



Record of Decision

East Boulder Mine

Amendment 004 to Operating Permit No. 00149

Sweet Grass County, Montana

The Final Environmental Impact Statement (EIS) for the East Boulder Mine proposed Amendment 004 to Operating Permit No. 00149 can be obtained by contacting Montana Department of Environmental Quality (DEQ) Montana Environmental Policy Act (MEPA) Coordinator Craig Jones at 406-444-0514 or from DEQ's website (<http://deq.mt.gov/public/eis>). Additional printed or electronic copies of this Record of Decision (ROD) and the Final EIS are available upon request. The supporting project record is available for review at the DEQ, Hard Rock Mining Bureau, located at 1520 East Sixth Avenue, Helena, MT 59620-0901. For additional information concerning these decisions, contact Craig Jones, Director's Office, DEQ, 1520 East Sixth Avenue, PO Box 200901, Helena, MT, 406-444-0514.

Signed by:

Sonja Nowakowski

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Sonja Nowakowski, Director September 3, 2024

State of Montana

Department of Environmental Quality

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ACRONYMS AND ABBREVIATIONS

agencies	DEQ and Forest Service-CGNF
APE	area of potential effects
ARM	Administrative Rules of Montana
CAA	Clean Air Act
CFR	Code of Federal Regulations
CGNF	Custer Gallatin National Forest
CORP	Consolidated Operations and Reclamation Plan
CWA	Clean Water Act
DEQ	Montana Department of Environmental Quality
EBMW	East Boulder Mine monitoring well
EIS	Environmental Impact Statement
EOR	Engineer of Record
EPA	U.S. Environmental Protection Agency
ERO	ERO Resources Corporation
FTSF	Filtered Tailings Storage Facility
HDPE	high-density polyethylene
HRMIB	Hard Rock Mining Impact Board
IRP	Independent Review Panel
LAD	land application disposal
MAAQs	Montana Ambient Air Quality Standards
MAQP	Montana Air Quality Permit
MCA	Montana Code Annotated
MEPA	Montana Environmental Policy Act
MG	million gallons
MMRA	Montana Metal Mine Reclamation Act
MPDES	Montana Pollutant Discharge Elimination System
MT	Montana
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFS	National Forest System
NWP	Nationwide Permit
POO	Plan of Operations
ROD	Record of Decision
SMC	Stillwater Mining Company, a subsidiary of Sibanye-Stillwater
TOMS	Tailings, Operations, Maintenance and Surveillance (Manual)
TSF	Tailings Storage Facility
UCP	underdrain collection pond
UCS	underdrain collection system
U.S.	United States
USACE	U.S. Army Corps of Engineers
WRSA	Waste Rock Storage Area
WTP	water treatment plant

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Record of Decision

INTRODUCTION

This document is the Montana Department of Environmental Quality's (DEQ) Record of Decision (ROD) for the East Boulder Mine Amendment 004 (Project). This ROD documents DEQ's Selected Alternative from the East Boulder Mine Final Environmental Impact Statement (Final EIS) along with the decision rationale. It contains a summary comparison of the alternatives analyzed under the Final EIS as well as agency and public involvement, and findings required by state and local laws and regulations. The Forest Service, Custer Gallatin National Forest (CGNF or Forest Service), the co-lead agency for this Project, documented its Selected Alternative and decision rationale in a separate ROD.

The Final EIS was prepared by the Forest Service and DEQ in compliance with the National Environmental Policy Act (NEPA) and the Montana Environmental Policy Act (MEPA) to evaluate the impacts of proposed Amendment 004 (amendment or AM4) to the East Boulder Mine Plan of Operations (POO) and DEQ Hard Rock Mining Operating Permit No. 00149, respectively. Under MEPA, an EIS is prepared "to assist the legislature in determining whether laws are adequate to address impacts to Montana's environment and to inform the public and public officials of potential impacts resulting from decisions made by state agencies" (Section 75-1-102(3)(a), Montana Code Annotated (MCA)). The Final EIS evaluated the environmental impacts of Alternative 1 – No Action, Alternative 2 – Proposed Action, and Alternative 3 – Agency-Modified Alternative. The AM4 proponent is Stillwater Mining Company (SMC), a subsidiary of Sibanye-Stillwater.

SMC first submitted the proposed fourth amendment to the POO and DEQ Hard Rock Mining Operating Permit No. 00149 to the two agencies on December 24, 2020. SMC revised AM4 several times in response to agency comments; the final submittal was the March 2022 revision (KC Harvey Environmental, LLC 2022), which was analyzed as the Proposed Action (Alternative 2) in the Draft and Final EIS. Prior to submittal to the agencies, SMC appointed an Independent Review Panel (IRP) pursuant to Section 82-4-377, MCA, and submitted the Lewis Gulch Tailings Storage Facility (TSF) design document and Tailings Operations, Maintenance and Surveillance (TOMS) Manual to the IRP for review. On October 8, 2020, the IRP issued a letter to SMC detailing its review and concluding that the IRP supported SMC's design as proposed. On May 13, 2022, DEQ responded to SMC and determined that the revised fourth amendment was complete and compliant with the substantive requirements of the Metal Mine Reclamation Act (MMRA) (DEQ 2022a). DEQ's compliance determination was made in conjunction with issuance of a draft permit amendment and the determination that an EIS is the appropriate level of environmental review pursuant to Administrative Rules of Montana (ARM) 17.4.608. **Table S.3-1** in the Final EIS summarizes the agency actions, approvals, and consultations that will be needed for Project implementation.

BACKGROUND

The East Boulder Mine (mine), an existing platinum and palladium mine, is approximately 23 miles south of Big Timber, Montana (MT), in Sweet Grass County and is accessed from Interstate 90 via Highway 298 (Boulder Road) to National Forest System (NFS) Road #205 (East Boulder Road) (**Figure 1**). The site consists of the following: an underground platinum and palladium mine that sits beneath the East Boulder Plateau; access tunnels (adits); plant site facilities; a lined TSF; and other ancillary facilities to support the operation, including a water treatment system. A portion of the water management facilities associated with the mine are located at the Boe Ranch, which lies on the west side of the East Boulder River approximately 4 miles south of McLeod, MT. SMC has continually operated the underground mine since 2002. The currently approved Operating Permit No. 00149 and POO (SMC 2023a) allow for sufficient waste rock storage through 2025 and sufficient tailings storage in the existing TSF through 2030 based on current mining rates. Additional waste rock and tailings storage are needed to continue operations, including mining of the platinum and palladium deposits in the Johns-Manville (J-M) Reef, a geological formation within the Stillwater Complex. Under AM4, SMC will construct and operate the Lewis Gulch TSF and the Dry Fork Waste Rock Storage Area (WRSA); construction of these facilities will extend the life of the mine approximately 11 to 14 years, based on current production rates, by providing additional tailings and waste rock storage. In addition, mine production will continue to be limited by the permit analysis steady-state level of 600 employees, and the East Boulder Mine production rate limits will be removed with the new limit based on the production limits in Montana Air Quality Permit (MAQP) No. 2653-07¹ (DEQ 2022b). The production rates set forth in the MAQP represent the current production rate limits and will be subject to change pursuant to state law.

The currently approved Operating Permit No. 00149/POO (permit/POO) for the entire mine encompasses approximately 2,333 acres (635 acres on National Forest System land and 1,698 acres on private land), including the mill site permit/POO area; shafts and ventilation adits that reach the surface of the East Boulder Plateau; and the Boe Ranch land application disposal (LAD) site, including the Yates gravel pit/injection well site. The mill site permit/POO area currently encompasses 397 acres and of that area, surface disturbance currently is approved and bonded for approximately 390 acres, of which 263 acres are currently disturbed (Appendix I of SMC 2023a). Under AM4, the mill site permit/POO boundary will be expanded to encompass approximately 761 acres² (Project area) on National Forest System and private land. As a result, the total acreage of the mine permit/POO boundary will increase to 2,697 acres.

