of Clancy Creek was placed in the pipe to prevent the flow of the water running into the pit. The Clancy Creek issues occurred under the “L-Pit” disturbance.

On June 4, 2018, the Montana Department of Environmental Quality (DEQ) initiated a permit amendment (Amendment 009) to Hard Rock Mining Operating Permit #00113 for MTMI. 82-4-337 (4), Montana Code Annotated (MCA) allows DEQ to modify the reclamation plan after timely notice and opportunity for hearing, at any time during the term of the permit and for any of the following reasons:

- (a) to modify the requirements so that they will not conflict with existing laws;
- (b) when the previously adopted reclamation plan is impossible or impracticable to implement and maintain;
- (c) when significant environmental problem situations not permitted under the terms of regulatory permits held by the permittee are revealed by field inspection and DEQ has the authority to address them under the provisions of this part.

In accordance with 82-4-337(4)(c), MCA, DEQ has determined that an updated reclamation plan is required to address the long-term reclamation of Clancy Creek under the “L-Pit” operations. The “L-Pit” disturbance remains at this site today. The proposed amendment would update the MTMI reclamation plan to address the long-term routing of Clancy Creek away from the open pit and to address the timing of removal of the shop building.

DEQ has prepared this draft environmental assessment (EA) to meet the requirements of the Montana Environmental Policy Act (MEPA). DEQ analyzed the environmental impacts of two alternatives: the No Action Alternative and the Proposed Action. A third

alternative, Expedited Pit Fill, was considered but eliminated from further consideration for not meeting the project objectives. The MTMI facility is located approximately twenty-five miles south of Helena, Montana, in Jefferson County (Figure 1-1).

Figure 1-1 MTMI General Location



1.2 Purpose and Need

DEQ's purpose and need in conducting this environmental review is to act on its state action to update the MTMI Reclamation Plan to address site conditions that have changed since the last MTMI Reclamation Plan was approved by DEQ (See Table 1-3 for a summary of permit changes). On June 4, 2018, DEQ initiated Amendment 009 to Hard Rock Mining Operating Permit #00113 for MTMI under the authority of 82-4-337 (4), MCA. The procedural directive for completing an environmental review under MEPA for this action is identified in the Administrative Rules of Montana (ARM) 17.4.621. DEQ initiated the action to address a significant environmental problem (Clancy Creek and the timing of removal of the Shop Building) that is not currently permitted under the terms of the permit and the corresponding MTMI "L-Pit" reclamation plan. The Clancy Creek issue and the shop building issue have been documented during field inspections and DEQ has the authority to address them under the provisions of this part.

The original reclamation plan was approved by DEQ on February 20, 1986 and has been incrementally changed over time with the various permitting actions shown in Table 1-3. The nature of the current reclamation plan change would be limited to two main areas: Clancy Creek and the timing of removal of the Shop Building. The revised reclamation plan would prescribe the movement of the Clancy Creek channel/pipe from near the pit to approximately 200-300 feet further away from the pit. In addition, the revised reclamation plan would clearly address that the long-term conveyance of Clancy Creek flow would not include the current placement of the plastic pipe. The revised reclamation plan would also address the timing of removal of the shop building such that it is demolished/removed early in the reclamation effort (reducing the risk that the building might become irrecoverable due to pit instability). DEQ's action on the permit amendment is governed by the Metal Mine Reclamation Act, Section 82-4-301, *et seq*, MCA.

MTMI's purpose and need in participating in this permit amendment and the corresponding environmental review is to address current deficiencies in the approved Reclamation Plan. On June 4, 2018, DEQ notified MTMI that, based on the current site conditions, the approved Reclamation Plan is not adequate. In the June 4th, letter, DEQ notified MTMI of the changes that are necessary to the Reclamation Plan. On August 17, 2018, MTMI responded to DEQ's Reclamation Plan changes. MTMI offered its comments on the shop building, general site clean-up, and the proposed movement of Clancy Creek.

1.3 Proposed Action

The proposed action would include an update to the MTMI "L-Pit" Reclamation Plan. Under the proposed action, the MTMI Reclamation Plan would be updated to require that a new channel be constructed for Clancy Creek extending from approximately Latitude 46.371398, Longitude -112.142797 to approximately Latitude 46.376396, Longitude -112.137659. Because the Clancy Creek project would be located outside of the L-Pit permit boundary, the change would also necessitate a change in the permit boundary to the area proposed under the M-Pit proposal. The length of the newly constructed channel

would be approximately 2,500 feet in length. The new channel would be constructed in bed rock and would be located approximately 200-300 feet from the current location of the plastic pipe carrying the flow of Clancy Creek. DEQ intends that, within the larger constructed channel, a smaller channel of sufficient dimensions to convey the average seasonal bankfull flow of a few cubic feet per second (cfs) would be constructed. The larger channel would function as a floodplain during higher flow conditions.

The conceptual starting point of the diversion for the new channel was identified based upon a variety factors, including, but not limited to 1) creating an open channel for Clancy Creek on stable ground, 2) capturing as much of the flow of Clancy Creek as possible, 3) minimizing the level of cut into the mountain, 4) avoiding the existing tension cracks as much as possible, 5) distancing the stream as far as practical from the pit rim, 6) etc.

DEQ estimates that the new channel would diverge from the natural channel near the 5820' elevation, based upon suitable topography adjacent to that stream reach, but the exact location would be determined based upon final engineering design work performed prior to construction. The actual point of diversion may vary by approximately +/- 20' in elevation, based upon optimization of the factors listed above.

Once started, the construction of the new channel is estimated to take approximately 60-90 days, but it would be done as part of the overall site reclamation. The total disturbance necessary for the project is estimated to be approximately 4 acres. The time estimated for demolition/removal of the building is estimated to take approximately 1-2 weeks.

1.4 Authorization Action

DEQ is responsible for issuing and ensuring compliance with state environmental laws and administrative rules under the MMRA. The MMRA contains reclamation standards for lands disturbed by mining, generally requiring that they be reclaimed to comparable stability and utility as that of adjacent areas. The Draft Reclamation Plan (Amendment 009) provides sufficient details regarding the proposed Reclamation Plan changes to allow DEQ to determine whether reclamation requirements and standards set forth in the MMRA would be satisfied. BLM may be responsible for reviewing and approving a modification to the Plan of Operations under 43 CFR 3809.432(a). However, the proposed amendment does not affect land administered by BLM.

DEQ is also responsible for protecting air and water quality under the Clean Air Act of Montana, Sections 75-2-101, *et seq.*, MCA, and the Montana Water Quality Act, Sections 75-5-101, *et seq.*, MCA. **Table 1-1** lists the regulatory authority and permits that may be required by MTMI.

Table 1-1. Potentially Applicable Regulations

DEQ	
Regulatory Authority	Purpose
Metal Mine Reclamation Act (82-4-301, <i>et seq.</i> , MCA)	MMRA regulates the mining of ore or rock in the State to provide adequate environmental protection. Mining must comply with state environmental laws and administrative rules. Approval may include stipulations for mine operation and reclamation. A sufficient reclamation bond must be posted with the state.
Montana Environmental Policy Act (75-1-102, <i>et seq.</i> , MCA)	To establish a process to anticipate and disclose possible impacts, including unexamined, unintended, and unwanted impacts.
Montana Water Quality Act, Montana Pollutant Discharge Elimination System (MPDES) (75-5-101, <i>et seq.</i> , MCA)	To establish effluent limits, treatment standards, and other requirements for point source discharges to state waters including ground water for active mine areas. Discharges to waters may not violate water quality standards.
Site-Specific Standards of Water Quality for Aquatic Life (75-7-101, MCA (aka 310 Permit))	Montana's Natural Streambed and Land Preservation Act, requires any person planning to disturb the bed or banks of a perennially-flowing stream or river to first obtain a 310 Permit from their local conservation district, so as to minimize erosion and sedimentation.
Short-Term Water Quality Standards for Turbidity (75-5-318, MCA (aka 318 Authorization))	Operators of a short-term construction or construction-related activity that could result in a release of sediment or turbid water must obtain authorization prior to beginning the project. Each authorization will include conditions that minimize, to the extent practicable, the magnitude of any change in water quality and the length of time during which any change may occur. Some may include site-specific requirements that ensure the activity does not have any long-term impact on existing and beneficial uses of state water.
Federal Clean Water Act (401 Water Quality Certification)	The federal Clean Water Act requires state certification for any permit or license issued by a federal agency for an activity that may result in a discharge to state waters, including wetlands. This requirement allows Montana to have input into federally approved projects that may affect its waters (rivers, streams, lakes, and wetlands) and in protecting water quality by applying state water quality standards.
Stormwater Permits (75-5-101, <i>et seq.</i> , MCA)	Stormwater is rain and snow melt that runs off surfaces such as rooftops, paved streets, highways, and parking lots and that does not percolate into the soil. As water runs off these surfaces, it carries pollutants such as sediment, oil, fertilizers, pesticides, trash, animal waste and a variety of other pollutants that can negatively impact water quality. DEQ regulates discharges of stormwater from construction activity, industrial activity and from Municipal Separate Storm Sewer Systems (MS4s) primarily through three Montana Pollutant Discharge Elimination System (MPDES) General permits.
Clean Air Act of Montana (75-2-101, <i>et seq.</i> , MCA)	To achieve and maintain levels of air quality that will protect human health and safety and, to the greatest degree practicable, prevent injury to plant and animal life and property, ...

DEQ	
Regulatory Authority	Purpose
Montana Fish, Wildlife and Parks (FWP)	
Regulatory Authority	Purpose
Montana Stream Protection Act (SPA) - 124	To protect and preserve fish and wildlife resources, and to maintain streams and rivers in their natural or existing stage
BLM	
Regulatory Authority	Purpose
General Mining Law and Surface Management Regulations (43 CFR 3809.1) BLM Permit MTM-82855	To ensure that the exploration for and development of minerals on federal lands does not cause unnecessary or undue degradation.

Upon completion of the EA, the agencies may (1) deny the permit amendment if the proposed operation would violate MMRA, the Clean Air Act, or the Water Quality Act; (2) approve the permit amendment; (3) approve the permit amendment with agency mitigations; or (4) determine the need for further environmental analysis to disclose and analyze potentially significant environmental impacts. After issuance of a permit amendment, MTMI may likely be required to post additional reclamation bond, as determined by DEQ in accordance with Section 82-4-338, MCA. Because the proposed amendment primarily affects reclamation of land that is not administered by BLM, the bond calculation/assessment may not be affected by BLM. MTMI did not post the latest bond and, therefore, Hard Rock Mining Operating Permit No. 00113 is currently suspended by operation of law. DEQ notified MTMI of the suspension in a letter dated June 6, 2018.

1.5 Permit Boundary and Disturbed Area Description

The area encompassed by the permit boundary is 2,116.0 acres. The area permitted for disturbance is 1,199.9 acres. The current disturbance at the site is 1188.9 acres. See Table 1-2 for a summary of the acreage that is currently permitted for disturbance.

Table 1-2. Site-wide Permit Disturbance Areas

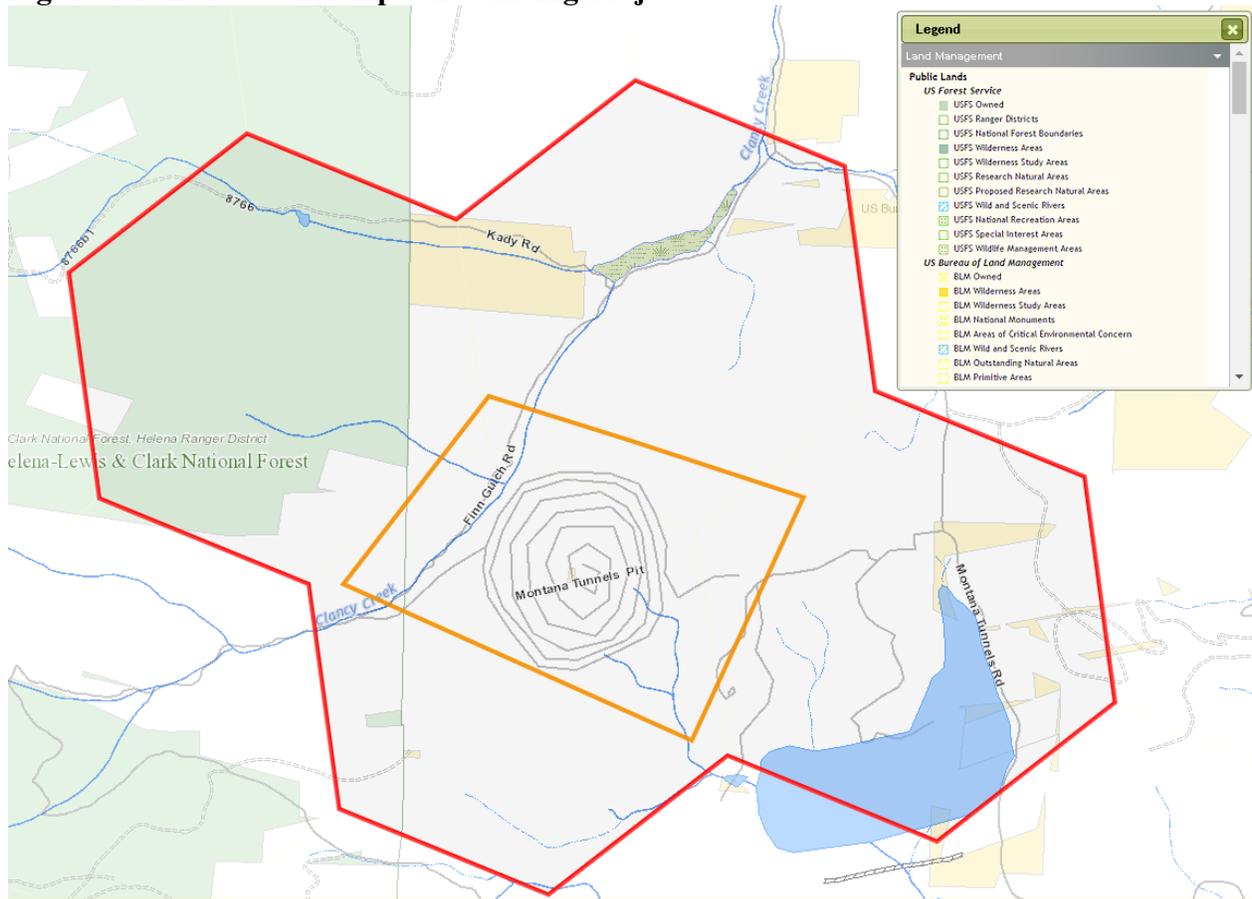
Area	Acres
Waste Rock storage areas	425.9
Cap rock and low-grade stockpiles	66.0
South pond and associated ponds, and tailings dam top	22.7
Tailing storage facility	259.3
Pit perimeter	16.4
Facilities	37.6

Gravel pit area	33.1
Soil and gravel stockpiles	59.6
Miscellaneous (roads, air monitoring station, scale)	30.9
Mine Pit	248.4
Total	1199.9

BLM Land

Some scattered tracts of leased BLM land totaling 131.8 acres occur within the permit boundary (Figure 1-2). The permitted disturbance affects 56.7 acres of BLM land. However, the proposed permit action does not impact BLM Land.

Figure 1-2. Land Ownership Surrounding Project



Notes: Red outline reflects the area of interest assigned by Natural Heritage Program Search
 Yellow Outline reflects the approximate area of the project disturbance

1.6 Mining Method and Pit Description

MTMI was permitted to open-pit mine an average of 15,000 tons per day (DSL 1986). The mining method did not change during the course of operations. The mine produced roughly 11,000 to 20,000 tons of ore per day. Drilling, blasting, loading, and hauling took place on 20-foot benches as the mine pit was deepened. Annual ore production amounted to approximately 4 to 6 million tons. The ore occurred as

disseminated sulfides of lead and zinc with associated gold and silver. Gold and silver also were recovered as a gold/silver alloy.