The Project area, East Boulder Plateau, and Boe Ranch have been analyzed previously by the agencies in compliance with NEPA and MEPA, including in the 1992 East Boulder Mine Project Final EIS (Department of State Lands et al. 1992), the 2012 Final EIS for SMC's Revised Water

¹ MAQP No. 2653-07 limits are 1,095,000 tons of ore production, 1,095,000 tons of waste rock handling, 1,095,000 tons of ore crushing, and 132,000 tons of borrow crushing on a rolling 12-month basis.

² Note: SMC applied to expand the permit/POO area to approximately 749 acres; however, SMC also proposed installation of three downgradient monitoring wells on National Forest System land that will be outside of the 749-acre area. For analyses in the Final EIS, the agencies included an additional 12 acres of National Forest System land to account for potential installation of monitoring wells.

Management Plans and Boe Ranch LAD (DEQ and Forest Service 2012), and the 2020 East Boulder Mine Stage 6 Tailings Storage Facility Expansion Project Final Environmental Assessment (DEQ and Forest Service 2020).

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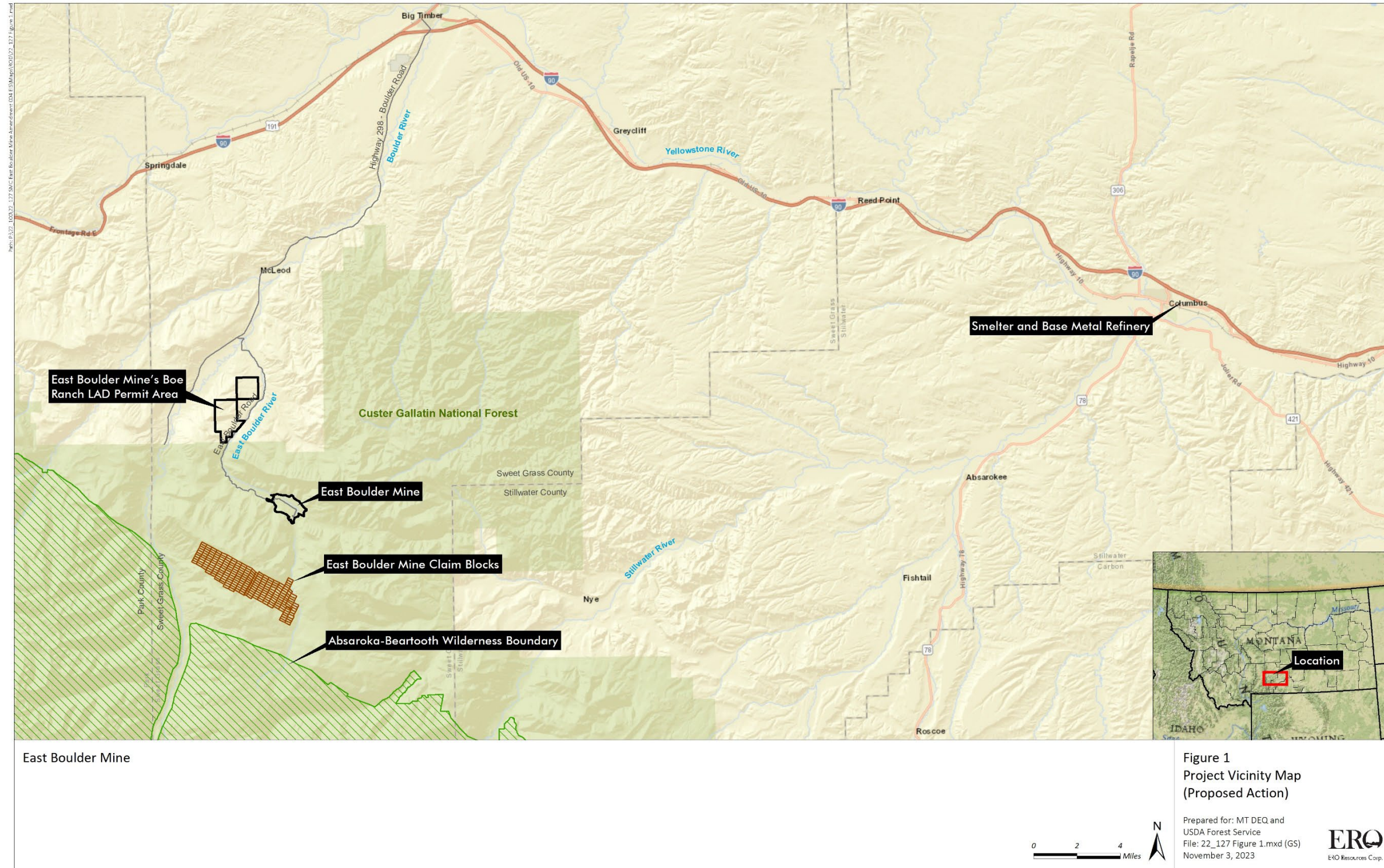


Figure 1. Project Vicinity Map (Proposed Action)

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PURPOSE, NEED, AND BENEFITS

MEPA and its implementing rules (ARM 17.4.617) require state agencies to consider the purpose and benefits of a Proposed Action.

PURPOSE AND NEED

DEQ's purpose and need in conducting the environmental review is to act upon SMC's proposed fourth amendment to Operating Permit No. 00149 under the MMRA (Section 82-4-301, *et seq.*, MCA) (for further detail see Final EIS **Section 1.1** and **Section 1.4.2, State Laws, Regulations, and DEQ Decisions to Be Made**). DEQ is required to review SMC's proposed amendment to determine if reclamation requirements and standards set forth in the MMRA will be satisfied and whether to issue the draft permit amendment as the final permit. SMC's proposed amendment will result in a continuation of existing mining operations and result in the following:

- Construction of a new TSF, as defined by Section 82-4-303(34)(a), MCA, in the Lewis Gulch basin;
- Development of a new WRSA in the Dry Fork area;
- Relocation of roads and infrastructure;
- Construction of a new bridge over East Boulder River;
- Removal of mine production limits for ore and waste rock; and
- Revision of the Consolidated Operations and Reclamation Plan (CORP) and implementation of the Lewis Gulch TSF TOMS Manual.

DECISION

Based on review of all alternatives presented in the Final EIS, DEQ selects Alternative 3 – Agency-Modified Alternative for implementation. Selection of Alternative 3 is consistent with applicable federal and state laws and regulations and is DEQ's preferred alternative that fulfills the Project's purpose and need.

Pursuant to Section 82-4-337(1)(h)(i) and Section 82-4-338, MCA, SMC is required to file with DEQ a reclamation bond in a form and amount determined by DEQ. DEQ will calculate the bond in accordance with Section 82-4-338, MCA. SMC will not be authorized to conduct any ground-disturbing activities until SMC submits the required bond to DEQ and DEQ has notified SMC of acceptance of the bond through the issuance of a final permit.

RATIONALE FOR THE DECISION

The rationale for this decision is based on the Project-specific environmental analysis included in the Final EIS and previous MEPA analyses and decisions for the East Boulder Mine. The purpose and need for this Project was considered as well as the importance of sustaining production from the East Boulder Mine as it supports hundreds of high-paying jobs and thus

the economy of local communities and the State of Montana, as well as the national significance of sustained access to these critical mineral resources.

The issues and concerns that arose during scoping, public meetings, and the Draft EIS comment period (see **How Issues were Considered and Addressed**) were reviewed and considered; and the beneficial and adverse environmental effects of the action alternatives as documented in the environmental analyses (**Chapter 3** in the Final EIS) were evaluated.

The analysis presented in the Final EIS shows failure of the TSF to be “unlikely” and a “low risk” based on the completed analyses, engineering controls in the TSF design by a qualified Engineer of Record (EOR), and reviews by third-party experts (IRP) and the NEPA/MEPA team in developing the Final EIS and supporting technical documentation. Throughout the facility operating life and through the closure phase, annual inspections of the Lewis Gulch TSF will be conducted by the EOR and periodic dam safety reviews will be conducted by the IRP. The decision incorporates additional mitigations to conduct additional investigations prior to closure to ensure proper cap design (Attachment 2, Stipulation #5).

The designs for both the Lewis Gulch TSF and Dry Fork WRSA include leakage collection and recovery systems to reduce nitrogen-related impacts on groundwater. The leakage collection and recovery system for the Dry Fork WRSA includes a double-liner system that represents the most robust design elements currently implemented at the site to mitigate groundwater impacts from nitrogen compounds.

The Selected Alternative was developed by the agencies to address issues and concerns raised in public scoping comments related to resiliency of storm water channel designs for the Dry Fork WRSA and long-term stability and appearance of the Lewis Gulch TSF and Dry Fork WRSA. DEQ may not withhold, deny, or impose conditions on any permit based on MEPA (Section 75-1-201(4), MCA). However, nothing in Section 75-1-201(4), MCA prevents an applicant and an agency from mutually developing measures that may be incorporated into a permit. The agencies developed the Selected Alternative in consultation with SMC, and DEQ’s selection of the Selected Alternative is made with SMC’s consent.

Under the Selected Alternative, the Dry Fork WRSA storm water channels will be sized to convey a 1-in-200 year, 24-hour precipitation event, while Alternative 2 has a storm channel design that may be insufficient to convey storm water from large precipitation events. The Selected Alternative will use geomorphic design or landform architecture design for the Lewis Gulch TSF and Dry Fork WRSA. Geomorphic landform design principles will be implemented to create a more natural appearance for the Dry Fork WRSA and Lewis Gulch TSF by mimicking reference area features such as slope angles, aspect, drainage density, vegetation patterns, and channel morphology. These changes will create a more “natural” appearance for the reclaimed features compared to Alternative 2. By introducing more gently sloping landforms and reducing storm water flow velocities, the Selected Alternative will also be expected to reduce erosion and could have improved success of revegetation compared to Alternative 2, which will further reduce visual impacts.

The expected reduction in erosion from the landform design features will decrease the potential for sediment delivery to aquatic habitat. The Selected Alternative will decrease anticipated maintenance of engineered structures and reduce the risk of drainage failure. Long-term wildlife habitat impacts under the Selected Alternative are anticipated to be somewhat less than Alternative 2 due to improvement of vegetative communities' response to geomorphic landform reclamation. The Selected Alternative's minor height and disturbance footprint (area) increase will occur relative to Alternative 2 for both the TSF and WRSA. The potential consequences related to these increases will be offset by the reduced risk of erosional damage and sediment delivery to aquatic habitat.

HOW ISSUES WERE CONSIDERED AND ADDRESSED

Comments received during the Project scoping period and public meetings were used to identify issues and develop alternatives for the Draft EIS (see the discussion under **Public and Agency Involvement** below). These key issues and the EIS sections where they were analyzed are summarized by resource topic in Final EIS **Table 1.5-1**. To address these concerns, the Forest Service and DEQ created Alternative 3, the Agency-Modified Alternative (Attachment 1) and developed mitigations (Attachment 2).

Comments received during the Draft EIS comment period were used to further refine issues and alternatives, make corrections, and improve the analysis documented in the Draft EIS; responses to those comments are included in **Appendix F** in the Final EIS.

ALTERNATIVE 3 – AGENCY-MODIFIED ALTERNATIVE

The alternative selected for implementation is described in Attachment 1 and summarized below (**Figure 2**). Mitigations developed as a result of the environmental review process are described in Attachment 2. In addition to the ongoing activities and reclamation already approved, the Selected Alternative will result in a continuation of existing mining operations and result in the following proposed Project components:

- Construction of a new TSF, as defined by Section 82-4-303(34)(b), MCA, in the Lewis Gulch basin;
- Development of a new WRSA in the Dry Fork area;
- Relocation of roads and infrastructure;
- Construction of a new bridge over East Boulder River;
- Removal of mine production limits for ore and waste rock; and
- Revision of the CORP and implementation of the Lewis Gulch TSF TOMS Manual.

The Lewis Gulch TSF will be a lined facility constructed with native borrow material and include an underdrain collection system (UCS). Features will occupy approximately 127 acres of total disturbance and will provide 5.8 million cubic yards of storage (11 to 14 additional years of tailings storage, based on current production rates). The Dry Fork WRSA will be a double-lined facility with a foundation constructed with native borrow material and include a UCS constructed in three stages. The facility will occupy approximately 101.9 acres of total disturbance (consisting of approximately 44.2 acres of National Forest System land and

approximately 57.7 acres of private land) and will provide 5.4 million cubic yards of storage (approximately 22 years of waste rock storage, based on current production rates).

The current East Boulder Mine production limits (2023 CORP) will be removed and the new limit will be based on the production limits in MAQP No. 2653-07. The two key aspects of Alternative 3 relative to Alternative 2 are the following:

- 1) Dry Fork WRSA storm water channels will be required to be sized to convey a 1-in-200 year, 24-hour precipitation event, and at closure, the sizing of closure storm water channels for both the Lewis Gulch TSF and Dry Fork WRSA will be reevaluated by SMC and conclusions provided to the agencies for consideration of design changes based on updated climate information.
- 2) The constructed embankments on long uninterrupted slopes of the Lewis Gulch TSF and the constructed side slopes and reclamation cap of the Dry Fork WRSA will be required to incorporate geomorphic landform design according to the agency-required Alternative 3 design objectives (described in **Attachment 1** and in Final EIS **Section 2.3.2, Required Design Objectives**); minor increases in surface disturbance may be required to meet the intent of this alternative.

The Lewis Gulch TSF will continue to be subject to the MMRA's TSF provisions, including EOR and IRP review and oversight (see discussion of the IRP and review process in Final EIS **Appendix A, Section A.2.2**). DEQ will require SMC to submit detailed design drawings for review and approval. Detailed designs for the TSF reclamation cap will not be required until 18 months prior to closure.