The approved footprint of the mine pit was 248.4 acres. The mine pit was permitted to extend from the 6,430-foot to the 4,250-foot elevation at the pit bottom. The pit rim daylight elevation (the lowest point on the rim) is approximately 5,670 feet on the southeast side of the pit. The pit was accessed by a primary haul ramp on the southeast side of the mine pit. Since mine operations ceased in December 2008, all pit highwalls have shown instabilities, except the north highwall which is composed of Lowland Creek Volcanics.

The pre-mining water table ranged from 5,650 to 5,750 feet in the vicinity of the mine pit area. Meteoric water and groundwater currently enter the pit. Up to several hundred gallons per minute (gpm) are currently entering the pit. The variability in mine pit inflow appears to be primarily due to variability in bedrock fracture and fault conditions and seasonal variability in precipitation and groundwater recharge. Larger inflows would be expected when saturated bedrock fractures, joints or faults are first encountered, and after spring precipitation recharges the local bedrock aquifer.

1.7 Project History

The MTMI mine was initially permitted on February 20, 1986. The permit allowed open pit mining operations. MTMI was permitted to mine ore from an open pit to produce zinc, lead, gold, and metal-sulfide concentrates for sale into commerce. MTMI was also permitted to process gold ore from the Diamond Hill Mine, an underground gold mine near Townsend, using a combination of conventional flotation and leach recovery processes. The permit allowed operations on private and federal lands.

1.7.1 Permit History

The Montana Department of State Lands (DSL), now DEQ, wrote a draft Environmental Impact Statement (EIS) on the proposed MTMI Mine in 1985 (DSL 1985). The draft EIS was adopted as the final EIS by way of a Notice of Adoption that was published in January 1986 (DSL 1986). The Record of Decision (ROD) was issued in February 1986, approving the project.

Since 1986, MTMI has applied for and received numerous amendments and revisions to Hard Rock Mining Operating Permit #00113 (**Table 1-3**). This draft EA is tiered to the August 2008 Final EIS (FEIS 08-31). FEIS 08-31 is appropriate to “tier to” because the resources and affected environment analyzed in that document are the same resources and environment that would be impacted by the Proposed Action. While FEIS 08-31 was issued over 10 years ago, tiering to this document is appropriate for the following reasons:

- the scope of the Proposed Action is relatively small and focused
- the concept of the Proposed Action related to Clancy Creek was analyzed in FEIS 08-31 (FEIS 08-31 contemplated a further move of Clancy Creek)
- the concept of the Proposed Action related to the Shop Building (aside from

expediting the move) is part of the approved reclamation plan and was analyzed in FEIS 08-31

- the resources impacted from the Proposed Action would be the same
- no other cumulative activities or impacts appear to be evident for this project

Table 1-3. Permit Amendment/Modification History Summary

Permit/Amendment/ Minor Revision	Date	Approved Actions
Hard Rock Mining Operating Permit #00113	02/20/1986	Open pit mine, waste rock storage area, tailings storage facility, and mill permitted; permit area 1,500 acres, 965 disturbed acres. A draft EIS was released in November 1985. Adopted as final EIS January 31, 1986.
Amendment 001	Undated	Plant site relocated to match EIS. No change in permitted or disturbed acres. No EA was completed.
Amendment 002	05/06/1986	Permit area decreased to 1,497 acres. Miscellaneous changes in facility locations and production levels. No EA was conducted because of the lack of impacts.
Minor Revision 88-001	05/23/1988	Changes to tailings embankment design, tailings discharge system, south pond, and monitoring wells below the south pond. No EA was completed.
Minor Revision 88-002	08/19/1988	Freshwater storage pond and water supply system. No changes to permit area or impacts. No EA was completed.
Minor Revision 89-001	03/27/1989	Reclaim water stored in west pond. No EA was completed for the revision.
Amendment 003	04/13/1990	Tailings embankment design changed and steepened to 1.75:1. Permit area 1,546 acres. Disturbed acres increased to 1,060 acres. An EA was completed April 12, 1990.
Amendment 004	05/11/1993	Two haul roads and cap rock stockpile approved. Permit area increased to 1,606 acres. Disturbed acres increased to 1,086. An EA was released on April 16, 1993.
Minor Revision 93-001	11/29/1993	Historic Diamond Hill Mine materials deposited at Montana Tunnels waste rock storage area. No EA needed for 1,800 cy of material.
Minor Revision 93-002	12/21/1993	Disposal of Washington Mine waste in waste rock storage area. No EA needed for 220,000 cy of material.
Amendment 005	01/24/1994	Redesign of waste rock storage area and segregation of waste rock approved. New computer-generated maps corrected permit area and disturbed acreages. Permit area expanded to 1,811 acres to encompass a water return line. Disturbed acres decreased to 1,033 acres. An EA was released on October 7, 1993.
Minor Revision 94-001	05/03/1994	Power line road relocation. No EA needed.
Amendment 006	02/28/1995	A tailings storage facility expansion and embankment raise to 5,600 feet was approved. No change in permitted acres. Disturbed acres increased to 1,106 acres. An EA was released on December 9, 1994.
Minor Revision 95-001	05/01/1995	Access road and soil stockpile revision. No EA needed.

Permit/Amendment/ Minor Revision	Date	Approved Actions
Minor Revision 95-002	06/18/1996	Deposit Diamond Hill Mine tailings at Montana Tunnels tailings storage facility. No EA needed.
Minor Revision 96-001	06/10/1996	Relocate road to access explosive storage area. No EA needed.
Minor Revision 97-001	02/28/1997	New power line to pump station. No EA needed.
Minor Revision 97-002	04/27/1997	Diamond Hill ore stockpile expansion. No EA needed.
Minor Revision 97-003	12/01/1997	Pit reclamation revision. No EA needed.
Minor Revision 97-004	03/06/1998	Pit slope layback and tailings storage facility buttress. Internal Checklist EA completed.
Minor Revision 98-001	04/02/1998	Northwest pit highwall stabilization. No EA needed.
Minor Revision 98-002	07/24/1998	Leach Diamond Hill concentrates. No EA needed.
Minor Revision 98-003	Withdrawn	Contingency location for Clancy Creek.
Minor Revision 99-001	07/07/1999	Relocate Diamond Hill ore crushing location. No EA needed.
Minor Revision 99-002	11/08/1999	Expand run-of-mine ore stockpile. No EA needed.
Minor Revision 00-001	03/10/2000	Corbin Flats tailings in waste rock storage area. No EA needed.
Minor Revision 01-001	10/02/2001	Gregory Mine waste in waste rock storage area. No EA Needed.
Amendment 007	03/22/2002	A tailings embankment raise is approved to 5,640 feet. Permit area stays at 1,811 acres. Disturbed acres increased to 1,163.6 acres. A draft EA was released on January 18, 2002. Final EA released on March 22, 2002.
Minor Revision 06-001	10/20/2006	Raise the tailings impoundment by 20 feet
Minor Revision 07-001	03/21/2007	Lay back a portion of the southwest wall of the Open Pit Mine to provide safe mining operations
Minor Revision 08-001	06/10/2008	Create compensatory wetlands on both the Clancy Creek and Spring Creek Drainages
Amendment 008	08/2008	M-Pit Expansion. EIS conducted.
Minor Revision 09-001	10/07/2009	Temporary contingency relocation plan for Clancy Creek
Minor Revision 10-001	08/03/2010	Disposal of Jefferson City yard remediation waste
Minor Revision 10-002	11/04/2010	Processing of Eklhorn ore at MTMI
Amendment 009	TBD	Update to Reclamation Plan to address Clancy Creek and timing of reclamation of the shop building

Source: DEQ, email, March 21, 2007, Final EIS – August 2008

Notes:

EA = Environmental Assessment

EIS = Environmental Impact Statement

Tailings embankment = Tailings storage facility embankment

1.8 Public Involvement

On July 26, 2017, DEQ received a letter from Montana Trout Unlimited and Earthworks about MTMI. Among other requests identified in the letter, the two parties request that DEQ act to address Clancy Creek. DEQ has met with Montana Trout Unlimited and Earthworks several times about MTMI since receipt of the July 26, 2017 letter.

DEQ posted the draft EA to its website and sent notice of the draft EA posting to the interested parties. DEQ took public comment on the draft EA for 30 days. Comments received on the draft EA are considered and addressed, as appropriate, in this final EA.

1.9 Issues and Concerns

Based on internal scoping and the information submitted by Montana Trout Unlimited and Earthworks, the issues listed in **Table 1-4** were identified. **Table 1-4** also indicates the section of the EA in which the issue is analyzed. DEQ has specifically tiered to FEIS 08-31 for each of the issues identified in Table 1-4 and for several other areas that were not identified as primary issues and concerns.

Table 1-4. MTMI Reclamation Plan Update Primary Issues and Concerns

Issue Area	Specific Concerns and Questions	EA Subsection where Analyzed
Soil and Stability	Would soil stability be affected by the location change for Clancy Creek?	Section 3.1
Surface Water	Would the interaction of surface water and ground water be negatively impacted? Would the water quality be degraded?	Section 3.2
Ground Water	Would the interaction of surface water and ground water be negatively impacted? Would the water quality be degraded? Would the ground water flow direction be altered/gradient change?	Section 3.2
Geology	Would slope stability be impacted by the location change for Clancy Creek?	Section 3.1
Fish & Aquatic Life	Are fish currently present upstream & downstream of the section of Clancy Creek in the high density polyethylene (HDPE) pipe? How would the location change of Clancy Creek affect fish & aquatic life (if present)?	Section 3.5
Land Use	How would the location change of Clancy Creek affect road access?	Section 3.9, Section 3.17

Issue Area	Specific Concerns and Questions	EA Subsection where Analyzed
	<p>Would recreation access (i.e. hunting access, etc.) be affected?</p> <p>How would the location change of Clancy Creek affect public safety?</p> <p>Can the road be closed for good?</p>	

SECTION 2. Alternatives

This section describes the alternatives evaluated in the environmental review.

2.1 No Action Alternative

Under the No Action Alternative, DEQ would not initiate/finalize the proposed amendment to update the MTMI Reclamation Plan. The MTMI facility is permitted under Hard Rock Mining Operating Permit #00113. Hard Rock Mining Operating Permit #00113 includes the operating plans and reclamation plans set forth in the initial permit application, subsequent permit amendments, and subsequent permit revisions as revised and updated during any deficiency reviews from DEQ. The L-Pit Reclamation Plan is clearly identified in the August 2008 *Final Environmental Impact Statement FEIS 08-31 for the Proposed M-Pit Mine Expansion at the Montana Tunnels Mine in Jefferson County, Montana*. Specifically, the L-Pit Reclamation Plan is discussed in the “No Action Alternative.” Because the “M-Pit” Mine Expansion never occurred, the “No Action Alternative” as presented in FEIS 08-31 appropriately describes the current state of the facility.

MTMI would be allowed to continue to route Clancy Creek past the open pit via a 20-inch plastic pipe (Clancy Creek is not addressed in the L-Pit Reclamation Plan) and the shop building would not be required to be demolished early in the reclamation efforts. In addition, the no action alternative would result in the reclamation bond not being adjusted to account for changes to Clancy Creek and the timely removal of the shop building. A summary of the Site-wide Reclamation Plan, under the “No Action Alternative” is shown in the following sub-sections. For a complete description of the approved Reclamation Plan, please see Hard Rock Mining Operating Permit #00113.

2.1.1 Waste Rock Storage Areas

Waste rock storage area slopes would be graded to a final slope of 2.5h:1v to enhance vegetation success and reduce erosion potential. Tops of waste rock storage areas would be essentially flat with less than 2% slopes. The top of the waste rock storage area would be graded to eliminate depressions and to provide surface water flow away from the steeper side slopes.

Potentially acid generating waste rock would be covered with a 36” layer of non-acid generating material. Slopes would be reduced on non-acid generating

material. Cap rock would be covered with a 16" layer of topsoil.

2.1.2 Cap Rock and Low-Grade Stockpiles

Cap rock is non-sulfide waste rock generally obtained from the overburden in the upper highwalls of the mine. If cap rock stockpiles are not completely used, the stockpiles are to be graded during reclamation to match the existing topography, covered with soil, and reseeded.

2.1.3 South Pond and Associated Ponds and Tailings Dam Top

Water is to be pumped to the pit to accelerate formation of a pit lake. The pond is to be reclaimed and converted to a percolation pond to manage the remaining seepage water and surface water runoff from the reclaimed tailings storage facility.

The clay liner of the south pond would be excavated during the closure period to expose native porous colluvial materials and create a percolation basin. Large rip rap would be placed in the bottom of the basin and at the spillway outlet to dissipate flow energy.

2.1.4 Tailings Storage Facility

The final surface of the tailings storage facility would have a 0.5% to 5% slope to the east toward the spillway. Drainage ditches would be constructed to channel storm water toward the spillway channel. To prevent surface erosion and limit infiltration, MTMI would construct channels with synthetic liners across the tailings storage facility surface.

Portable pumps would be used to remove the ponded water from the tailings storage facility as needed. Ponded water would be pumped to the mine pit. Construction of water runoff controls on the tailings storage facility surface would occur when adequate consolidation of the tailings has taken place.

Dust control would be provided during reclamation of tailings by progressively capping the sandy beach areas of the facility following removal of the pond. Water spigotting or sprays would be used, if necessary, to control dust on exposed surfaces of the tailings storage facility. The anticipated consolidation of tailings would leave a natural low point in the southeast corner of the tailings storage facility. Using fill and grading, the tailings surface would be sloped to promote drainage to the spillway at the east end of the tailings storage facility embankment. Surface runoff would report to a percolation pond constructed in the reclaimed south pond.

The tailings surface would be capped with 36 inches of nonacid-generating rock and covered with an additional 24 inches of soil which would then be seeded to minimize water infiltration and to complete final reclamation. More soil would be placed if additional settlement occurred after soil placement.

After soil application, the tailings surface area would be amended with fertilizer and ripped to loosen the soil. The tailings surface would be drill seeded with a grasslands seed mixture. Run-on control ditches upgradient of the tailings storage facility surface would divert water away from the facility. A spillway would be constructed on the east end of the tailings storage facility embankment as part of the closure activities to route storm water off the tailings storage facility surface and minimize flows into the tailings. The spillway is designed to pass the probable maximum precipitation event. Water flowing from the spillway would be directed into a bedrock chute to the constructed percolation pond.

Reclamation of the waste rock storage area that buttresses the downstream face of the tailings storage facility embankment would be the same as other waste rock storage area reclamation. Slopes would be reduced to a 2.5h:1v. The top of the tailings storage facility embankment and the buttress slope would be covered with 16 inches of soil and seeded.

2.1.5 Pit Perimeter

The pit perimeter would be revegetated and weeds would be controlled. A fence would be constructed to limit access to the pit and cautionary signage would be posted near the pit.

2.1.6 Facilities

The mill structure, warehouse and administration buildings would be cleaned out and transferred to the Jefferson Local Development Corporation following closure. The facilities area, soil stockpile sites, miscellaneous roads, and sediment control structures would be graded to the natural contours.

All other buildings and structures, including the stockpile cover, conveyors, crusher buildings, substation, shop building, garage, lube-bay, and tanks would be removed by salvage companies when they are no longer needed. Some infrastructure may be used for five or more years for maintenance and equipment needs. The facilities area would be graded to the natural contours.

After removal and salvage of buildings not left for Jefferson Local Development Corporation use, such as pipelines, equipment, and facilities, any remaining solid waste would be disposed in accordance with all applicable laws and regulations. Inert waste (concrete, plastic, steel, wood) may be buried in on-site waste disposal areas. Any regulated materials or hazardous waste present in the mining or ore processing areas would be properly disposed, marketed, recycled, or returned to vendors in accordance with regulations. Standard municipal wastes would be taken to the Lewis and Clark County landfill in truck roll-off dumpsters.

2.1.7 Gravel Pit Area

The gravel pit area would be re-contoured. The area would be covered with adequate growth media and seeded.

2.1.8 Soil and Gravel Stockpiles

The soil and gravel stockpile areas will be re-contoured. The area would be covered with adequate growth media and seeded.