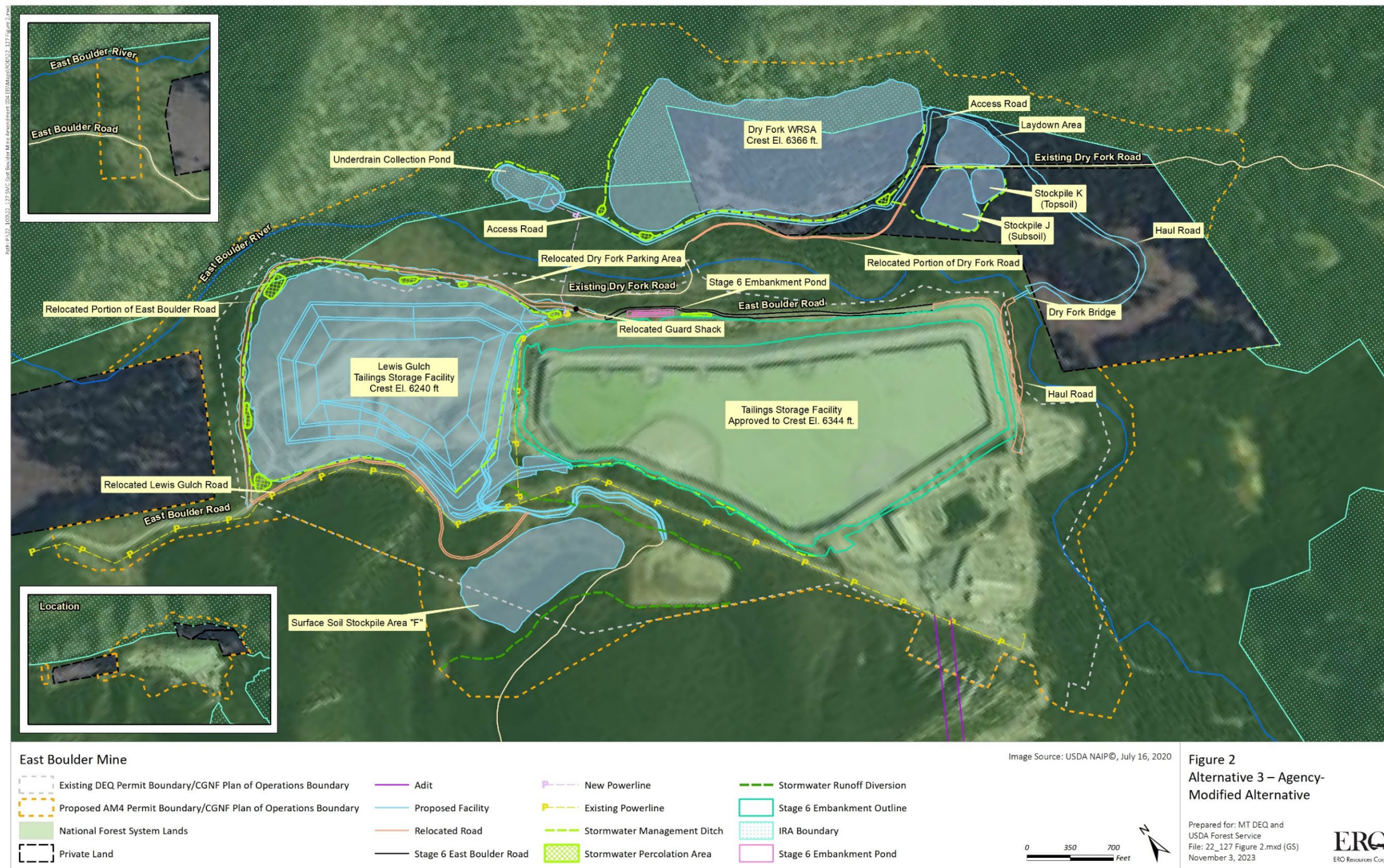


Figure 2. Alternative 3 – Agency-Modified Alternative

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OTHER ALTERNATIVES CONSIDERED

In addition to Alternative 3, two other alternatives (discussed below) were considered. A more detailed comparison of these alternatives can be found in the Final EIS: Final EIS **Table S.5-2** summarizes components of the alternatives and for complete descriptions, see Final EIS **Chapter 2**. Final EIS **Table S.5-3** summarizes the resource-specific impacts of each alternative and for detailed impacts analyses, see Final EIS **Chapter 3**.

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, the East Boulder TSF would be closed and reclaimed at the end of mining operations, and SMC would not be approved to construct the Lewis Gulch TSF, the Dry Fork WRSA, or any associated activities described under AM4. The currently approved Operating Permit No. 00149 would remain, allowing for sufficient waste rock storage through 2025. Although the East Boulder TSF would not reach tailings capacity until 2030, under the No Action Alternative, it was assumed that (1) no alternative storage or revision to SMC's operations would occur that would alter currently approved waste rock storage and (2) that mining would end once production of available ore is exhausted (estimated to be 2029).

ALTERNATIVE 2 – PROPOSED ACTION

Under Alternative 2 – Proposed Action (Alternative 2), DEQ will approve SMC's application for AM4 to Operating Permit No. 00149 as described in SMC's March 2022 application (KC Harvey Environmental, LLC 2022).

The agencies' approvals of the amended Operating Permit No. 00149 will have included any DEQ-required stipulations pursuant to Section 82-4-337(2)(b), MCA. Similar to Alternative 3 and in addition to ongoing activities already approved under the No Action Alternative, Alternative 2 will have increased the mill site permit/POO boundary from approximately 397 to 761 acres; allowed SMC to construct the Lewis Gulch TSF, Dry Fork WRSA, and associated infrastructures; and implemented a production rate based on the production limits in MAQP No. 2653-07. Alternative 2 will have resulted in similar disturbances as those listed above for Alternative 3; however, geomorphic landform design requirements will not have been implemented and storm water channels will have been sized to convey a 1-in-100 year, 24-hour precipitation event.

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

Several additional alternatives (and/or alternative components and mitigations) were considered but eliminated from detailed study during the planning process. These alternatives included using alternative blasting agents, rinsing waste rock, implementing mitigations to protect groundwater, designing and constructing a filtered tailings storage facility (FTSF), conducting alternative waste rock monitoring, increasing the storm event design interval for the Dry Fork WRSA to be the same as what was used for the Lewis Gulch TSF, and adding

mitigation measures to minimize surface subsidence. The rationale for not carrying these alternatives and mitigations forward into detailed analysis is provided in **Appendix B2** in the Final EIS and summarized below for key alternatives.

MEPA requires an alternative to be achievable under current technology, and the alternative must be economically feasible as determined (Section 75-1-201(1)(b)(iv)(C)(I), MCA). The CGNF provided a rationale for not carrying forward the design and construction of a FTSF in a position memorandum (CGNF 2023). DEQ is in concurrence with CGNF's conclusion on the viability of a FTSF alternative (CGNF 2023); a FTSF is neither achievable under current technology nor economically feasible for the proposed Project at the East Boulder Mine. Furthermore, a FTSF will be exempt from the MMRA requirements for conventional TSFs. Specifically, there will not be a requirement for design review or oversight by a designated EOR or an IRP pursuant to Sections 82-4-376 and 82-4-377, MCA. Although this exemption will not necessarily result in increased risk of failure or impacts at the facility, a reduction in the requirements for independent design review, monitoring, and oversight may decrease the capabilities of SMC and DEQ to ensure safety and adherence to state-of-practice engineering standards at the facility.

DEQ considered suggestions to use alternative measures to reduce nitrogen residuals and mitigations to protect groundwater. However, these alternatives were dismissed because DEQ (with CGNF concurrence) considers the design of the Dry Fork WRSA with a leakage collection and recovery system, which includes a double-liner (upper and lower 100-mil high-density polyethylene (HDPE) underdrain layers), to be an adequate mitigation for groundwater impacts from nitrogen residues associated with the waste rock. The WRSA design elements are the most robust design elements currently implemented at the site to mitigate groundwater impacts from nitrogen compounds. Furthermore, throughout the course of operations, SMC has implemented and refined source reduction methods to decrease nitrogen loads from mining activities. The methods have included improvements in handling of explosives to avoid spills, improvement of loading and blasting techniques, selective application of less soluble explosives in wet areas, and improved management of underground water to minimize contact between mine water and blasted rock (SMC 2023a; Water Management Plan).

PUBLIC AND AGENCY INVOLVEMENT

Several methods were used to inform the public and to solicit comments. These methods included publication of a Notice of Intent and a Notice of Availability in the *Federal Register*, press releases, legal notices in the newspaper of record (*Bozeman Daily Chronicle*), distribution of public notices by email and postcard, two public meetings during scoping, and one public meeting following issuance of the Draft EIS. Public scoping for the proposed Project was held from May 27, 2022, to July 18, 2022. CGNF and DEQ hosted two public scoping meetings at the Carnegie Public Library in Big Timber, Montana on June 23, 2022; the meetings also were livestreamed via Zoom for online participants. The Draft EIS was made available for public review and comment for 45 days following publication of the Notice of Availability in the *Federal Register* and a legal notice in the *Bozeman Daily Chronicle* on June 23, 2023. CGNF and

DEQ hosted one public meeting on the Draft EIS at the Carnegie Public Library in Big Timber, Montana on July 12, 2023; the meeting was also livestreamed via Zoom for online participants.

Analysis issues were identified through internal scoping within the interdisciplinary team, which included resource specialists from DEQ and CGNF, as well as third-party consultants, and from public comments received during the public scoping period. The public and agency scoping process defined the resource topics analyzed in the EIS and helped to identify the potential issues that drove alternatives development and mitigations. Issues of concern were identified for air quality, surface water quality and hydrology, wetlands and groundwater dependent ecosystems, groundwater quality and hydrology, geology and geochemistry, geotechnical stability, soils and reclamation, cultural resources, vegetation, aquatic life and fisheries, wildlife, public health and safety, noise, visual resources, land use and recreation, and socioeconomics and environmental justice. See Final EIS **Table 1.5-1** for the specific issues and concerns for each of these resource areas. To address these concerns, the Forest Service and DEQ created Alternative 3, the Agency-Modified Alternative and developed mitigations (Attachment 2).

Substantive comments on the Draft EIS that were within the scope of this Project have been addressed and incorporated into the Final EIS to the extent practicable. Public and agency comments received during this analysis, and the responses to those comments, are provided in the Final EIS **Appendix F**.

MITIGATIONS

Mitigation measures were developed after consideration of the potential impacts documented in the Final EIS analyses. DEQ can only require mitigations, which will be implemented as permit stipulations, under certain circumstances. As noted in Final EIS **Section 1.4.2, State Laws, Regulations, and DEQ Decisions to Be Made**, DEQ may add stipulations to the final amendment approval pursuant to Section 82-4-337(2)(b), MCA, either with SMC's consent or by providing to SMC, in writing, the reason for the stipulation, a citation to the statute or rule that gives DEQ the authority to impose the stipulation, and the reason that the stipulation was not contained in the draft permit amendment. The DEQ-required permit stipulation measures for the Selected Alternative are listed in Attachment 2.

MONITORING AND MAINTENANCE

Monitoring of the Selected Alternative will occur during and after implementation. Specific monitoring items are outlined in Attachment 1 – Selected Alternative. These monitoring items will be included in the construction terms and conditions, and SMC is required to comply with all terms and conditions of federal and state permits.

FINDINGS REQUIRED BY STATE AND LOCAL LAWS

Alternative 3 is consistent with the applicable state and local laws and regulations detailed in **Appendix A2** in the Final EIS. Consistency with each is documented in **Chapter 3** in the Final EIS. The Selected Alternative's compliance with key laws are further detailed below.

MONTANA ENVIRONMENTAL POLICY ACT

MEPA requires State of Montana agencies to conduct an environmental review when making decisions or planning activities that may impact the human environment. DEQ consideration of AM4 to Operating Permit No. 00149 is an activity that requires MEPA analysis. An EIS is required whenever an agency proposes a major action significantly affecting the quality of the human environment (Section 75-1-201(1)(b)(iv), MCA). MEPA (Section 75-1-101, *et seq.*, MCA) and its implementing rules (ARM 17.4.601, *et seq.*) define the process to be followed when preparing an EIS. Pursuant to ARM 17.4.627(3), when a proposed project is subject to the provisions of both MEPA and NEPA, DEQ may “accede to and follow more stringent requirements, such as additional content or public review periods, but in no case may it accede to less than is provided for in these rules.” As described above under **Public and Agency Involvement**, appropriate notices and opportunities for public comment were provided.

The East Boulder Mine Amendment 004 EIS complies with the procedural and analytical requirements of MEPA.

MONTANA METAL MINE RECLAMATION ACT

The purpose of the MMRA (Section 82-4-301, *et seq.*, MCA) is to ensure that the usefulness, productivity, and scenic values of all lands and surface waters in Montana affected by mining and exploration receive the greatest reasonable degree of protection and that the lands are reclaimed to beneficial uses. Other purposes of the MMRA are to allow mining as an activity beneficial to the economy of Montana and to allow the production of minerals to meet the needs of society and the economic demands of the marketplace (Sections 82-4-302(b) and (c), MCA).

The procedure for DEQ's review of an application for a major amendment to a hard rock mining operating permit is the same as the procedure for an application for an operating permit and is set forth in Section 82-4-337, MCA. Pursuant to Section 82-4-337(1)(d), MCA, when DEQ determines that an application is complete and compliant, DEQ is required to declare in writing that the application is complete and compliant and issue a draft permit amendment. Under Section 82-4-337(1)(f), MCA, a draft permit issued as a final permit is the proposed state action that is subject to review under MEPA. On May 13, 2022, pursuant to Section 82-4-337, MCA, DEQ issued a letter to SMC and determined that the revised application for Major Amendment 004 to Operating Permit No. 00149 was complete and compliant with the substantive requirements of the MMRA. DEQ's compliance determination was made in conjunction with issuance of a draft permit amendment and the determination that an EIS is the appropriate level of environmental review pursuant to ARM 17.4.608. Issuance of the draft permit as a final permit is the proposed state action subject to the environmental review requirements of MEPA (Section 75-1-Parts 1 through 3, MCA) and its implementing rules (ARM 17.4.601, *et seq.*).

Section 82-4-337(2)(b), MCA, requires DEQ to consult with the applicant before placing stipulations in a draft or final permit. Permit stipulations in a draft or final permit may address only compliance issues within the substantive requirements of the MMRA unless the applicant consents to additional stipulations. For a stipulation imposed without the applicant's consent,

DEQ is required to provide the applicant in writing the reason for the stipulation and, for a stipulation imposed in the final permit that was not contained in the draft permit, the reason that the stipulation was not contained in the draft permit. SMC reviewed and provided consent on June 19, 2024, to the stipulations developed by DEQ for the Project.

Pursuant to the authority provided in Section 82-4-337(2), MCA, DEQ is including the Selected Alternative in the final permit, with provisions for SMC to conduct the following stipulations not included in the draft permit amendment:

- Submit a revised CORP within 180 days of the issuance of the ROD (Stipulation #1);
- Update the Water Resources Monitoring Plan within 30 days of the issuance of the ROD (Stipulation #2);
- Provide in each annual report a general description of near surface stope elevations and detailed reporting where near surface mining occurred (Stipulation #4);
- Reclaim the Lewis Gulch TSF embankment and crest surface with 6 inches of subsoil and 6 inches of topsoil for a total of 12 inches of replacement soil (Stipulation #5); and
- Conduct additional investigations and analysis for the Lewis Gulch TSF and Dry Fork WRSA by no later than 18 months before closure to ensure proper cap design, ensure proper execution of cap contouring, and facilitate a successful positive surface drainage (Stipulation #8).

Complete descriptions of the stipulations listed above are provided in Attachment 2.

Under the Selected Alternative, SMC will adhere to the requirements and standards set forth in Section 82-4-336, MCA. The MMRA's reclamation provisions in Section 82-4-336(9)(a), MCA, require "the reclamation of all disturbed land to comparable utility and stability as that of adjacent areas," and in Section 82-4-336(9)(b)(iii), MCA, reclamation must mitigate "postreclamation visual contrasts between reclamation lands and adjacent lands."

As summarized here and more fully set forth in the Final EIS, the Selected Alternative, with the stipulations set forth in Attachment 2, is consistent with the reclamation requirements and standards set forth in the MMRA. DEQ has the primary responsibility for carrying out the MMRA, but the IRP and the EOR also have MMRA implementation responsibilities for TSFs. The following sections describe these responsibilities.