2.1.9 Miscellaneous (roads, air monitoring station, scale)

The 2.6-mile access road would remain at closure. The road presently meets county road specifications. The service road to the waste rock storage area would be reclaimed as a drainage channel as part of the waste rock storage area drainage system. The upper south pit ramp would be reclaimed by pulling back the bank or using fill as necessary to bring this area back to natural slope. Flat roads would be ripped before soil and seed are applied. The pit ramp would be reclaimed from the pit rim to the expected high-water mark of the pit lake at closure.

2.1.10 Mine Pit

Reclamation of the mine pit would leave highwalls as rock faces. At closure, most of the mine dewatering system would be shut off, and the L-Pit would begin to fill with water. Because of stability problems in the northwest highwall of the pit and corresponding safety concerns, vertical pumping wells would be maintained on the north, northwest, and southwest highwalls for 5 years. The L-Pit would remain accessible above the water level by way of the pit access ramp. MTMI's plan is to allow the pit highwalls to naturally weather and ravel into the pit, cover pit benches, and form talus slopes above the pit lake.

2.1.11 Clancy Creek

While a lined diversion channel was constructed by MTMI in 2009 in anticipation of possible failure of the pit highwall, the diversion channel was compromised by tension cracks extending beyond the pit wall failure of 2013. As a result, the stream flow was diverted to the bypass pipeline. A permanent Clancy Creek reclamation solution is not currently part of the "No Action Alternative."

2.1.12 Facilities (Shop Building)

The shop building is a "facility" as describe in Section 2.1.6, but the current condition of the building was not anticipated as part of the "No Action Alternative." Therefore, the expedited shop building demolition is not contemplated in the "No Action Alternative."

2.2 Proposed Action Alternative

The MTMI facility is permitted under Hard Rock Mining Operating Permit #00113.

Hard Rock Mining Operating Permit #00113 includes the operating plans and reclamation plans set forth in the initial permit application, subsequent permit amendments, and subsequent permit revisions as revised and updated during any deficiency reviews from DEQ. While not specifically selected under the M-Pit environmental review completed in 2008, the No-Action Alternative (i.e. the L-Pit Reclamation Plan) is clearly identified in the August 2008 *Final Environmental Impact Statement FEIS 08-31 for the Proposed M-Pit Mine Expansion at the Montana Tunnels Mine in Jefferson County, Montana*. Because the “M-Pit” Mine Expansion never occurred, the “No Action Alternative” as communicated in FEIS 08-31 appropriately describes the current state of the facility.

Under the Proposed Action, MTMI’s Reclamation Plan would be updated from the currently approved L-Pit Plan to include a Clancy Creek Diversion and a timely schedule for demolishing the shop building. The remaining site-wide reclamation activities would remain as described in FEIS 08-31 and summarized in Section 2.1 of this EA. The entire reclamation activities are estimated to take five years to complete. The addition of the Clancy Creek channel relocation is anticipated to occur concurrently with the remainder of the other site-wide reclamation.

2.2.1 Clancy Creek -

Clancy Creek needs to be diverted away from the open pit. An open, lined, diversion channel would be constructed to divert the flow of water away from the pit. According to the US Geological Survey, Stream Stats, the annual maximum stream flow of Clancy Creek just below the project area is expected to be about 2.81 cubic feet per second (CFS) (Stream Stats, 2019).

Location of Clancy Creek Diversion – As shown in Figure 2-1 and Figure 2-2, the diversion routing for Clancy Creek would start near the 5,820 foot contour. DEQ has used information contained in the November 12, 1998, Contingency Plan for Clancy Creek Diversion (Prepared by Knight Piesold Ltd) in its development of the Revised Reclamation Plan. While the evaluation was conducted in the late 1990s, the conceptual details of the channel relocation are still relevant today. The channel proposed via this amendment would likely be located approximately 50 to 60 feet in elevation higher up the hillside than the channel that was designed in 1998. The characteristics of the approximate new location for the Clancy Creek channel are similar to those analyzed in that document. DEQ staff have reviewed the details of the previous environmental review documents and supporting data, the November 12, 1998, Contingency Plan for Clancy Creek Diversion, aerial imagery of the Clancy Creek Diversion, inspection observations made of the Clancy Creek area, and geologic mapping of the proposed site location of the Clancy Creek relocation and determined that the proposed new creek location is stable and likely to provide long-term reclamation success for the Clancy Creek relocation. DEQ intends to require collection of additional geologic and geotechnical data during final engineering design work at the beginning of the reclamation project to confirm its determination and assumptions about the new channel location.

Figure 2-1. Clancy Creek Diversion Channel Location – Aerial View (10/23/18)



Design Flow Event - The overall goal would be to create a stable stream channel that would convey the design flow. The Clancy Creek Diversion would be designed to accommodate the flow of a 1 in 20-year 24-hour storm event (equal to 350 cfs). Flows exceeding this amount would spill over the freeboard into the pit lake (FEIS 08-31).

Design of Clancy Creek Diversion - DEQ intends that, within a larger constructed channel, a smaller channel of sufficient dimensions to convey the average seasonal bankfull flow of a few cubic feet per second (cfs) would be constructed. The larger channel would function as a floodplain during higher flow conditions. The diversion channel would span approximately 2,500 feet around the Northwest side of the open pit, beginning at elevation 5820 +/- 20' and ultimately tying into the natural channel downstream at elevation 5680 ft. The channel would have an average grade of 5 to 6%, similar to the overall grade of the original Clancy Creek channel.

A corridor that is 60 feet wide would be built along the diversion to allow for construction and maintenance of the channel. Material excavated from the channel would be placed in berms on the pit slope side of the channel. After excavation of the channel is complete, the area would be mapped to locate any discontinuities or fractures. Grout would be used to seal any fractures, effectively making the channel bed comparatively impermeable.

The constructed channel would be lined with 100 mil HDPE material to prevent infiltration into the bedrock. The liner material will be covered with a non-woven geotextile, then 12 inches of fine grained gravel and riprap material to prevent erosion. Alluvial material obtained from either the construction of the diversion intake structure or areas within the Clancy Creek valley that would be bypassed by the diversion would then be placed in the diversion to simulate the natural channel substrate. As the channel is revegetated with grasses, forbs and shrubs, it will become more stable and less apt to erosion during storm events.

A diversion channel with a concrete drop structure would be required. The upstream tie-in of Clancy Creek to the new channel bed would require excavation to bedrock and partial layback of the hillside. Modification of the creek flow (i.e. grout curtain, ground water barrier,) would begin with a diversion approximately 250 feet upstream from the beginning of the new engineered channel. The creek flow from the engineered channel would then be diverted back to the original stream channel (after clearing the area of the stream channel near the pit). The engineered channel creek flow would re-enter the natural channel at a point just above the existing wetlands. The final 500 feet of the channel would be much shallower grade as it ties into the wetlands.

2.2.2 Shop Building

The mill structure, warehouse and administration buildings would be cleaned to address any contaminated areas. The ownership would be transferred to the

Jefferson Local Development Corporation following closure. All other buildings and structures including stockpile cover, conveyors, crusher buildings, substation, truck shop, garage, lube-bay, and tanks would be removed by salvage companies when they are no longer needed. Some infrastructure may be used for five or more years for maintenance and equipment needs. The structural stability of the shop building closest to the southern pit wall has deteriorated to the point that the structure needs to be one of the first structures removed. The updated reclamation plan addresses the timing of the shop building removal.

Figure 2-3. Photo showing Shop Building (view from North-Northwest – 10/23/18)



Figure 2-4. Photo showing "sloughing" of shop building (view from South)



2.2.3 Summary of Resulting Site-wide Reclamation Plan

The site-wide reclamation plan would be composed of the elements of the “L-Pit” Reclamation Plan, in addition to the changes described in the proposed action of this document. Please see Table 2-1 for a summary of the site-wide reclamation plan under this alternative.

Table 2-1. Summary of MTMI Site-Wide Reclamation Plan under the Proposed Action

Reclamation Area	General Reclamation Description/Summary
Waste Rock storage areas	Same as “No Action Alternative.” See Section 2.1.
Cap rock and low-grade stockpiles	Same as “No Action Alternative.” See Section 2.1.
South pond and associated ponds, and tailings dam top	Same as “No Action Alternative.” See Section 2.1.
Tailing storage facility	Same as “No Action Alternative.” See Section 2.1.
Pit perimeter	Same as “No Action Alternative.” See Section 2.1.
Facilities	Same as “No Action Alternative.” See Section 2.1.
	Same as “No Action Alternative.” See Section 2.1.
Gravel pit area	Same as “No Action Alternative.” See Section 2.1.
Soil and gravel stockpiles	Same as “No Action Alternative.” See Section 2.1.
Miscellaneous (roads, air monitoring station, scale)	Same as “No Action Alternative.” See Section 2.1.
Mine Pit	Same as “No Action Alternative.” See Section 2.1.
Clancy Creek	<p><i>A diversion channel would be constructed to divert the flow of water away from the pit. The diversion channel would span approximately 2500 feet around the Northwest side of the open pit, beginning at an approximate elevation of 5820 feet and ultimately tying into the wetlands downstream at an elevation of 5680 feet. The diversion channel would be designed for a 1 in 20-year 24-hour storm event. An average grade of 5 to 6% would be maintained for the new engineered channel, which closely matches the overall grade of the original Clancy Creek channel.</i></p> <p>The upstream tie-in of Clancy Creek to the new channel bed would require excavation to bedrock and partial layback of the hillside. Modification of the creek flow (i.e. grout curtain, ground water barrier) would begin with a diversion approximately 250 feet upstream from the beginning of the new engineered channel. The creek flow from the engineered channel would then be diverted back to the original stream channel (after clearing the “pit-threatened” area of the creek). The engineered channel creek flow would</p>

	re-enter the natural channel at a point just above the existing wetlands.
Facilities – Shop Building	All other building and structures including stockpile cover, conveyors, crusher buildings, substation, truck shop , garage, lube-bay, and tanks would be removed by salvage companies when they are no longer needed. Some infrastructure may be used for 5 or more years for maintenance and equipment needs. The structural stability of the shop building closest to the southern pit wall has deteriorated to the point that the structure needs to be one of the first structures removed. Recyclable and salvageable material would be removed from site and addressed accordingly. Any remaining demolition debris would be removed from site and taken to an approved landfill.
General Site Area	Remaining site material would be removed from site and either recycled, salvaged, or taken to an approved landfill. Among other items, the general site clean-up should address the fleet vehicles, pieces/parts from the fleet vehicles, miscellaneous barrels, unused fencing, and other material scattered around the mining site.

Note: Hard Rock Mining Operating Permit #00113 includes the operating plans and reclamation plans set forth in the initial permit application, subsequent permit amendments, and subsequent permit revisions as revised and updated during any deficiency reviews from DEQ. For a complete description of the approved Reclamation Plan, please see Hard Rock Mining Operating Permit #00113.

2.3 Expedited Pit Fill Alternative

The MTMI facility is permitted under Hard Rock Mining Operating Permit #00113. Hard Rock Mining Operating Permit #00113 includes the operating plans and reclamation plans set forth in the initial permit application, subsequent permit amendments, and subsequent permit revisions as revised and updated during any deficiency reviews from DEQ. The L-Pit Reclamation Plan is clearly identified in the August 2008 *Final Environmental Impact Statement FEIS 08-31 for the Proposed M-Pit Mine Expansion at the Montana Tunnels Mine in Jefferson County, Montana*. Specifically, the L-Pit Reclamation Plan is discussed in the “No Action Alternative.” Because the “M-Pit” Mine Expansion never occurred, the “No Action Alternative” as communicated in FEIS 08-31 appropriately describes the current state of the facility. Under the Expedited Pit Fill Alternative, MTMI’s Reclamation Plan would not be updated. Clancy Creek water would eventually be allowed to flow directly into the pit and the shop building removal would not be expedited.

2.4 Alternative Considered but Dismissed from Further Detailed Analysis

In addition to the proposed action, DEQ also considered the "no action" alternative and an “expedited pit fill” alternative.

2.4.1 No Action Alternative

The "no action" alternative would maintain the status quo. The approved reclamation plan does not address the reclamation needs for Clancy Creek and the current placement of Clancy Creek flow into a pipe would not be addressed in a reclamation plan. Clancy Creek water would remain in the plastic pipe and the timing of shop building removal would not be expedited. DEQ does not consider the “no action” alternative to be appropriate because the proposed action would not comply with all applicable rules and regulations, specifically 82-4-337(4), MCA. The no action alternative forms the baseline from which the impacts of the proposed action can be measured. The no action alternative was removed from further consideration.

For a comparison of the no action alternative with the proposed action alternative, see Table 2-2.

Table 2-2: Comparison of primary reclamation activities/parameters for two alternatives for reclamation at MTMI

Reclamation Element	No Action Alternative	Proposed Action Alternative
Waste Rock storage areas	Same as currently permitted (See Section 2.1)	Same as currently permitted (See Section 2.1)
Cap rock and low-grade stockpiles	Same as currently permitted (See Section 2.1)	Same as currently permitted (See Section 2.1)
South pond and associated ponds, and tailings dam top	Same as currently permitted (See Section 2.1)	Same as currently permitted (See Section 2.1)
Tailing storage facility	Same as currently permitted (See Section 2.1)	Same as currently permitted (See Section 2.1)
Mine Pit	Clancy Creek remains in a plastic pipe. Mine Pit receives only groundwater, no surface flow from Clancy Creek. Should the plastic pipe fail, efforts would be made to repair/replace the plastic pipe.	Clancy Creek is moved to new bedrock channel. Mine Pit receives only groundwater, no surface flow from Clancy Creek
Pit perimeter	Same as currently permitted (See Section 2.1)	Same as currently permitted (See Section 2.1)
Pit Lake Fill Time (years)	Same as currently permitted. Estimated to be approximately 450 years (See Figure IV-2 of EIS – DSL 1986)	Same as currently permitted. Inflow of Clancy Creek was not calculated to impact the pit lake fill time (See Figure IV-2 of EIS – DSL 1986).

Facilities (excluding Shop Building)	Same as currently permitted (See Section 2.1)	Same as currently permitted (See Section 2.1)
Facilities – Shop Building	Same as currently permitted. Demolished and removed from site – but no specific plan to remove the building early in the reclamation process	Same as currently permitted. Demolished and removed from site – including a specific plan to prioritize the removal of the building so that it is conducted soon (early in the reclamation process)
Gravel pit area	Same as currently permitted (See Section 2.1)	Same as currently permitted (See Section 2.1)
Soil and gravel stockpiles	Same as currently permitted (See Section 2.1)	Same as currently permitted (See Section 2.1)
Miscellaneous (roads, air monitoring station, scale)	Same as currently permitted (See Section 2.1)	Same as currently permitted (See Section 2.1)
Clancy Creek	Preserved in HDPE pipe indefinitely	Diverted to newly constructed channel
General Site Area	No specific mention of need and/or plan to clean up the general site area to remove excess clutter and debris.	Specific reclamation plan element to clean-up the general site area to remove excess clutter and debris.
Air Quality Protections	Same as currently permitted (See Section 2.1)	Same as currently permitted (See Section 2.1)
Erosion	Same as currently permitted (See Section 2.1)	Same as currently permitted (See Section 2.1)

2.4.2 Expedited Pit Fill Alternative

Like the Proposed Action Alternative, the Expedited Pit Fill Alternative would follow the L-Pit Reclamation Plan (identified in the August 2008 *Final Environmental Impact Statement FEIS 08-31 for the Proposed M-Pit Mine Expansion at the Montana Tunnels Mine in Jefferson County, Montana*) in all but one area: Clancy Creek. The "expedited pit fill" alternative would allow MTMI to discontinue maintenance of the plastic pipe currently used to transport the flow of Clancy Creek and ultimately let Clancy Creek flow into the open pit. The shop building would be required to be demolished and removed from the area showing the sloughing, but would not be prioritized early in reclamation.

DEQ eliminated this alternative from further consideration because it does not meet the stated need of preserving the flow of water from Clancy Creek. The "expedited pit fill" alternative was eliminated from further consideration.