Role of Montana DEQ

As described above, MMRA and its implementing rules define the steps to be taken by DEQ in issuing an exploration license, issuing an operating permit, or revising an approved operating plan for reclamation of an applicant's proposed or modified exploration plan or mine operation. A finding that the mining or reclamation plan will violate the MMRA, the Clean Air Act (CAA) of Montana, the Montana Water Quality Act, the Public Water Supply laws, or rules adopted pursuant to these laws, will be grounds for DEQ to deny an application for a permit or license amendment (Section 82-4-351, MCA).

DEQ also sets reclamation bonding under MMRA (Section 82-4-338, MCA). DEQ and the CGNF currently hold a joint reclamation bond to ensure reclamation of the mine (see Final EIS **Section 3.6.3.5, Reclamation Bond**) in compliance with both the MMRA and the Forest Service's

locatable minerals regulations (see Final EIS **Section A.1.5, Locatable Minerals – 36 CFR 228, Subpart A**).

Role of the Independent Review Panel and Engineer of Record

Other key aspects of the MMRA, which were added in 2015, relate specifically to TSFs and include (1) TSF design standards (Section 82-4-376, MCA); (2) requirements for TOMS Manuals (Section 82-4-379, MCA); (3) the IRP (Section 82-4-377, MCA), an independent panel of engineers and specialists that reviews TSF designs; and (4) the designation of an EOR for the design and documentation, oversight, and inspection of TSFs (Section 82-4-375, MCA).

The Lewis Gulch TSF proposed by SMC in AM4 (described in Final EIS **Section 2.2.2.1, Lewis Gulch TSF**) meets the MMRA's definition of a TSF provided in Section 82-4-303(34)(a), MCA:

“Tailings storage facility” means a facility that temporarily or permanently stores tailings, including the impoundment, embankment, tailings distribution works, reclaim water works, monitoring devices, storm water diversions, and other ancillary structures.

The proposed Lewis Gulch TSF is therefore subject to the MMRA's TSF provisions (Section 82-4-376, MCA), and an IRP is responsible for implementation of these provisions (Section 82-4-377, MCA). Specifically, an IRP is responsible for reviewing the design document and TOMS Manual; underlying analysis; and any assumptions, including the practical application of current technology in the design. The detailed level of design and review required for TSFs is intended to provide for the design, operation, monitoring, and closure of TSFs such that they (a) meet state-of-practice engineering design standards; (b) use applicable, appropriate, and current technologies and techniques that are practicable given site-specific conditions and concerns; and (c) provide for the protection of human health and the environment. The IRP must submit a report to the mine operator and DEQ for their review of the design document, along with any recommended modifications, and the IRP's determination is conclusive.

The EOR's and IRP's review and approval of the design document, and oversight for the TSF through operations and reclamation, are important considerations for the agencies in the identification of impacts; documentation of the IRP review of the proposed Project is in **Appendix C** in the Final EIS and a summary of the IRP review is provided in **Appendix A.2.2, Montana Metal Mine Reclamation Act** in the Final EIS.

MONTANA WATER QUALITY ACT

The State of Montana, through DEQ, has the primary responsibility for carrying out the Montana Water Quality Act (Section 75-5-101, *et seq.*, MCA) and its implementing rules (ARM 17.30.101, *et seq.*), which regulate discharges of pollutants into state surface waters through Montana Pollutant Discharge Elimination System (MPDES) permits and the adoption of water quality standards. Water quality standards, including the Montana nondegradation policy, specify the changes in surface water or groundwater quality that are allowed from a wastewater discharge. A MPDES permit may also include limits for discharges of storm water and require development of a Storm Water Pollution Prevention Plan (SWPPP). SMC's non-storm water discharge is regulated by MPDES Permit No. MT0026808 (CORP Appendix D2; SMC

2023a), and storm water discharge is regulated under a statewide industrial permit (MTR000503; CORP Appendix D4; SMC 2023a) and a SWPPP.

Section 303(d) of the Clean Water Act (CWA; see Final EIS **Section A.1.9, Clean Water Act**) requires states to assess the condition of state waters to determine where water quality is impaired (does not fully support uses identified in the stream classification or does not meet all water quality standards) or threatened (is likely to become impaired in the near future). The 303(d) list provides probable causes (a chemical or physical condition that could affect uses) and probable sources (an activity that could contribute to that condition). The actual causes and sources of impairment are determined and quantified during the total maximum daily load (TMDL) development process. Causes are listed with high, medium, or low confidence; and sources are listed as either confirmed or unconfirmed. The reach of the East Boulder River within the analysis area has been identified by DEQ as water body segment ID# MT43B004_143, has been assessed by DEQ as a class B-1 stream, and has been determined to be fully supporting of all beneficial uses as defined in Section 303(d) of the CWA (DEQ 2009).

Any Project activity that may result in dredge or fill in waters of the United States features cannot proceed until SMC obtains a Section 404 permit from the U.S. Army Corps of Engineers (USACE 2023), per the CWA (33 United States Code 1251, *et seq.*) (see Final EIS **Section A.1.9, Clean Water Act**), and a 401 Water Quality Certification from DEQ, unless DEQ grants blanket certification. Such activities may be permitted under a Nationwide Permit (NWP), as applicable. Plans for avoidance, minimization, and mitigation of effects on wetlands will be required before permit issuance. DEQ provided Section 401 certification pursuant to state regulations (ARM 17.30.101, *et seq.*) and the CWA for USACE's NWP authorization of the proposed Project.

DEQ's permit decision and conditions on the MPDES permit renewals, the 401 certification or other applicable water quality permit, and the USACE's permit decision constitute compliance for the Selected Alternative with Montana Water Quality Act requirements.

CLEAN AIR ACT OF MONTANA

The U.S. Environmental Protection Agency (EPA) has delegated authority to DEQ to administer and enforce the regulations set forth under the CAA; as a result, some of the regulations established by the CAA are directly referenced in the ARM (see Final EIS **Section A.1.8, Clean Air Act** for more detail). The State of Montana, through DEQ, has the primary responsibility for carrying out the requirements of the CAA of Montana through the development and implementation of an EPA-approved State Implementation Plan, which provides for the attainment and maintenance of federal and state air quality standards.

Montana established Montana Ambient Air Quality Standards (MAAQS) under the CAA of Montana. The MAAQS include both standards that are more stringent than the National Ambient Air Quality Standards (NAAQS) in some instances and pollutants that are not included in the NAAQS (ARM 17.8.101-17.8.1713). NAAQS and MAAQS are presented in Final EIS **Table A.2-1** and discussed in Final EIS **Section 3.2, Air Quality**.

Fugitive Dust

The East Boulder Mine is subject to DEQ air quality regulations ARM 17.8.304(2), 17.8.308(2), and 17.8.308(3) relating to fugitive particulate matter emissions. Pursuant to ARM 17.8.304(2), fugitive dust emissions need to meet an operational visible opacity of standard of 20 percent or less, averaged over six consecutive minutes. The same 20 percent (six-consecutive-minute) average will apply during construction of the haul road (ARM 17.8.308(3)). Pursuant to ARM 17.8.308(2), SMC is required to take reasonable precautions to control emissions of airborne particulate matter from haul road operations.

Montana Air Quality Permits

Pursuant to ARM 17.8.743, an air quality permit is required for any air contaminant sources that have the potential to emit (PTE) greater than 25 tons per year (tpy) of any regulated pollutant. The East Boulder Mine has a PTE greater than 25 tpy of particulate matter with an aerodynamic diameter of 10 microns or less (PM₁₀), oxides of nitrogen (NO_x), and carbon monoxide (CO); therefore, an air quality permit is required. SMC holds Montana Air Quality Permit (MAQP) No. 2653-07 for the East Boulder Mine, which was first issued on August 19, 1992, and has been modified seven times since. SMC's air quality permit sets emission limitations for specific constituents and includes measures required to minimize fugitive dust during construction and operations.

The MAQP limits production at the East Boulder Mine to 1,095,000 tons of ore production, 1,095,000 tons of waste rock handling, 1,095,000 tons of ore crushing, and 132,000 tons of borrow crushing on a rolling 12-month basis. The ore production limit is equal to an average daily production rate of 3,000 tons per day. SMC will need to demonstrate to DEQ that the proposed Project will comply with this existing permit and obtain approval from the DEQ Air Quality Bureau for any necessary modifications to the existing MAQP No. 2653-07.

Pursuant to ARM 17.8.745(1), modifications to an existing air quality permit are not needed for de minimis changes. The thresholds for these changes include construction or changed conditions that do not increase the facility's PTE by more than 5 tpy of any pollutant with some exceptions, including any condition that will violate an existing permit condition or will potentially violate ambient air quality standards.

In addition to its air quality permit, SMC's East Boulder Mine CORP (SMC 2023a) includes Best Management Practices to protect air quality, including management of chemical dust suppressants and use of prescribed fires.

DEQ's permit decision and conditions on the MAQP permit renewals, air quality regulations for fugitive dust, and DEQ's enforcement of MAAQS constitute compliance with requirements set forth under the CAA of Montana for the Selected Alternative.

COUNTY NOXIOUS WEED CONTROL ACT

The Sweet Grass County Weed Board administers the County Noxious Weed Control Act (Sections 7-22-2101 through 2153, MCA) for any land-disturbing activities in its jurisdiction.

SMC has a Weed Control Plan approved by the Sweet Grass County Weed Board. If needed, SMC will modify its approved plan before surface disturbance allowing the Selected Alternative to be in compliance with the County Noxious Weed Control Act.

MONTANA NATURAL STREAMBED AND LAND PRESERVATION ACT

The Montana Department of Natural Resources and Conservation administers the Montana Natural Streambed and Land Preservation Act (Section 75-7-101, *et seq.*, MCA). Any nongovernmental entity that proposes to work in or near a stream on public or private land requires a 310 permit for any activity that physically alters or modifies the bed or banks of a perennially flowing stream. SMC submitted for a 310 permit as part of its NWP application (KC Harvey Environmental, LLC 2023) for the Selected Alternative, and approval of that permit provides compliance with the Montana Natural Streambed and Land Preservation Act.

MONTANA METAL MINES TAXES

Metal Mines License Tax

Metalliferous (hard rock) and micaceous (mineral) mines are annually assessed and taxed in the State of Montana (Section 15-37-101, *et seq.*, MCA). Any person engaged in or carrying on the business of working or operating any mine or mining property in Montana from which gold, silver, copper, lead, or any other metal or metals or precious or semiprecious gems or stones are produced must pay the license tax, which is computed on the gross value of the product. For platinum group metals, the gross value of product above \$250,000 is taxed at a rate of 1.6 percent. Metal mine license taxes are distributed to the state's general fund (47 percent), hard rock mining impact trust account (2.5 percent), hard rock mining reclamation debt service fund (8.5 percent), natural resources operations state special revenue account (7 percent), and county or counties identified as experiencing fiscal and economic impacts (in an impact plan – see the discussion below) or in which the mine is located (35 percent) (Section 16-37-117, MCA).

Montana Hard Rock Mining Impact Act and Hard Rock Mining Impact Property Tax Base Sharing Act

The Hard Rock Mining Impact Act (Section 90-6-301, *et seq.*, MCA) and the Hard Rock Mining Impact Property Tax Base Sharing Act (Section 90-6-401, *et seq.*, MCA) are designed to assist local governments in handling financial impacts caused by large-scale mineral development projects and to remedy revenue disparities among adjacent local government units. A new mineral development may result in the need for local governments and school districts to provide additional services and facilities before mine-related revenues become available. The resulting costs can create a fiscal burden for local taxpayers.

Pursuant to Section 90-6-305, MCA, the Hard Rock Mining Impact Board (HRMIB) oversees an established process for identifying and mitigating fiscal impacts on local governments through the development of a Hard Rock Mining Impact Plan (Plan). Under the impact act, each new large-scale hard rock mineral development in Montana is required to prepare a Plan to assess

the local government fiscal impact. In the Plan, the developer is to identify and commit to prepay all increased capital and net operating costs to local government units that will result from the mineral development (Section 90-6-309, MCA). After development, taxes are annually assessed.

SMC developed the East Boulder Mine Impact Plan (East Boulder Plan) prior to development of the mine. Pursuant to Section 90-6-311, MCA, the East Boulder Plan may be amended under definite conditions specified in the East Boulder Plan or the governing body of an affected county, or the mineral developer may petition the board for an amendment to the East Boulder Plan. The East Boulder Plan was last amended in 1998. Construction of the mine began in 1999, and the mine reached commercial production in 2002. SMC prepares an annual Tax Base Sharing Report for submittal to the Montana Department of Revenue and the HRMIB pursuant to Section 90-6-405, MCA.

DEQ's MMRA authority regarding the East Boulder Plan is to (1) ensure the HRMIB has waived the requirement of an impact plan or (2) ensuring that the permittee has filed an impact plan with the HRMIB and the appropriate county or counties pursuant to Section 82-4-335(6), MCA. DEQ has determined that SMC is a large-scale mineral developer and that it has met its MMRA obligations regarding the East Boulder Plan. The MMRA does not authorize DEQ to require a permittee to amend its impact plan or to place a stipulation on a permittee's permit to update its impact plan.

Under Section 90-6-404(1), MCA, the local government unit in which the ore body or the mineral deposit being mined is located (in the case of the East Boulder Mine, Sweet Grass County) must be allocated 20 percent of the total increase in taxable valuation of the gross proceeds. The remaining increase in taxable valuation of the mineral development must be allocated between affected counties and affected municipalities according to a formula based on the place of residence of mineral development employees (see the discussion in **Section 3.15, Socioeconomics and Environmental Justice** in the Final EIS).

SWEET GRASS COUNTY GROWTH POLICY AND PLANNING REGULATIONS

Montana law specifically provides municipalities (in this case, Sweet Grass County) with the authority to adopt a specific statutory framework for a variety of land use and planning regulations. Land use planning activities in Sweet Grass County are reviewed by the Sweet Grass County Planning Department and the Sweet Grass County Planning Board. The planning department reviews these activities and makes recommendations to the decision-making boards or governing bodies in the county. While all the land in the city of Big Timber is zoned and subject to land development regulations, land outside Big Timber is not zoned. Land that is not zoned in the county is still subject to county subdivision regulations, building for lease or rent regulations, and growth policies (Sweet Grass County 2022). No subdivision of land or creation of a building for lease or rent will occur as part of the AM4 and, therefore, is not subject to the Sweet Grass County and Big Timber Subdivision Regulations (Sweet Grass County 2006) or the Sweet Grass County Building for Lease or Rent Regulations (Sweet Grass County n.d.).

The Sweet Grass County Growth Policy provides a description of the natural and human characteristics of the county, an inventory of the county's facilities and services, and goals, objectives and strategies for implementation that reflect current principles and values held by county residents to provide a vision for future development and policy and regulation implementation (Sweet Grass County 2006).

AGENCY ACTIONS, AUTHORIZATIONS, AND CONSULTATIONS NEEDED FOR PROJECT IMPLEMENTATION

Before SMC can begin the Project, various permits, certificates, licenses, and approvals will be required. **Table S.3-1** in the Final EIS summarizes the primary agency actions, approvals, and consultations that will be needed for Project implementation.