SECTION 3. Affected Environment and Environmental Consequences

The analysis of the Proposed Action Alternative has been compared against the “No Action Alternative” to identify the potential impacts from the alternative.

The impact analysis will identify and estimate whether the impacts are direct or secondary impacts. Direct impacts occur at the same time and place as the action that causes the impact. Secondary impacts are a further impact to the human environment that may be stimulated, or induced by, or otherwise result from a direct impact of the action (ARM 17.4.603(18)). Where impacts would occur, the impacts analysis will also estimate the duration and intensity of the impact.

The duration is quantified as follows:

Short-term: Short-term impacts are defined as those impacts that would not last longer than the life of the project, including final reclamation.

Long-term: Long-term impacts are impacts that would remain or occur following project completion.

The intensity of the impacts is measured using the following:

No impact: There would be no change from current conditions.

Negligible: An adverse or beneficial effect would occur but would be at the lowest levels of detection.

Minor: The effect would be noticeable but would be relatively small and would not affect the function or integrity of the resource.

Moderate: The effect would be easily identifiable and would change the function or integrity of the resource.

Major: The effect would alter the resource.

3.1 GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE

Are soils present, which are fragile, erosive, susceptible to compaction, or unstable? Are there unusual or unstable geologic features? Are there special reclamation considerations?

Geology and minerals are specifically covered in Section 3.2 of FEIS 08-31. The area affected around Clancy Creek and the shop building have proven to be unstable. The instability of those areas is the driving factor for the current permit amendment. Large portions of the pit rim sloughed into the pit in approximately 2013. Other fractures, without corresponding sloughing, are visible near Clancy Creek and near the shop building. Moving Clancy Creek further away from the open pit is meant to preserve the flow of Clancy Creek. Some of the instability in the Clancy Creek drainage was “temporarily” addressed by conveying the flow of Clancy Creek water into a plastic pipe and by the edge of the open pit. The location of the proposed action, the extent of the proposed action, and the affected environment for the proposed action have not significantly changed since the issuance of FEIS 08-31 and, therefore, tiering to FEIS 08-31 is appropriate.

Direct Impacts:

DEQ staff have reviewed the details of the previous environmental review documents and supporting data, the November 12, 1998, Contingency Plan for Clancy Creek Diversion, aerial imagery of the Clancy Creek Diversion, inspection observations made of the Clancy Creek area, and geologic mapping of the proposed site location of the Clancy Creek relocation and determined that the proposed new creek location is stable and likely to provide long-term reclamation success for the Clancy Creek relocation. The relocation of Clancy Creek is meant to preserve the long-term flow of Clancy Creek. Relocating the flow of water further away from the open pit would improve the likelihood that the Clancy Creek flow would not directly enter the pit. In addition, relocating the Clancy Creek channel would improve the overall soil stability near the pit wall. The new engineered stream channel would be expected to capture surface runoff water in the area of the channel. Under the current configuration, excess flow that does not enter the pipe saturates the soil around the pit wall and increases the moisture of the soil and consequently the instability of that area.

Moving the channel would require use of heavy construction equipment and corresponding truck traffic. A safe buffer distance between unstable ground and where the channel would be moved would be necessary. The buffer would minimize impacts to soil stability. Impacts on geology and soil quality, and stability from construction of the new channel would be long-term, positive, and minor.

The timely demolition and removal of the truck shop should have no impact on soil quality and stability. The truck shop demolition was part of reclamation activities for previous permit action approvals, but not necessarily prioritized to occur early in the reclamation effort. MTMI discontinued the use of the shop shortly after the sloughing that occurred in approximately 2013. Without use of the building, the stability of the area due to truck traffic is not compromised. However, the actual demolition activities would require some demolition equipment and truck traffic. A safe access distance and use of equipment capable of completing demolition would be necessary.

Secondary Impacts:

The long-term secondary impacts on the soil stability would be positive, but minor. The channel would be able to handle runoff water more effectively than the existing pipe can currently handle excess water. By moving Clancy Creek away from the pit wall, the stability of soils near the pit wall would likely improve, particularly during spring months.

3.2 WATER QUALITY, QUANTITY, AND DISTRIBUTION

Are important surface or groundwater resources present? Is there potential for violation of ambient water quality standards, drinking water maximum contaminant levels, or degradation of water quality?

Surface water is specifically covered in Section 3.7 of FEIS 08-31. The proposed action to relocate Clancy Creek is similar to that analyzed in FEIS 08-31. The extent of the

proposed action to relocate Clancy Creek, in comparison to the Clancy Creek relocation that was contemplated in FEIS 08-31 for the M-Pit expansion, is much smaller. The affected environment for the proposed action has not significantly changed since the issuance of FEIS 08-31. Therefore, tiering to FEIS 08-31 is appropriate and descriptive of the anticipated impacts for water quality, quantity, and distribution. One notable change since issuance of FEIS 08-31 is the pit wall sloughing near Clancy Creek that necessitated the “temporary” diversion of Clancy Creek flow into a plastic pipe to ensure that the flow would not be lost to the pit.

The analysis area in FEIS 08-31 for surface water resources includes the Clancy Creek watershed. The Clancy Creek watershed is a hydrologic unit code (HUC) size 12 watershed (HUC #100301011306) and is a subwatershed to the Prickly Pear Creek HUC 10 watershed (HUC #1003010113).

Information for the analysis of surface water resources in the MTMI area was found in the application for Amendment 008 to MTMI Hard Rock Mining Operating Permit #00113 and related technical reports contained therein (MTMI 2007). Surface water quality standards were obtained from DEQ publication DEQ-7 (DEQ 2006a). Maximum Contaminant Levels (MCL) for public water supply systems were obtained from 40 CFR Part 143.3. More recent hydrologic data collected as part of the application for operating permit Amendment 008 were cross-checked with information provided in the 1986 final EIS (DSL 1986). No additional hydrologic data was collected as part of this project (Amendment 009).

Clancy Creek is classified by DEQ as a B-1 stream, meaning that beneficial uses for “drinking, culinary and food processing (after conventional treatment), bathing, swimming and recreation, growth and propagation of salmonids and aquatic life, waterfowl and furbearers, agriculture and industrial purposes” must be maintained. Applicable surface water quality standards for Clancy Creek include DEQ-7 human health standards, as well as acute and chronic aquatic life standards. Surface water is specifically covered in Section 3.7 of FEIS 08-31.

The potential impact of sloughing and the corresponding impact on the surface water of Clancy Creek is of concern at this site. To temporarily prevent the loss of Clancy Creek water to the open pit, the stream flow was conveyed into an plastic pipe. The pipe has been used to transmit the flow of water past the open pit, but a permanent reclamation plan for the diversion has not yet been approved.

Direct Impacts:

Other than a potential short-term minor impact on stream turbidity from the construction of the new Clancy Creek channel, no other water quality impacts would be expected. The quantity of water downstream of the pit and the distribution of Clancy Creek beyond the pit (downstream of the pit) wall could increase with the proposed project as more surface flow is expected to be captured by the lined, engineered channel.

Secondary Impacts:

No secondary impacts on water quality, quantity and distribution would be expected from the proposed project.

3.3 AIR QUALITY:

Will pollutants or particulate be produced? Is the project influenced by air quality regulations or zones (Class I airshed)?

The current air quality of the area meets air quality standards. The construction/reclamation activities contemplated by the proposed action would not trigger air permitting requirements.

Direct Impacts:

Minimal particulate matter impacts, or other air quality impacts, would result from the proposed action. Minor short-term particulate emissions and combustion source emissions (oxides of nitrogen and carbon monoxide) would result from the construction activities related to the Clancy Creek relocation portion of the project. The level of emissions would be short-term and minor and would be of similar magnitude to that of other small-scale construction operations. The shop building demolition is already part of the approved reclamation plan, but the demolition would occur earlier in the reclamation activities under Amendment 009.

Secondary Impacts:

No secondary impacts on air quality would be anticipated from this project.

3.4 VEGETATION COVER, QUANTITY AND QUALITY:

Will vegetative communities be significantly impacted? Are any rare plants or cover types present?

Section 3.4 of FEIS 08-31 discusses the soil, vegetation, and reclamation resources within the MTMI study area. The analysis area for soils, vegetation, and reclamation includes the L-Pit Plan operating permit area and the areas that would be disturbed by permitting the M-Pit Mine Expansion Plan. The analysis area for sensitive plants and plant communities included the area within a 10-mile radius of the mine site (See Section 3.4 of FEIS 08-31 for additional information on vegetation).

Shrub and grassland vegetation types are present as openings within Douglas-fir forest along Clancy Creek. Native grasslands are dominated by various combinations of Idaho fescue, rough fescue, and bluebunch wheatgrass. The vegetation communities are common to west-central Montana as documented in Pfister and others (1977) and Mueggler and Stewart (1980). The two main grassland types are rough fescue and Idaho fescue, and Idaho fescue and bluebunch wheatgrass. Grassland types along Clancy Creek and tributaries are generally dominated by introduced species including timothy, redtop, smooth brome, and Kentucky bluegrass. The project site area for Amendment 009 is the area immediately surrounding Clancy Creek and the disturbed area around the shop building.

A December 2019 search of the Montana Natural Heritage Program database (MTNHP) identified 15 vegetative species of concern with potential habitat throughout the greater project area. Wavy Moonwort, Peculiar Moonwort and Whitebark Pine, all species of concern, have been observed about 2 miles to the south and west of the project area.

Spotted Knapweed, Dalmation Toadflax, and Common Hound's-tongue, all listed noxious weeds, have been identified in the immediate project area. Other noxious weeds are potentially present at or near the project area.

Direct Impacts:

The disturbance on the vegetation cover, quantity, and quality around the Clancy Creek channel relocation would be long-term minor. Land disturbance at the site may result in propagation of noxious weeds. The construction activities to create the new, revised channel would be short-term (lasting approximately 60 - 90 days) and would disrupt a relatively small amount of vegetation (approximately 4 acres). Upon completion of the new, relocated channel, the disturbed area around the channel would be re-seeded. The project area would be subject to the most current Montana Noxious Weed Management Plan and the most current Jefferson County Weed Management Plan.

No additional vegetation would be disrupted for the shop building demolition portion of the proposed action. The shop building and the area needed to access the shop building have been previously disturbed and currently contain no vegetation. Final reclamation of the area surrounding the current location of the shop building would be reseeded.

Secondary Impacts:

The disturbance of ground near Clancy Creek would result in a minor increase in weeds. Weeds would be treated as part of general site reclamation. No other secondary impacts on vegetation cover, quantity and quality would be anticipated from this project.

3.5 TERRESTRIAL, AVIAN AND AQUATIC LIFE AND HABITATS:

Is there substantial use of the area by important wildlife, birds or fish?

Wildlife and birds frequent the area surrounding Clancy Creek. Fish are present in Clancy Creek. The current use of a plastic pipe to convey the water from Clancy Creek past the pit has impacted the natural aquatic life and habitat in the area. The approximate 1200 feet stretch of the Clancy Creek channel that contains the plastic pipe does not function as a natural stream bed and limits the natural movement of fish to the upper reaches of the stream channel.

While birds might fly over the shop building, wildlife do not frequent the area around the building. The immediate area around the building is without vegetation or other attractants, such as ponded water, for wildlife.

Direct Impacts:

Wildlife and bird habitat would not likely improve immediately from the proposed action. However, the preservation of Clancy Creek water from flowing into the pit would have long-term and minor impacts on wildlife and birds. Water that would otherwise become part of the pit lake would be diverted and would support a base level of water in the Clancy Creek drainage.

The creation of the new Clancy Creek channel placed in bedrock and at a higher elevation from the existing location would improve the viability of the bypass to support aquatic life compared with the current diversion via pipeline, but would not achieve the habitat quality that existed in the natural channel. From an aquatic life perspective, the movement of the channel to the new location would result in improved aquatic habitat to that produced by having the water in the pipe. Preservation of flow from upper Clancy Creek would create a similar and positive downstream effect on aquatic life and habitat to the situation that exists today, with water being conveyed through a plastic pipe.

No impacts on wildlife would be expected from the building demolition portion of the proposed action because the area currently contains little to no suitable habitat.

Secondary Impacts:

No secondary impacts on terrestrial, avian and aquatic life and habitats would be expected from the proposed action.

3.6 UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES:

Are any federally listed threatened or endangered species or identified habitat present? Any wetlands? Species of special concern?

A December 2019 search of the MTNHP database by DEQ staff identified potential habitat for up to 90 mammal, reptile, invertebrate, bird, and amphibian species of concern (SOC), potential SOC, sensitive, or threatened species. Habitat for these species is common and not unique to the project area. According to the MTNHP database search, Grizzly Bear, Wolverine and Westslope Cutthroat Trout may occur in or near the project area. Canada Lynx, Great Gray Owl, Green-tailed Towhee and Westslope Cutthroat Trout have been observed near the project area between 1989-1994. Several wetlands are located in and around the project area at Clancy Creek. No wetlands are present near the shop buildings.

Direct Impacts:

Reclamation of the site is currently required. The proposed action represents a minor adjustment to the site reclamation plan that would otherwise be conducted at the site. The proposed action would preserve the flow of water from Clancy Creek, which would have a long-term minor, but positive impact on the environmental resource of surface water.

Secondary Impacts:

No secondary impacts on unique, endangered, or limited environmental resources would result from the proposed action.

3.7 HISTORICAL AND ARCHAEOLOGICAL SITES:

Are any historical, archaeological or paleontological resources present? This section of the draft EA is tiered to the August 2008 Final EIS (FEIS 08-31). The level of disturbance contemplated in the proposed action is much less than the level of disturbance assessed in FEIS 08-31 for the same area.

Direct Impacts:

Reclamation of the site is currently required. The proposed action represents a minor adjustment to the site reclamation that would otherwise be conducted at the site. The level of disturbance resulting from Amendment 009 would be less than that allowed under Amendment 008. No impacts on historical and archaeological sites would result from the proposed action.

Secondary Impacts:

No secondary impacts to historical and archaeological sites would result from the proposed action.

3.8 AESTHETICS:

Is the project on a prominent topographic feature? Will it be visible from populated or scenic areas? Will there be excessive noise or light?

The proposed project would be located entirely on private land. The project area is somewhat remote with little to no public access.

Direct Impacts:

The proposed project may be visible if a viewer is located at an observation point that is unobstructed from topographic or forested vegetation, although much of the viewshed is concealed by rolling hills and mountains that surround the area. Aesthetic impacts from reclamation activities would be long-term and minor, but would not be excessive to receptors in the area. Reclamation of the site is currently required. The proposed action represents a minor adjustment to reclamation work that would otherwise be conducted at the site. The proposed project would preserve the flow of water from Clancy Creek, which would sustain the aesthetics of the Clancy Creek drainage. The proposed action would allow for the flow of Clancy Creek to be transferred from a plastic pipe to an open channel. The impacts on aesthetics from this change would be long-term, positive, and minor.

Secondary Impacts:

No secondary impacts on aesthetics would result from this project.

3.9 DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR OR ENERGY:

Will the project use resources that are limited in the area? Are there other activities nearby that will affect the project?

Direct Impacts:

No demands on the environmental resources of land, water, or energy would be created from this project. The proposed action would allow for the flow of Clancy Creek to be transferred from an HDPE pipe to an open channel. Amendment 009 reflects a more viable long-term option for conveying the flow of Clancy Creek water past the MTMI pit wall.

Secondary Impacts:

No secondary impacts on the demands on environmental resources of land, water, air or energy would result from this project.

3.10 IMPACTS ON OTHER ENVIRONMENTAL RESOURCES:

Are there other activities nearby that will affect the project?

DEQ reached out to the following entities regarding nearby activities that may affect the project, however no other projects were identified:

- Montana Department of Natural Resource and Conservation
- Montana Department of Environmental Quality
- Montana Department of Transportation
- Jefferson County
- United States Department of Interior Bureau of Land Management

Direct Impacts:

No impacts on other environmental resources would result from the proposed action.

Secondary Impacts:

No secondary impacts on other environmental resources would be created from the proposed action.

3.11 HUMAN HEALTH AND SAFETY:

Will this project add to health and safety risks in the area?

MTMI is required to adhere to all applicable state and federal safety laws. Industrial work such as is required for this project is inherently dangerous. The Mine Safety and Health Administration (MSHA) has developed rules and guidelines to reduce the risks associated with this type of labor, specifically, the labor related to construction/demolition as required by the proposed action. No members of the public would be allowed access to the general project proximity during the construction/demolition phase of the proposed action.

Direct Impacts:

No impacts to public health and safety would result from the proposed action. However, minor impacts on worker human health and safety would be involved in the construction/demolition phases of the proposed action. The potential impacts on worker health and safety would be slightly higher than the existing reclamation plan due to the

inherent risk of working near the pit rim. Impacts to human health and safety would be short-term and minor.

Secondary Impacts:

No secondary impacts on human health and safety would result from the proposed action.

3.12 INDUSTRIAL, COMMERCIAL AND AGRICULTURAL ACTIVITIES AND PRODUCTION:

Will the project add to or alter these activities?

Direct Impacts:

The proposed action would have no impacts on industrial, commercial, and agricultural activities and production.

Secondary Impacts:

No secondary impacts on industrial, commercial and agricultural activities and production would result from the proposed action.

3.13 QUANTITY AND DISTRIBUTION OF EMPLOYMENT:

Will the project create, move or eliminate jobs? If so, estimated number.

Direct Impacts:

Reclamation of the site is currently required. The proposed action represents a minor adjustment to the site reclamation that would otherwise be conducted at the site. The proposed project would not create, move, or eliminate jobs. The project may create minor additional time that the reclamation contractors remain on site to complete the site-wide reclamation, but would be unlikely to add any new job opportunities.

Secondary Impacts:

No secondary impacts would be created on the quantity and distribution of employment in the area from the proposed action.

3.14 LOCAL AND STATE TAX BASE AND TAX REVENUES:

Will the project create or eliminate tax revenue?

Direct Impacts:

Reclamation of the site is currently required. The proposed action represents a minor adjustment to the site reclamation that would otherwise be conducted at the site. Local and state tax base and tax revenues would not be further impacted from the proposed action.

Secondary Impacts:

No secondary impacts on local and state tax base and tax revenues would result from this project.

3.15 DEMAND FOR GOVERNMENT SERVICES:

Will substantial traffic be added to existing roads? Will other services (fire protection, police, schools, etc.) be needed?

Direct Impacts:

Reclamation of the site is currently required. The proposed action represents a minor adjustment to the site reclamation that would otherwise be conducted at the site. There would be no substantial traffic added to existing roads. No additional demand for government services would be created from this project.

Secondary Impacts:

No secondary impacts to the demand for government services would be created from this project.

3.16 LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS:

Are there State, County, City, USFS, BLM, Tribal, etc. zoning or management plans in effect?

The proposed project would occur entirely on private land. The project area would be subject to the most current version of Montana Noxious Weed Management Plan and the most current version of the Jefferson County Noxious Weed Management Plan.

Direct Impacts:

Other than the weed management plans previously mentioned, no locally adopted environmental plans and goals would be impacted from the proposed action because no such local plans exist for the project area.

Secondary Impacts:

No secondary impacts on locally adopted environmental plans and goals would be impacted by the proposed action.

3.17 ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES:

Are wilderness or recreational areas nearby or accessed through this tract? Is there recreational potential within the tract?

Direct Impacts:

The proposed action would improve long-term water retention in the Clancy Creek drainage. The proposed project would have long-term, positive, and minor impacts on the quality of recreational opportunities in the immediate area because water would be available for the downstream fishery and for wildlife and birds. The impacts to quality of recreational opportunities would be long term, positive, and minor. Access to recreational opportunities would not be impacted by the proposed action, other than the relatively short

time period involved with constructing the Clancy Creek channel. The access road near Clancy Creek would be impacted. Depending on the relocation project, the land ownership of the area needed to move the road, and the actual on-site construction, the future access to the road may be lost. However, BLM and MTMI have already taken steps to prevent the road from being used for safety reason (blocking the access with Jersey Barriers), so the actual impact to upstream access would likely be long term and minor.

Secondary Impacts:

No secondary impacts on access to and quality of recreational and wilderness activities would result from the proposed action.

3.18 DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING:

Will the project add to the population and require additional housing?

Direct Impacts:

Reclamation of the mine site is currently required, but Clancy Creek is not addressed in the final permit containing the approved reclamation plan. The proposed action represents an additional reclamation requirement to complete the site reclamation. The density and distribution of population and housing would not be further impacted from the proposed action. The workers on site for the site-wide reclamation would likely need to be on site for an additional minor amount of time to address the Clancy Creek reclamation, but additional workers and/or housing would likely not be required.

Secondary Impacts:

No secondary impacts on density and distribution of population and housing would result from the proposed action.

3.19 SOCIAL STRUCTURES AND MORES:

Is some disruption of native or traditional lifestyles or communities possible?

Direct Impacts:

Reclamation of the site is currently required. The proposed action represents a minor adjustment to the site reclamation that would otherwise be conducted at the site. No disruption of native or traditional lifestyles or communities would result from the proposed action.

Secondary Impacts:

No secondary impacts on social structures and mores would result from the proposed action.

3.20 CULTURAL UNIQUENESS AND DIVERSITY:

Will the action cause a shift in some unique quality of the area?

Direct Impacts:

Reclamation of the site is currently required. The proposed action represents a minor adjustment to the site reclamation that would otherwise be conducted at the site. Cultural uniqueness and diversity would not be impacted by the proposed action.

Secondary Impacts:

No secondary impacts on cultural uniqueness and diversity would result from the proposed action.

3.21 PRIVATE PROPERTY IMPACTS:

Are we regulating the use of private property under a regulatory statute adopted pursuant to the police power of the state? (Property management, grants of financial assistance, and the exercise of the power of eminent domain are not within this category.) If not, no further analysis is required. Does the proposed regulatory action restrict the use of the regulated person's private property? If not, no further analysis is required. Does the agency have legal discretion to impose or not impose the proposed restriction or discretion as to how the restriction will be imposed? If not, no further analysis is required. If so, the agency must determine if there are alternatives that would reduce, minimize or eliminate the restriction on the use of private property, and analyze such alternatives.

The proposed project would take place on private land owned or leased by the applicant. DEQ has determined, however, that the permit conditions are reasonably necessary to ensure compliance with applicable requirements under the Metal Mine Reclamation Act and demonstrate compliance with those requirements. Therefore, DEQ's approval of Amendment 009 would not have private property taking or damaging implications. Section 82-4-337(4), MCA, authorizes the amendment of the reclamation plan. The operator has no vested right to a particular reclamation method, especially given DEQ's authority to revise reclamation plans under Section 82-4-337(4), MCA.

3.22 OTHER APPROPRIATE SOCIAL AND ECONOMIC CIRCUMSTANCES:

Due to the nature of the proposed activity, and the limited project duration, no further direct or secondary impacts would be anticipated from this project.

3.23 PUBLIC INVOLVEMENT:

Scoping for this proposed action consisted of internal and external efforts to identify substantive issues and/or concerns related to the proposed project. Internal scoping consisted of internal review of the EA document by several DEQ environmental specialists. External efforts included queries to the following websites/databases/personnel:

- Montana Fish, Wildlife, and Parks
- Montana Department of Environmental Quality
- Jefferson County
- US Geological Society – Stream Stats
- Montana Natural Heritage Program
- United States Department of Interior Bureau of Land Management

3.24 OTHER GOVERNMENTAL AGENCIES WITH JURISDICTION:

The proposed project is located on private land. While BLM land is not affected by the proposed project, BLM was consulted during the development of the EA. All applicable state and federal rules must be adhered to, which, at some level, may also include other state, federal, or tribal agency jurisdiction.

3.25 CUMULATIVE EFFECTS:

Cumulative effects are the collective effects on the human environment when considered in conjunction with other past, present, and future actions. Cumulative impact analysis under the MEPA rules requires DEQ to consider all past and present state and non-state actions. For future actions, DEQ needs only to evaluate those actions under concurrent consideration by any state agency. Concurrent actions include state agency actions through pre-impact statement studies, separate impact statement evaluation, or permit process procedures. Analysis of cumulative environmental effects includes other actions that are related to all action alternatives by location or generic type. The purpose of this cumulative effects analysis is to ensure that DEQ's decision considers the full range of effects of its action on the human environment.

The impacts of the proposed action and alternatives are primarily limited to the geographical extent of the past mining. The proposed action alternative may preserve the flow of Clancy Creek long term and, as such, provide some positive, but minor, impacts beyond the permit boundary. Therefore, the cumulative impacts study area for the post-mine soils stability, aquatic life, and wildlife resources is primarily the mine permit area, but with some consideration of the Clancy Creek drainage. The cumulative impacts study area includes all areas in which planned or expected actions could cumulatively affect the resources within the study area.

Other than mining, present and past actions affecting soils stability, aquatic life, and wildlife in the area include, vehicle traffic near Clancy Creek, hunting, fishing, and general recreation. To date, these activities have had minimal overall effects on the resources in the area. No identified future actions are under current consideration by another state or federal agency within the cumulative impacts analysis area.

The relocation of Clancy Creek (proposed action) alternative would lead to a more long-term solution to the preservation of Clancy Creek water, which, would also improve soil stability, preserve downstream aquatics, and preserve wildlife habitat. The proposed action alternative and the past and reasonably foreseeable actions would cumulatively result in a minor and general improvement in the conditions of soils stability, aquatics, and wildlife habitat.

SECTION 4. Contributors

This EA was prepared by Wayne Jepson and Dan Walsh of DEQ. Other DEQ staff, BLM staff, and FWP staff were consulted about the project.

SECTION 5. Need for Further Analysis and Significance of Potential Impacts

DEQ is required to determine the significance of the impacts to determine whether preparation of an environmental impact statement (EIS) is necessary. The criteria that DEQ is required to consider in making this determination are set forth in ARM 17.4.608 as follows:

1. The severity, duration, geographic extent, and frequency of the occurrence of the impact;
2. The probability that the impact will occur if the proposed action occurs; or conversely, reasonable assurance in keeping with the potential severity of an impact that the impact will not occur;
3. Growth-inducing or growth-inhibiting aspects of the impact, including the relationship or contribution of the impact to cumulative impacts;
4. The quantity and quality of each environmental resource or value that would be affected, including the uniqueness and fragility of those resources or values;
5. The importance to the state and to society of each environmental resource or value that would be affected;
6. Any precedent that would be set as a result of an impact of the proposed action that would commit DEQ to future actions with significant impacts or a decision in principle about such future actions; and
7. Potential conflict with local, state, or federal laws, requirements, or formal plans.

Amendment 009 for MTMI would impact the reclamation requirements for Clancy Creek and would affect the timing of removal of the shop building. Approximately 4 acres of land would be disturbed to accommodate the movement of Clancy Creek. The impacts of the Proposed Action are limited to the geographic extent of the permit boundary. Impacts on the resources evaluated range from no impact to minor impacts. Some of the impacts would be short-term and would be realized only during the construction phase to create a new Clancy Creek channel. There would be no undue or unnecessary degradation of resources.

DEQ has not identified any growth-inducing or growth-inhibiting aspects due to the reclamation plan update. DEQ’s approval of a new reclamation plan does not set any precedent and would not commit DEQ to any future action with significant impacts, nor is it a decision in principle about any future actions that DEQ may act on. Finally, the reclamation plan update does not conflict with any local, state, or federal laws, requirements, or formal plans.

Based on consideration of all the criteria set forth in ARM 17.4.608, DEQ has determined that the proposed action will not significantly affect the human environment. Therefore, an EA is the appropriate level of environmental review and preparation of an EIS is not required.

RECOMMENDATION FOR FURTHER ENVIRONMENTAL ANALYSIS:

EIS: _____
NO FURTHER ANALYSIS: _____ X
MORE DETAILED EA: _____

Attachment 1 - Response to Comments



April 6, 2020

Montana DEQ
Hard Rock Mining Bureau
PO Box 200901
Helena, MT 59620-0901

E-mail: DEQMEPA@mt.gov

Dear Mr. Walsh:

Montana Department of Fish, Wildlife & Parks (FWP) appreciates the opportunity to comment on the Draft EA for the Proposed Reclamation Plan Update for the Montana Tunnels Mine. FWP recognizes that the current EA attempts to make the best of a challenging situation.

General Comments on the Environmental Assessment:

The Clancy Creek Watershed has been at risk of capture by the pit for several years (see photo) and this situation (including the emergency action to secure the stream in a 20 inch diameter pipe) has caused substantial, wide-ranging impacts to the stream, floodplain habitat, and aquatic life which included brook trout and westslope cutthroat trout fisheries as of 2008.



Google Image (2014) looking north, with Clancy Creek immediately adjacent to the pit. In conjunction with Kady Gulch entering from the left (west), the Clancy Creek/Kady Gulch

FWP-1

The No Action Alternative of the 2008 EIS was not selected. It would be more accurate to ascribe the impacts to Clancy Creek to the “Action” Alternative of the 1986 EIS.

DEQ was concerned with stability of the mine pit wall adjacent to Clancy Creeks at least as early as 1996; however, mitigations proposed and implemented by MTMI during the L-pit mining phase were expected to prevent pit wall failures both during operations and after closure. In 1998, DEQ approved a permit revision authorizing MTMI to reduce the steepness of the pit wall adjacent to Clancy Creek to improve stability, install horizontal dewatering wells in the pit wall to lower groundwater pressure within the wall, and install a cutoff wall and pumpback wells between the pit rim and Clancy Creek to prevent alluvial groundwater associated with Clancy Creek from draining into the pit. These measures appear to have been effective for at least a decade. In addition, MTMI subsequently submitted a proposal later during 1998 presenting a design for a replacement channel for Clancy Creek which was to be constructed in the event that a future highwall failure compromised the natural creek channel. However, MTMI later withdrew the proposal. A similar proposal was submitted by MTMI in the fall of 2009, in response to the observed development of tension cracks between the pit highwall and Clancy Creek. The lined diversion channel was constructed during October 2009, but it was not utilized until the spring of 2011 when the cracks apparently widened, resulting in infiltration of the stream’s flow into the alluvium. The pit wall failure of August 2013 compromised the lined channel, requiring installation of the pipeline through which Clancy Creek remains diverted.

Long term pit wall stability was apparently overestimated in some areas, likely because

westslope cutthroat trout fishery was supported by a combined 3.8 miles of interconnected habitat in 2008.

The 2008 EIS evaluating pit expansion and relocation of Clancy Creek did not foresee that the pit wall adjacent to Clancy Creek lacked long term stability, and the evaluation of the no-action alternative (no pit expansion and no need to relocate Clancy Creek) stated that the Clancy Creek channel would not be disturbed and that there would be no direct impacts to wetlands (2.6 acres) associated with Clancy Creek, which were subject to mitigation if the pit were expanded. As of 2013, when Clancy Creek was placed in a 20-inch diameter pipe under an emergency action, we now know that the no action alternative of the 2008 EIS resulted in substantial stream channel impacts, and that associated wetland habitat is also gradually sloughing into the pit.

FWP-1

The current EA evaluates the options of maintaining status quo with Clancy Creek remaining in a 20-inch pipe, or the preferred alternative of constructing a lined diversion ditch to carry water past the pit. Although FWP supports the concept of passing Clancy Creek water beyond the pit, the EA does not provide sufficient analysis to precisely determine the location of the future pit wall in relation to the Clancy Creek floodplain. FWP conceptually agrees that an open channel west of the pit would be desirable if the following conditions could be met:

- 1) The bypass channel should be designed with attributes that promote aquatic life. A natural design typically includes pool and riffle habitat, riparian vegetation, and a natural interaction of groundwater/surface water. Sinuosity and channel dimensions are typically obtained by nearby reference reaches in Clancy Creek. FWP can provide a list of vendors qualified to design and implement natural channel construction.
- 2) A study to determine the long-term stability of the constructed channel relative to the west pit wall is needed to assess long-term project success, prior to construction of a channel. Ideally this study should determine the future pit wall location once stability is met, and how that eventual pit wall would impact Clancy Creek.

FWP-2

FWP-3

FWP agrees with the EA's conclusion that the 20-inch pipe and a simple, lined diversion channel both fail to provide suitable solutions to maintaining aquatic life, including the Westslope Cutthroat Trout (WCT) and Brook Trout fishery that existed in connected Kady Creek/Clancy Creek as of 2008. A more robust design that includes natural stream elements could be more effective at supporting aquatic life but long-term success is uncertain at this time. FWP and DEQ staff met in 2019 to discuss possible solutions to the problem posed by the failing pit, and one option that was raised was implementation of relatively low cost measures to get water past the failing pit and also providing resources to assist with WCT recovery in areas with likely long term success -- an off-site mitigation approach to fishery impacts. DE has indicated that there are procedural barriers to implementing off-site mitigation since Clancy Creek issues were not identified in past environmental documents, but FWP believes the issue of off-site mitigation may warrant future consideration for the following reasons:

FWP-4

1. The EA has not demonstrated that the lined, bypass channel or pipe alternatives can remain functional in the long-term, and neither the bypass or the 20" pipe provide beneficial aquatic habitat. If the bypass is changed to a full stream channel reconstruction then future discussions of off-site mitigation may not be appropriate.

FWP-5

geotechnical stability assumptions for some of the geologic units intercepted by the mine pit, while valid for fresh rock samples obtained and tested during core drilling, may cease to be applicable after weathering of the bedrock. Desaturation of bedrock adjacent to pit highwalls due to pit dewatering may contribute to accelerated weathering. In addition, it is likely that some faults, fractures, geologic contacts, or other zones of weakness within the bedrock beyond the pit perimeter were not identified during initial exploration drilling and geotechnical evaluation, and that these structures allowed for displacement of bedrock blocks due to gravity subsequent to excavation of the open pit. Please refer to the information provided in the 2008 EIS, Sections 3.2 and 3.3, for more detailed discussion of site geology, minerals, and geotechnical stability. The history of pit wall stability issues (1995-2007) is discussed on pages 3-16 to 3-18. The 2008 conclusion that, under the no action alternative, the L-pit highwall adjacent to Clancy Creek would not experience large-scale failures was based upon analyses conducted by professional engineers. Additional information on this question is provided in the response to FWP-3.

FWP-2

Construction of a channel on the hillside above the Clancy Creek valley would necessarily preclude some natural channel characteristics. While it may be feasible to simulate pools and riffles in some sections, and streamside vegetation (as indicated in the EA at Page 22, Section 2.2.1) would become established over time, it is not reasonable to establish a floodplain with the dimensions of the existing valley bottom. Groundwater – surface water interaction, if any, in a constructed hillside channel would necessarily be different than that which occurred in the valley bottom. In some areas, the channel excavation may intercept bedrock groundwater at least seasonally, while in other sections of the channel route, the

- 2. The ultimate, long-term location of the pit rim has not been thoroughly evaluated related to Clancy Creek except to indicate the bypass channel would be up-slope of the current stress cracks; FWP-6
- 3. The EA does not provide a contingency plan if their proposed action does not succeed in bypassing water over the long-term. FWP-7

Specific Comments:

Page 4: The L-Pit analysis (1986) never analyzed potential impacts to Clancy Creek.

FWP comment: Failure to accurately predict extent of pit slumping effects in 1986 and 2008 related to Clancy Creek should not be repeated in the future. The expected location of the future pit boundary related to Clancy Creek should be studied in detail before money is invested to move the stream. FWP-8

Page 7: Potentially Applicable Regulations Table does not include the SPA 124 permit.

FWP Comment: The SPA 124 permit is not listed in this table. Modification of the stream channel may require detailed information regarding channel design. A challenging design feature for the proposed lined ditch will likely be bedload transport and winter icing issues which may affect long term effectiveness of this alternative. The challenging dynamic of moving a channel upslope with large changes in grade at the top and bottom of the project are not discussed, especially with regard to sediment transport. FWP-9

Pages 15-28: Alternatives (no action, bypass channel, etc.)

FWP Comment: The proposed action alternative including the construction of an open, lined channel to divert water away from the pit along the 5800 ft contour, about 50 ft upslope of the nearest surface tension crack lacks a long term effectiveness evaluation which should be fully evaluated prior to construction. In addition, the EA correctly acknowledges on page 33 that, "From an aquatic life perspective, the movement of the channel to the new location would result in similar aquatic habitat to that produced by having the water in the pipe." The bypass channel should be designed with attributes that promote aquatic life. A natural design typically includes pool and riffle habitat, riparian vegetation, and a natural interaction of groundwater/surface water. Sinuosity and channel dimensions are typically obtained by nearby reference reaches in Clancy Creek. FWP can provide a list of vendors qualified to design and implement natural channel construction. FWP-10

Page 37: Locally Adopted Environmental Plans and Goals

FWP Comment: The EA does not mention the Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout and Yellowstone Cutthroat Trout in Montana. FWP and MDEQ was one of 19 signatories of this document intended to restore Westslope Cutthroat Trout. This document, signed in 2007, describes habitat protection and species restoration priorities to reduce the risk of extinction of cutthroat trout. As of 2020, genetically pure cutthroat reside in 63 miles of stream in the Upper Missouri Sub-basin including FWP-11

channel bottom is expected to remain above the water table. In these areas, water conveyed by the channel is expected to infiltrate into the bedrock. It is unknown at this time whether the entire flow of the stream could be lost to infiltration to bedrock. For this reason, DEQ proposes that the channel be lined. While the liner would be covered with gravel, alluvial material, and rip rap to simulate a natural stream bed and minimize liner deterioration over time, saturation of this alluvial cover material would not simulate natural groundwater – surface water interaction. DEQ notes that the natural channel of Clancy Creek (assuming that the channel that existed prior to 2008 was natural rather than altered) within the reach proposed for replacement did not appear to exhibit much sinuosity. DEQ expects that aquatic life will become established within the bypass channel and that the channel, while not regularly supporting fish occupancy, will allow fish passage.

DEQ notes that replacement and/or preservation of fish habitat in upper Clancy Creek is not the only reason for proposing the construction of this bypass channel. Ensuring that these flows continue to bypass the mine pit over the long term would continue to provide additional flow to downstream reaches and thus may support any aquatic habitat that may exist in lower Clancy Creek or further downstream in Prickly Pear Creek. Also, maintenance of downstream flows is of importance for water rights.

FWP-3

DEQ concurs that the Clancy Creek bypass channel should not be constructed on ground that may later be impacted by future ground movement associated with the Montana Tunnels pit. DEQ has inspected tension cracks in the Clancy Creek valley associated with the pit wall failure approximately annually for the past 10 years. Little if any additional crack propagation has been observed since 2014, and some

3.8 miles of the Clancy Creek/Kady Creek complex. The loss of the Clancy Creek population would be significant, and the potential for mitigating this likely loss should be evaluated.

FWP looks forward to continued evaluation of the Clancy Creek situation. We recognize that current staff with DEQ inherited a challenging situation and our goal is to assist finding realistic, long-term remedies for the future.

Sincerely,



Mark Deleray
Regional Supervisor

of the cracks appear to have partially closed since the landslide occurred. This is expected, as the collapse would have reduced the strain on the rock that remained in place. Furthermore, displacement of the landslide debris into the pit bottom, as well as accumulation of this material against the remaining highwall at approximately the material's angle of repose, buttresses the remaining highwall thus making future significant pit wall failures in this area less likely. Debris has accumulated against the pit wall adjacent to Clancy Creek almost up to the pit rim, thus substantially buttressing the ground that remains in place. In addition, some buttressing of the pit wall is also provided by the water in the lake.

Locating the diversion channel well away from existing mapped tension cracks should ensure stability of the new channel. This assessment is supported by the known geology in the area of the proposed diversion. Please refer to Figure 3.3-1 on Page 3-27 of the 2008 FEIS, which indicates a transition from diatreme bedrock within the existing pit wall and beneath the Clancy Creek valley to bedrock consisting of Elkhorn Volcanics a short distance up the adjacent hill slope. The nature of the diatreme bedrock is well described on Pages 3-5 through 3-7 of the 2008 FEIS, which clarifies why this material is prone to be less geotechnically stable than other rock types in the area.

Based upon the information outlined above, DEQ considers additional ground movement beyond the limits of existing tension cracks to be unlikely. Therefore, the proposed channel, once constructed, is not expected to be compromised by further subsidence. The proposed channel would be located as far from the pit rim as can reasonably be achieved, given site-specific constraints primarily related to topography. The line portraying the proposed new



April 5, 2020

Department of Environmental Quality
Hard Rock Mining Bureau
c/o Dan Walsh
PO Box 200901
Helena, MT 59620-0901

E-mail to: DEQMEPA@mt.gov

RE: Montana Tunnels EA

Thank you for the opportunity to comment on the Draft EA for the Proposed Amendment 009 to Hard Rock Mining Operating Permit No. 00113 for the Montana Tunnels Mine. These comments are submitted on behalf of Earthworks, Montana Trout Unlimited, Trout Unlimited and the Montana Environmental Information Center.

We appreciate the Department's forward progress towards a more accurate financial assurance calculation for the Montana Tunnels Mine. The EA is an important step towards identifying the potential costs associated with reclamation of Clancy Creek and other issues at the mine.

Unfortunately, conditions at the mine site have deteriorated to the point where there are no good outcomes for Clancy Creek, a tributary to Prickly Pear Creek and a Westslope Cutthroat Trout stream. After reviewing the field inspection reports from 2009 to the present, it's hard to understand why more immediate steps weren't taken to address the stability and financial liability issues at this mine site. It's disappointing to see Montana faced with yet another defunct mine, with a substantial financial liability and a trout stream in a pipe.

We also reiterate our request to the Department to issue Notices of Violation and assess penalties for the company's failure to follow its operating permit, resulting in the harm to Clancy Creek and other resources. The mine operator should not be allowed to cause lasting damage to a healthy trout stream, without any penalty. Regardless of whether the Department collects on that penalty, it is important to send a message that these types of actions are unacceptable. Perhaps

NGO-1

NGO-2

stream location was updated in the Final EA – please see Figure 2-1 in the Final EA.

In addition, bedrock along the channel route would be examined during site reclamation to confirm geologic and geotechnical conditions prior to any construction. As bedrock along this route is currently covered with soil and vegetation, the proposed approach to channel construction would involve stripping soil from the planned channel route at the beginning of mine reclamation, then leaving the excavation open for collection of geotechnical data until near the completion of site reclamation. The additional geotechnical monitoring would be conducted to confirm expected conditions as analyzed in the EA. Data collected during this period would be used to select the final channel design /alignment and/or to determine if the stream relocation is likely to result in reclamation success.

Locating the channel further up the hillside than what is proposed (as shown in Figure 2-1 of the Final EA) would require constructing the point of diversion much farther up the natural channel of upper Clancy Creek, thus eliminating much more of the natural habitat present in that section of the channel. Furthermore, steep terrain located adjacent to this upstream reach of Clancy Creek would require much greater excavation of bedrock in order for the point of diversion to be constructed further upstream. This would likely require the creation of approximately 400 vertical feet of highwall adjacent to the upper stream channel. This upper reach of stream and the adjacent hillside would remain undisturbed under the proposed action.

FWP-4

DEQ has not identified regulatory authority within the MMRA to support off-site mitigation. DEQ's authority to forfeit bonds is set forth in Section 82-4-341(4),

the Department should consider adding this to the list of obligations for any potential new operator.

Although we recognize and support the need for an updated reclamation plan and associated financial assurance calculation, we have concerns with the adequacy of the EA to achieve an appropriate plan and accurate calculation.

NGO-3

We recommend that a more detailed EA be conducted with current data and analysis. Please see our more detailed comments below.

NGO-4

Sincerely,



Bonnie Gestring
Northwest Program Director
Earthworks
Missoula, MT 59801
bgestring@earthworksaction.org

David Brooks
Executive Director
Montana Trout Unlimited
Missoula, MT 59802
david@montanatu.org

Colin Cooney
Montana Field Coordinator
Trout Unlimited
Bozeman, MT 59715
Colin.cooney@tu.org

Derf Johnson
Clean Water Program Dir. & Staff Attorney
Montana Environmental Info. Center
Helena MT 59624
djohnson@meic.org

MCA. Subsection 6 indicates DEQ "may, with the staff, equipment, and material under its control or by contract with others, take any necessary actions for required reclamation of the disturbed lands according to the existing reclamation plan . . ." Furthermore, "Disturbed lands" is defined in 82-4-303(9), MCA to mean land or surface water that has been disturbed beginning at the date of the issuance of the permit, and gives examples of disturbances that result from the operation. As a result, disturbances that can be reclaimed with a forfeited bond are limited to those disturbances caused by activities authorized and conducted under the permit.

Furthermore, the bond held for MTMI is a joint bond held between DEQ and BLM. According to federal law (§ 3809.597(b)), BLM will use the funds collected from financial guarantee forfeiture to implement the reclamation plan, or portion thereof, on the area or portion of the area to which financial guarantee coverage applies.

FWP-5

As noted on Page 22, Section 2.2.1 of the EA, once the bypass channel is excavated and lined, gravel and rip rap would be placed over the liner to protect the liner and to minimize erosion/ scouring within the channel. In addition to these materials, locally derived alluvial material and soil would likely also be used in order to construct the channel and floodplain on top of the liner, similar to the design proposed for the stream channel re-location associated with the M-Pit Expansion described in the 2008 FEIS, Alternative 3. The EA has been updated. DEQ anticipates that within this larger constructed channel, a smaller channel of sufficient dimensions to convey the average seasonal bankfull flow of a few cubic feet per second (cfs) would be constructed, while the larger channel would function as a floodplain during higher flow conditions. The proposed channel, as described, would provide an

1. Statutory Authority

The EA identifies a number of Montana Statutes by which DEQ has the authority to amend the permit, including 82-4-337(4) (a)(b) or (c). DEQ cites 82-4-337(4)(c) as the reason for the updated reclamation plan and draft EA. However, it's clear that 82-4-337 (4)(a) and (b) also apply in this circumstance. The Department should identify all of the statutory reasons for which the amended plan is necessary, or explain why these statutes do not apply. The instability issues, pit wall failure, and stream displacement occurred as a result of the mine owner's failure to comply with the law and its operating permit, as demonstrated by a series of field investigations that document the deterioration of site conditions. These circumstances are integral to understanding the conditions at the site, and making an informed decision about the available alternatives. NGO-5

2. Adequate analysis to understand imminent risk.

We are concerned about DEQ's determination that it has not identified an imminent danger to public safety, health or the environment from the current site conditions at MTMI. A visual assessment by mining engineer, Jim Kuipers, raised a number of concerns about public safety and environmental impacts¹:

"The evidence of various forms of mass failure, including erosion, unravelling and block failures, and extensive surface cracking showing the failures are likely to extend significantly further beyond the current pit boundary, suggests that current conditions are conducive to a significant failure of the pit walls potentially affecting the pit lake. This would certainly be a risk to public safety were access not restricted. However, the current financial assurance calculations do not identify tasks or include funds for either maintenance of fencing and signs, or any form of site security. Even if access is restricted, the pit and pit lake will be an attractive nuisance for trespassers. The risk relative to public safety will never be eliminated."

NGO-6

"A significant mass failure of the pit walls could have several potential impacts including displacement of the pit lake water and/or impacts to pit lake water quality. Displacement of pit lake water such as that which has occurred on several occasions in the Berkeley Pit is likely to occur at Montana Tunnels which could endanger workers and/or equipment. Displacement of specific sections of the pit wall containing higher mineralized contents could impact pit lake geochemistry."

NGO-7

increase of aquatic habitat over what is currently at the site. Although this bypass channel is not expected to replicate the aquatic habitat that was lost within the ½ mile section of channel that is currently replaced by the 20" diameter pipeline, it should allow for fish passage and thus connect the remaining habitat areas in Upper Clancy Creek and Kady Gulch. If so, then quality habitat in this complex may be reduced from the 3.8 miles of stream length that FWP notes as having existed through 2008 down to approximately 3.3 miles, but the two segments of habitat would at least be reconnected.

As indicated in Section 2.2.1, the larger channel would have a capacity of 350 cfs. If and when peak flows exceed this flow, the additional flow would not enter the channel. Rather, the diversion intake structure would be designed such that stage levels above the depth associated with the design flow would pass over an elevated spillway into the original Clancy Creek channel. This measure should prevent long term damage to the channel that would be expected if flows were allowed to exceed design conditions. If no further pit wall failures occur adjacent to the Clancy Creek valley, then water passing over the spillway during rare extreme runoff events would continue down the natural channel, but some or all of the flow would likely infiltrate into the alluvium and enter the pit via subsurface flow. If further sloughing occurs, then these flood flows would likely enter the pit via surficial flow.

Please see DEQ's response to FWP-4 regarding the comments on off-site mitigation.

FWP-6

As noted in previous responses (above), further geotechnical data collection is planned during the period of mine reclamation in order to confirm that the proposed channel route is not likely to be

“The impacts that have occurred to Clancy Creek as a result of pit wall unravelling have already been significant in terms of requiring removal of the creek from its natural channel and use of a pipe to route the flow around the subsidence area that would otherwise have resulted in the loss of creek water to the open pit. Given present conditions, it is questionable whether the pipe will not be displaced by future subsidence that is occurring into the pit that extends well beyond the current fenced area. In that event the pipe will no longer function in its present location, and it is probable that a loss of flow from Clancy Creek will be permanent unless further and potentially costly additional mitigation is undertaken.”

NGO-8

The EA should provide analysis to support its assertion that the site does not present an imminent risk, including a risk to those who would conduct the proposed reclamation of the mine structure and re-routing of Clancy Creek.

NGO-9

On July 2017, we sent a letter to DEQ requesting that the Department conduct an open pit stability evaluation to determine the ultimate extent to which the pit walls are likely to unravel or otherwise fail and lead to further subsidence of natural ground features outside of the current active pit area.² Additionally, we requested a Failure Modes and Effects Analysis (FMEA) be undertaken to better define the potential for catastrophic failure as well as other potential environmental and public as well as worker safety impacts. We reiterate that request now, and urge DEQ to incorporate that analysis into the EA. Without that analysis it is impossible to identify an appropriate reclamation plan for Clancy Creek or determine the public safety and environmental risks associated with such reclamation.

NGO-10

The photo (below) illustrates the proximity of the pitwall fractures to the shop building and a crack that extends towards what appears to be a waste rock pile. We understand that the EA is focused on Clancy Creek and the shop building, but these photos illustrate the potential for much greater impacts to mine facilities, including what appears to be a waste rock pile. How is the Department addressing the reclamation costs associated with mitigating these impacts, and the reasonably foreseeable impacts of a pit wall failure on these facilities?

NGO-11

compromised by further failures of the pit wall and to ensure that the likelihood of reclamation success for channel movement would be high. As noted in Response FWP-3 above, past pit wall failures have resulted in buttressing of the remaining pit wall, making further significant failures less likely. DEQ acknowledges that there are limitations to the available options. Siting the channel further up the hillside necessitates that the diversion intake be moved substantially further upstream, which would result in elimination of additional natural stream habitat in upper Clancy Creek. Also, steeper hillslopes further upstream may preclude hillside channel construction.

FWP-7

82-4-338, MCA, requires, in part, that “Bond calculations, including calculations for the initial bond or for subsequent bond reviews and adjustments, may not include amounts for any occurrence or contingency that is not a reasonably foreseeable result of any activity conducted by the applicant.” ARM 17.24.140 requires, in part, that “The department shall require submission of bond in the amount of the estimated cost to the department if it had to perform the reclamation, contingency procedures and associated monitoring activities required of an operator subject to bonding requirements under the Act, the rules adopted thereunder, and the permit, license or exclusion.” Contingency plans are necessarily dependent upon the potential nature of a failure over the long term. DEQ intends to calculate the bond such that a practical contingency of moving the stream but keeping it in a pipeline would be possible under the bond calculation. Such a scenario would likely result in a lower bond calculation than the proposed action presented in the EA; therefore, the bond calculation would likely not be increased for this contingency scenario.

² Earthworks and Montana Trout Unlimited, Letter to Montana DEQ Director, Tom Livers, July 26, 2017.



3. Adequacy of data, analysis and information.

DEQ tiers to the 2008 FEIS in the EA, but the 2008 FEIS does not provide adequate data on current conditions. Instability issues became apparent in the 2009 field investigations, and have significantly worsened since then. The EA proposes to divert Clancy Creek approximately 50 - 150 feet from the nearest mapped surface tension crack. However, the EA does not provide a current detailed map of the existing surface tension cracks, and instead refers to a 1998 Contingency Plan for Clancy Creek Diversion created by Knight Piesold that predates these impacts.

The EA must provide current data and a detailed map of the existing surface tension cracks. Without that information it is impossible to identify the appropriate location for the Creek diversion or develop an appropriate reclamation design. This diagram (below) from 2013 identifies some of the major cracks that existed at the time that the pipe was being planned, but current data is needed.

NGO-12

NGO-13

Before completing construction of the proposed diversion, geotechnical data would be collected along the channel route to confirm stability assumptions included in this EA and to support final designs. If the pre-construction assessment indicates that reclamation success would not be likely, then the channel route would still likely provide a more stable route for relocation of the diversion pipeline over the long term. The bond calculation would cover this scenario or the scenario presented in the proposed action.

FWP-8

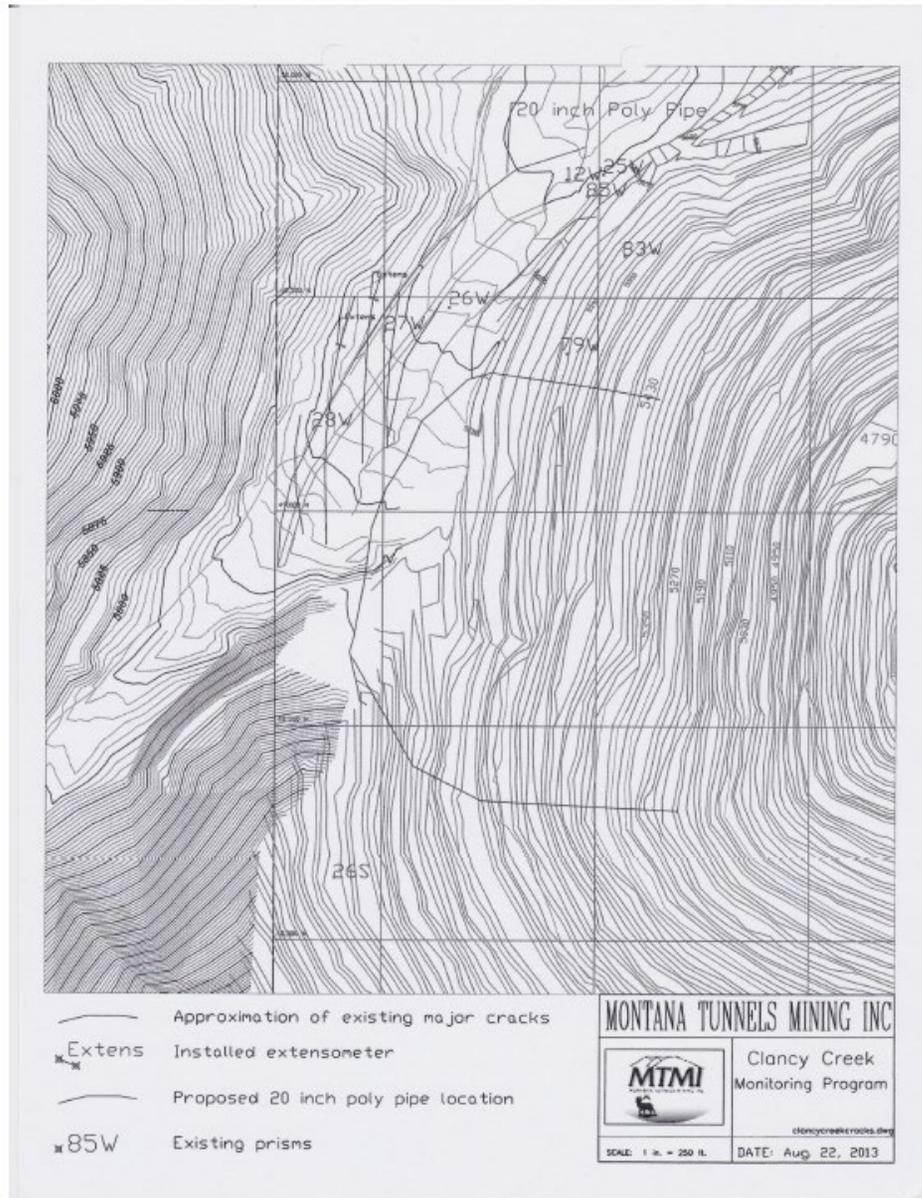
See response to FWP-3. These issues would be addressed during final engineering design prior to construction of the channel. The purpose and need is to have Clancy Creek flowing in a more natural state than in a pipeline to increase the aquatic habitat. DEQ can require bonding to ensure adequate engineering review during final design, but cannot require or conduct any channel relocation without first amending the mine's reclamation plan.

FWP-9

Thank you for your comment. DEQ has added SPA-124 to the table in the Final EA. All the features of a natural stream may not be able to be replicated in the new location. Please also see DEQ's response to FWP-2.

FWP-10

Thank you for your comment. Should DEQ end up in the position of forfeiting bond and scheduling reclamation activities, DEQ will work with FWP during that process. The actual on-site conditions may present a scenario that precludes pool and riffle construction for the ½ mile of Clancy Creek affected by this action.



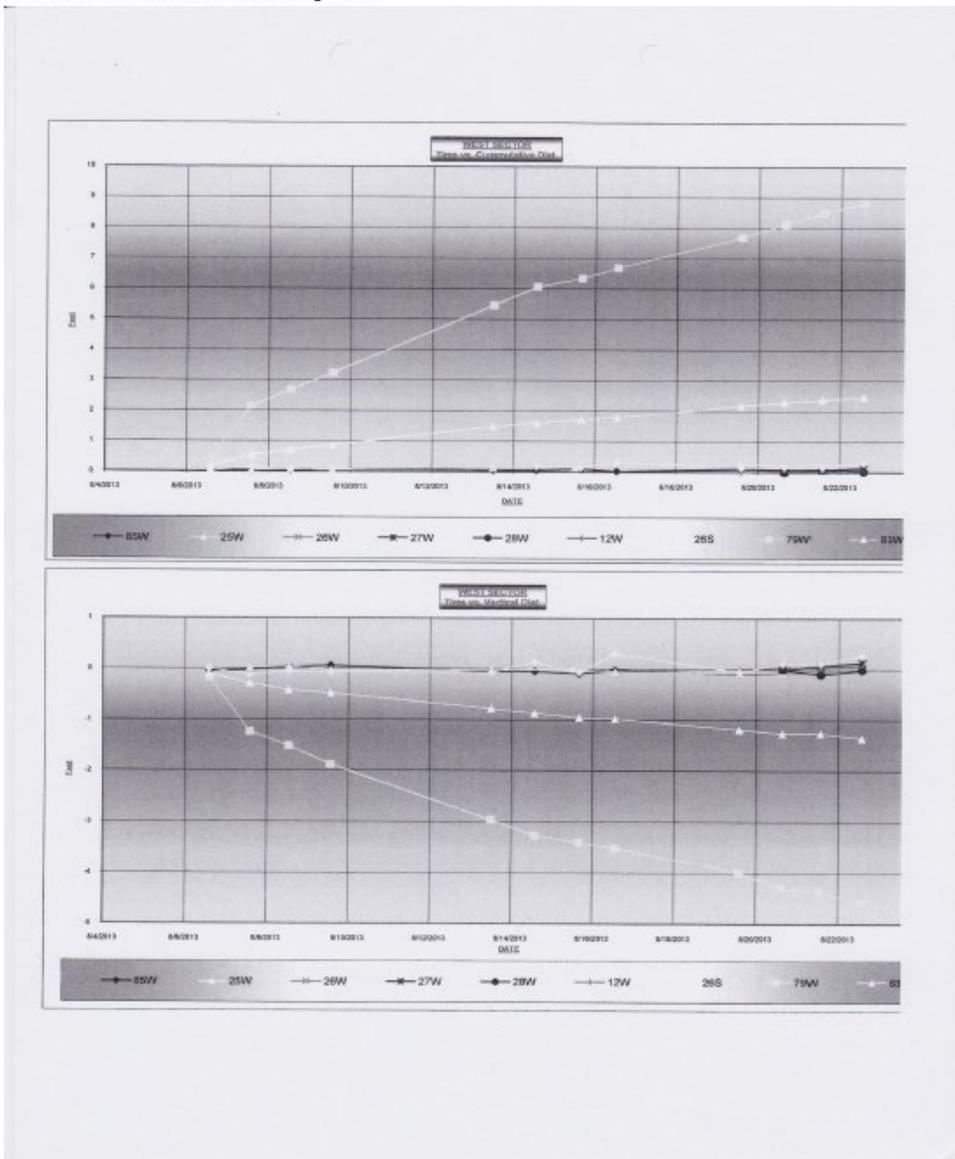
FWP-11

One goal of this project is to avoid the loss of this WCT habitat in the Clancy Creek / Kady Gulch complex. The expected outcome would be the re-establishment of fish passage between the two areas, but with the continued loss of quality habitat in the intervening 0.5 mile (as has been the case for the past 9 years approximately).

NGO-1

Additional bond was posted by MTMI as required up through 2007. The bond was considered to be adequate to fulfill the reclamation plan at that time. In 2008 a mine expansion was approved, pending the submittal of additional bond to cover the expansion plan. As part of that expansion plan, stability issues associated with the existing pit and Clancy Creek would have been addressed. However, due at least in part to the "Great Recession" of 2008, MTMI did not have capital and could not secure additional funding to either post the additional required bond or fund the up-front costs associated with initiating the mine expansion. Since that time, MTMI has continued to seek investors to fund the re-opening of the mine but has not been successful in securing funding. Meanwhile, calculated costs of reclamation for the previously approved closure plan have increased, and additional potential costs associated with remediation of pit wall stability issues that have developed since the cessation of mining in 2008 have been recognized. This permit amendment, initiated by the DEQ to address stability issues that were not identified at the time the previous mine plan (L-Pit) was approved and bonded, is intended to update the existing reclamation plan to address these issues and to enable DEQ to request additional bond to cover reclamation expenses associated with remediation of impacts related to pit wall subsidence.

MTMI also appeared to collect data on the movement/expansion of the tension cracks over time. This information, along with a more current assessment should be included in the EA to evaluate risk and to inform reclamation plans. NGO-14



NGO-2

DEQ continues to enforce the conditions of the permit. DEQ has issued three violation letters to MTMI since 2017 (Violation Letter #VLHRM20171012-00005, Violation Letter #VLHRM20180716-00019, and Violation Letter #VLHRM20190516-00029). DEQ has also sought and collected penalty against MTMI. On September 4, 2019, DEQ sent MTMI an executed Administrative Order on Consent, including a penalty of \$36,048. DEQ has since received the penalty payment.

NGO-3

On-site options for achieving the goal of preserving the flow of Clancy Creek at this site are limited due to the pit location and the limited space on the hill west of the pit. DEQ has drafted this EA on the conceptual need to move Clancy Creek as far away from the pit wall as practically possible. Consequently, DEQ also used the practical assumption that the hill to the west is a limiting factor (to some extent). Final design work on channel relocation will be integral before initiating on-site construction. The design work is not necessary for completing this EA. DEQ has used available data for this EA, but does not have either access to the site or available funding at this time to conduct additional geotechnical data collection. Data collection to support final engineering designs would be completed before investing in on-site construction.

NGO-4

This EA has been prepared based on all currently available data. DEQ has concluded that movement of the stream needs to be part of an approved reclamation plan. This amendment of the reclamation plan is intended to formalize the reclamation requirements for Clancy Creek.

As discussed in response to FWP-3, additional ground movement beyond the limits of existing tension cracks

4. Adequacy of design.

The EA should provide more detailed engineering designs to provide an adequate basis for the reclamation bond estimate. The EA states that the overall goal is to create a stable stream channel that would convey the design flow, yet the EA does not provide sufficient information or analysis to determine where it would need to be located, or the level of excavation into the hillside that would be necessary to achieve this goal. Furthermore, the proposed Clancy Creek diversion would be designed to accommodate the flow of a 1 in 20-year, 24-hour storm event. This design feature is inadequate, particularly given the increased rate and frequency of large storm events as a result of climate change. Damage to the lined structure, and further damage to Clancy Creek, is more likely to occur if it isn't designed to accommodate major storm events. Similarly, the EA does not include any analysis of the potential impacts, such as cracks and leaks, to the diversion liner as a result of the shifting of the underlying and nearby surface due to expansion or contraction of adjacent tension cracks, short of pit wall unravelling or collapse. Even if the pit wall remains relatively stable in perpetuity (which we do not think will be the case), the existing fractures in the area of the proposed diversion will likely experience much greater seasonal movement and, hence, strain on the liner and diversion canal than under circumstances void of the existing fractures.

NGO-15

NGO-16

5. Perpetual management/mitigation.

The EA fails to provide detailed analysis of how the stream diversion will be maintained in perpetuity, particularly in light of the ongoing pit wall failure and the propagation of stress fractures. MMRA 82-4-36(9) requires that "with regards to disturbed land other than open pits and rock faces, the reclamation plan must provide for the reclamation of all disturbed land to comparable utility and stability as that of adjacent areas." Similarly, MMRA 82-4-36 (10) requires that the reclamation plan provide sufficient measures to ensure public safety and to prevent the pollution of air or water *and the degradation of adjacent lands*. As such, the EA must include a long-term plan that identifies the appropriate maintenance activities and staff required to maintain the diversion channel in perpetuity, including the potential for repeated reconstruction.

NGO-17

The EA claims that any storm or runoff-induced overflow of the Clancy Creek diversion canal would simply flow into the pit, but it provides no evaluation of the risks that such overflow could result in the full avulsion of Clancy Creek into the pit. The EA should address this risk and the necessary long-term maintenance to avoid it.

NGO-18

Unfortunately, conditions at the mine site have deteriorated to the point that there are no good outcomes for Clancy Creek. Although the purpose of the proposed reclamation plan is to improve the likelihood that Clancy Creek does not flow directly into the pit, important habitat

NGO-19

is unlikely. Before construction of the relocated stream channel is initiated, further geotechnical data will be collected during the period of mine reclamation to confirm that the proposed channel route is not likely to be compromised by further failures of the pit wall, thus ensuring that the channel relocation would be successful.

NGO-5

DEQ considers 82-4-337(4)(c) MCA to be the most appropriate statutory provision to support this action, as it is triggered by field investigations documenting unpredicted, unpermitted impacts associated with mine development. As this comment also references those same field investigations, there appears to be agreement that 82-4-337(4)(c) MCA is appropriate. 82-4-337(4)(a) MCA is arguably applicable. However, DEQ has decided to base its decision on the strongest regulatory position. 82-4-337(4)(b) is not clearly applicable as it is conditioned upon the previously approved reclamation plan being impossible to implement. This is not the case here, as the previously approved reclamation plan for MTMI's L-Pit does not include a permanent diversion for Clancy Creek. As such, that reclamation plan could be implemented, but would not address the problem.

NGO-6

Subsidence adjacent to the Montana Tunnels pit walls is well documented. There have not been any further significant failures of pit walls since 2013, which suggests that conditions are stabilizing. Past pit wall failures have resulted in buttressing of the remaining pit wall, making further significant failures less likely.

DEQ has inspected tension cracks in the Clancy Creek valley associated with the pit wall failure approximately annually for the past 10 years. Little if any additional crack propagation has been observed since 2014, and some of the cracks appear to have

and stream function have been lost as a result of the “interim” measure of placing the stream in a pipe, and will also be lost as a result of the proposed reclamation plan to place the stream in a constructed, lined channel. The EA should describe the direct and indirect effects to stream function and habitat, and identify mitigation measures to address these impacts. Those direct and indirect effects to stream function and habitat should be measured against the baseline of the pre-mining conditions of Clancy Creek not, as the current EA states by comparison to the “no action alternative” of leaving the creek in a pipe (EA 2.4.1 and Section 3: “The analysis of the Proposed Action Alternative has been compared against the “No Action Alternative” to identify the potential impacts from the alternative” Also see, 3.2 pg. 33 in EA). The MMRA requires the reclamation plan to provide for reclamation to comparable stability *and utility* as that of adjacent areas (emphasis added). That means accounting for stream function and fish habitat comparable to other healthy native West Slope Cutthroat streams.

NGO-20

NGO-21

The EA should also include potential off-site mitigation measures to address the loss of Westslope Cutthroat habitat and stream function as a result of the mine’s impacts. Furthermore, it must consider the likelihood that the pitwall will ultimately fail, resulting in the permanent loss of Clancy Creek, and evaluate a range of possible mitigation measures to address those permanent losses. It is reasonably foreseeable that the pit wall will fail, and ultimately entrain Clancy Creek. The EA must address this issue, and develop an appropriate long-term reclamation plan and associated financial assurance. We strongly recommend that estimating the effects of the proposed alternative, planning perpetual management, and identifying off-site mitigation should happen in close consultation with MT Fish, Wildlife, & Parks.

NGO-22

partially closed since the landslide occurred. This is expected, as the collapse would have reduced the strain on the rock that remained in place. Furthermore, displacement of the landslide debris into the pit bottom, as well as accumulation of this material against the remaining highwall at approximately the material’s angle of repose, buttresses the remaining highwall thus making future significant pit wall failures in this area less likely. Debris has accumulated against the pit wall adjacent to Clancy Creek almost up to the pit rim, thus substantially buttressing the ground that remains in place. In addition, some buttressing of the pit wall will also be provided from the water in the lake.

With regard to public safety, fencing, signs, and site security, please refer to Section 2.1.5 and 3.11 of this EA. Measures such as described in this comment are included in current bonding calculations.

NGO-7

Comparison of the Montana Tunnels pit and lake with the Berkeley Pit and lake may not be appropriate due to the relative scales of size. The Berkeley pit lake has approximate dimensions of 1000’ depth and 6500’ x 4000’ width. The lake surface is < 200’ from the pit rim. In comparison, the Montana Tunnels pit lake has dimensions of approximately 1000’ x 1600’ wide. The lake surface is approximately 600’ above the maximum mining depth; however, measurements taken during 2018 suggest that the actual lake depth may only be in the 200’ range due to filling of the deepest portions of the pit with landslide debris. The lake surface is currently approximately 600’ below the pit rim, and as such there is essentially no potential for future pit wall failures to displace water out of the pit. Dangers posed by past landslides in the Berkeley Pit were primarily associated with large waves propagated across the great width of the lake and the use of manned watercraft on the lake surface for

monitoring purposes. There is no access to the Montana Tunnels pit lake surface, while the smaller dimensions of the pit and the lake volume preclude comparable wave action. With regard to the potential for mineralized material from the pit walls influencing pit lake geochemistry. This was investigated in the 2008 EIS, and it was concluded that the greatest potential for water quality impacts was associated with the western wall beneath Clancy Creek because the mineralized diatreme rocks which represent the ore zone developed by the open pit dip toward the west, and thus were primarily exposed within the western pit wall, which has since been buried beneath landslide debris from the western wall failure. A mitigation considered in the EIS was to place non-mineralized waste rock against this pit wall to limit interaction between mineralized wall rock and the pit lake. The 2013 pit wall failure has essentially accomplished this mitigation. Sampling of the pit lake was performed by DEQ using an unmanned aerial vehicle (drone) during October 2018. Samples were obtained from the lake surface and from depths of 92 and 184 feet. Analyses of the pit lake water samples documented that the lake chemistry was in compliance with all human health and aquatic life criteria.

NGO-8

It is possible that future subsidence occurring between the existing pit rim and the identified tension cracks that are most distant from the pit rim could compromise the existing pipeline diversion. This is, in part, the rationale for DEQ's decision to require a modification to the existing mine reclamation plan to require that a diversion channel be constructed further away from the current pipe location and the pit (in general).

NGO-9

The question of imminent risk is addressed in previous responses. Performance of reclamation, whether conducted by MTMI or a DEQ hired contractor, would be required to comply with safety requirements enforced by the Mine Safety and Health Administration (MSHA). Final engineering designs, which are normally completed prior to initiation of reclamation / construction, would be required to address any safety concerns that exist at that time. Safety measures instituted during reclamation would likely include geotechnical monitoring such as use of laser surveying to rapidly detect any movement of pit walls adjacent to areas of construction work. This would provide warnings of potential ground movement well in advance of a failure, allowing time to evacuate any at-risk areas.

NGO-10

These comments / requests are addressed in previous responses to comments (above). DEQ does not consider a formal FMEA analysis to be necessary, and notes that this amendment, if approved, would require that geotechnical data collection be performed during the project reclamation phase to ensure that risks are minimized during construction.

NGO-11

DEQ assumes that this comment refers to a fracture that extends to the north from the shop building and terminates near the edge of the "cap rock stockpile" which is to be used to cover the tailings impoundment during reclamation, prior to placement of a final soil cover. Given the distance of this stockpiled material from the pit, and the lack of observed ground movement in this area during the past several years, DEQ does not predict that future significant ground displacement in this area which might impact the ability to move this material, or to remove the shop building, during the reclamation phase is likely to

occur. However, as noted above, geotechnical monitoring would be required during reclamation to ensure worker safety.

NGO-12

As noted in previous responses and in the 2008 FEIS, pit wall stability concerns have been documented at least since 1995. These issues were reviewed in that EIS, and associated impacts continued to evolve after completion of the analysis. Ground movements adjacent to the western (Clancy Creek) and eastern (Shop Building area) pit wall both peaked during approximately the 2012-2013 period, and little additional movement has been observed since that time. For clarification, the EA only referred to the 1998 Clancy Creek diversion plan for purposes of conceptual diversion channel design. Although the currently proposed diversion would be located higher up the hillside and further from the mine pit perimeter, channel design concepts would be similar. For a map showing the current extent of tension cracks in this area, please refer to the map which was included as part of this comment. No additional tension cracks have developed on the hillside above Clancy Creek since that map was prepared in August 2013.

NGO-13

MTMI has not maintained the tensiometers associated with tension cracks near Clancy Creek since the pit wall failure nor prepared updated maps; however, DEQ has routinely inspected the area since that time. No additional tension crack development has been observed since approximately 2013, so the map provided with this comment still represents the current condition. Geotechnical monitoring would be conducted prior to and during on-site reclamation / construction to ensure worker safety and channel stability. Please refer to the previous responses.

NGO-14

MTMI conducted geotechnical monitoring of tension cracks near Clancy Creek between approximately 2009 and 2013. The graphs included with this comment document progressively widening tension cracks, leading to the pit wall failure of August 2013. As previously noted, little additional movement has occurred since 2013, but monitoring since that time has been limited to visual observations, so updated graphs are not available. Geotechnical monitoring will be conducted during reclamation activities both to ensure worker safety and to ensure that final designs for the bypass channel will consider long-term ground stability along the channel route. Also, refer to Response FWP-3.

NGO-15

The bond calculation will make conservative assumptions regarding the amount of hillside excavation required as well as costs associated with geotechnical monitoring and final engineering design work. In addition, DEQ intends to add costs into the bond determination for contingency of reasonably foreseeable activities, as allowed by 82-4-338(6), MCA.

NGO-16

As described in the EA, the channel is proposed to be designed to convey flows up to 350 cfs. Currently that design flow is associated with a storm event having a 1 in 20-year return frequency. Assuming that climate change increases the intensity of precipitation events in this region, that return frequency may be increased to something like 1 in 15 years. However, that is irrelevant to the functioning of the diversion channel. If and when peak flows exceed the design flow, the additional flow would not enter the channel. Rather, the diversion intake structure would be designed such that stage levels above the depth associated with the

design flow would pass over an elevated spillway into the original Clancy Creek channel. This measure should prevent long term damage to the channel that would be expected if flows were allowed to exceed design conditions. If no further significant pit wall failures occur adjacent to the Clancy Creek valley, then water passing over the spillway during rare extreme runoff events would continue down the natural channel, but some or all of the flow would likely infiltrate into the alluvium and enter the pit via subsurface flow. If further sloughing occurs, then these flood flows would likely enter the pit via surficial flow.

NGO-17

Please refer to the responses above. Every effort would be made during final channel design and construction to ensure that the channel design would provide long-term stability and to assess the relative likelihood of reclamation success. DEQ would consider bonding for relocation of the existing diversion pipeline to the proposed diversion channel location, in the event that the channel ceases to convey stream flow at some future date or if unanticipated geotechnical stability concerns are identified during excavation of the channel route during reclamation that lead to a determination that the channel is unlikely to remain stable.

NGO-18

See previous comment above addressing the channel's design flow, and management of flows in excess of that volume. Proper engineering design and construction of the diversion intake structure should preclude failure of the intake structure and minimize or eliminate the need for maintenance. The structure would include a spillway that causes all flow in excess of the channel's capacity to be routed into the natural channel, from which it may discharge to the pit. When

flow associated with an extreme event subsides, overflow into the natural channel would cease.

The intake structure would be approximately ¼ mile upstream of the section of Clancy Creek that has been impacted by ground instability, so the structure would not be at risk from subsidence. The bond would include costs to retain an engineering firm to prepare all final reclamation designs and contractor oversight.

NGO-19

Please refer to DEQ's response to FWP-5. The proposed channel would include a liner placed over bedrock to prevent loss of flow, but the liner would be covered with materials suitable for establishment of aquatic habitat, including local alluvial material, erosion control measures, and vegetation. The area affected by this proposed action is roughly ½ mile of Clancy Creek Channel. Per FWP, fish habitat in this area consists of 3.8 miles of channel, including this ½ mile section that is currently diverted into a pipeline. Segments of Clancy Creek above and below the diversion would remain in their current condition and would continue to provide habitat. The proposed channel would provide for fish passage between these two areas, and would also provide some habitat, although that habitat may not be of the same quality as natural stream segments.

NGO-20

Mining has occurred in the Clancy Creek watershed for approximately 150 years, as evidenced by the numerous historic waste rock dumps located adjacent to both the upper creek channel (above the mine pit area) and lower sections of the channel. Information about the channel prior to this period is very limited. Further downstream, the creek flows through extensive historic placer mining deposits which provide limited aquatic habitat and no connectivity for fish passage between the upper Clancy Creek / Kady

Gulch complex that supports West Slope Cutthroat trout populations and downstream areas such as Prickly Pear Creek. Please also see DEQ's response to comment FWP-2.

The "no-action" alternative is the alternative that results if the proposed action is not approved. In this case, if the proposed action is not approved, the result is the status quo of Clancy Creek water conveyed beyond the pit via a plastic pipe, not a pre-mining condition.

NGO-21

MTMI is not the only source impacting the health of Clancy Creek. The drainage has endured extensive mining for the past 150 years. 82-4-336(9)(a), MCA reads "With regard to disturbed land other than open pits and rock faces, the reclamation plan must provide for the reclamation of all disturbed land to comparable utility and stability as that of adjacent areas." The comment appears to inappropriately stretch the statutory language to apply to other native Westslope Cutthroat streams.

NGO-22

See response to FWP-4 regarding "off-site" mitigation and FWP-3 regarding pitwall stability. DEQ has consulted with FWP on this EA and intends to continue consulting with FWP concerning these matters.