IMPLEMENTATION

This Project will be implemented upon issuance of both the CGNF Final ROD and the DEQ ROD; submittal and approval of a revised POO and DEQ Hard Rock Mining Operating Permit No. 00149 consistent with the Selected Alternative (Attachment 1); implementation of required mitigation measures (Attachment 2); and posting of a reclamation bond. It is reasonable to anticipate that as the Selected Alternative is implemented, additional features or disturbance in support of these activities may be needed to meet operational or regulatory requirements. Each of these activities will be expected to occur in or adjacent to the Project area. Incremental requests for changes occurring during the life of the mine to meet regulatory needs, safety requirements, Best Management Practices, production and development needs, or technology advancements are likely to continue throughout the life of the mine. Any relocation of approved disturbances (due to on-the-ground conditions) or applications by SMC for new disturbance will have to be approved by DEQ after review and consideration of that agency's regulatory authorities including, but not limited to, MEPA and MMRA. DEQ will continue to review operating permit modifications and their impacts as they are proposed under MMRA and MEPA.

APPEAL OF DEQ'S DECISION

This decision is subject to a court appeal by the applicant and other parties for 90 days after issuance of the ROD under Section 82-4-349(1), MCA. Any action or proceeding challenging a final agency decision alleging failure by DEQ to comply with or inadequate compliance with a requirement of MEPA must be brought within 60 days after issuance of the ROD pursuant to Section 75-1-201(5)(a)(ii), MCA. An applicant for a permit amendment may request an administrative hearing on a denial of the application by submitting a written request for a hearing within 30 days of receipt of this ROD pursuant to Section 82-4-353(2), MCA. The request must state the reason that the hearing is requested.

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- Stillwater Mining Company (SMC) and Knight Piésold (Knight Piésold Ltd). 2023b. East Boulder Mine – 2023 Permitting Support for Lewis Gulch TSF and Dry Fork WRSA. Count. No. NB23-00404. April 11.
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ATTACHMENT 1—SELECTED ALTERNATIVE

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ALTERNATIVE 3 – AGENCY-MODIFIED ALTERNATIVE

Alternative 3 was developed by the agencies to address issues and concerns raised in public scoping comments (see the *Public Scoping Report*; ERO Resources Corporation [ERO] 2022). Specifically, this alternative was intended to address the following public concerns:

- As proposed by SMC, the storm channel designs for the Dry Fork WRSA may be insufficient to convey storm water from large precipitation events.
- To help ensure long-term vegetation and reclamation stability and function of Project features (e.g., TSF embankments, WRSA side slopes, and reclamation cap), as well as to provide a more “natural” aesthetic for reclaimed features, SMC should use geomorphic design or landform architecture design for the Lewis Gulch TSF and Dry Fork WRSA that mimics natural geology and hydrology.

To address these public concerns, the agencies held meetings with SMC and its contractor, Knight Piésold Ltd. in December 2022 to discuss geomorphic landform design concepts and ways that these concepts could be applied to the proposed Lewis Gulch TSF and Dry Fork WRSA. SMC, with Knight Piésold Ltd., developed visual renderings in March and April 2023 for both the Lewis Gulch TSF and Dry Fork WRSA (SMC and Knight Piésold Ltd. 2023a, 2023b) to visually represent how Alternative 3 geomorphic landform design objectives could be implemented (see the Final EIS **Appendix E**). The visual renderings demonstrated that the footprint for these facilities could fit within the available space, using existing CORP guidance and geomorphic landform techniques (SMC and Knight Piésold Ltd. 2023a, 2023b).

The two key aspects of Alternative 3 are:

- 1) Dry Fork WRSA storm water channels will be required to be sized to convey a 1-in-200 year, 24-hour precipitation event, and at closure, the sizing of closure storm water channels for both the Lewis Gulch TSF and Dry Fork WRSA will be reevaluated by SMC and conclusions provided to the agencies for consideration of design changes based on updated climate information.
- 2) The constructed embankments on long uninterrupted slopes of the Lewis Gulch TSF and the constructed side slopes and reclamation cap of the Dry Fork WRSA will be required³ to incorporate geomorphic landform design according to the agency-required Alternative 3 design objectives, which are described below under **Required Design Objectives**; minor increases in surface disturbance may be required to meet the intent of this alternative.

³ As described above under **Montana Metal Mine Reclamation Act**, DEQ may not withhold, deny, or impose conditions on any permit based on MEPA (Section 75-1-201(4), MCA). However, nothing in Section 75-1-201(4), MCA prevents an applicant and an agency from mutually developing measures that may be incorporated into a permit. The agencies developed the Selected Alternative in consultation with SMC, and DEQ’s selection of the Selected Alternative is made with SMC’s consent.

Permit/POO Boundary and Disturbance

Disturbance under Alternative 3 could be as much as 180 acres (as compared to about 167 acres under Alternative 2); the total increase in disturbance for the Lewis Gulch TSF and Dry Fork WRSA facilities will be based on the agency-required design objectives and detailed designs submitted by SMC to the agencies. The maximum increase anticipated under the design objectives will be 10 percent for the Lewis Gulch TSF and Dry Fork WRSA footprints and 20 percent for soil stockpiles (as compared to Alternative 2) to accommodate the geomorphic landform designs of the TSF and WRSA.

Alternative 3 will include the same proposed Project facilities (e.g., Lewis Gulch TSF, Dry Fork WRSA, access roads, utilities, soil stockpile, and borrow areas), monitoring, design features, and agency-required mitigations as compared to the Proposed Action (Alternative 2). **Figure 2** above provides footprints for the Lewis Gulch TSF and Dry Fork WRSA based on the visual renderings developed by SMC (SMC and Knight Piésold Ltd. 2023a, 2023b).

Required Design Objectives

Under Alternative 3, SMC will submit revised designs, including a designs basis document with measurable criteria, that are consistent with the required⁴ design objectives described below. The intent of these design objectives will be to increase long-term vegetation and reclamation stability and function of Project features (e.g., TSF embankments, WRSA side slopes, and reclamation cap) to provide a more “natural” aesthetic for reclaimed features, and to improve resilience of water management features for large storm events.

The revised designs will meet the following design objectives:

- **Lewis Gulch TSF:** Concurrent with construction and operations, and where feasible, constructed embankments will incorporate geomorphic landform design, specifically on the northwest and northeast outer embankments where acreage and landscape will allow for such design. If needed, relocation of portions of NFS Road #205 to facilitate an increase in the TSF footprint (up to 10 percent as compared to Alternative 2) will occur where necessary to achieve design objectives. Storm water percolation pond locations and the embankment toe will be allowed to be altered as necessary to achieve an overall embankment slope objective of 2H:1V. However, the footprint of the TSF will not be allowed to overlap the portion of wetland areas surveyed in Lower Lewis Gulch as shown on **Figure 3.3-4** and summarized in **Table 3.3-24** of the Final EIS. Shallower embankment slopes will be required for the final design to create a variable slope topography with complex slope profiles and different slope aspects. Breaking the slope into multiple small sub-watershed basins will be required. Construction of these basins with their swales and ridges will delineate small sub-watershed regions along the embankment slopes that will enhance surface water drainage by distributing runoff over

⁴ As described above under **Montana Metal Mine Reclamation Act**, DEQ may not withhold, deny, or impose conditions on any permit based on MEPA (Section 75-1-201(4), MCA). However, nothing in Section 75-1-201(4), MCA prevents an applicant and an agency from mutually developing measures that may be incorporated into a permit. The agencies developed Alternative 3 in consultation with SMC, and DEQ's selection of the Selected Alternative is made with SMC's consent.

several sub-basins, create diverse vegetative micro-environments, and mimic natural geomorphic features of the surrounding area. Any substantive modifications to the Alternative 3 landform that will constitute a change to the design document, as specified under Section 82-4-376, MCA, will need to be certified by the EOR and referred to the IRP for review and approval.

- **Dry Fork WRSA:** Concurrent with construction and operations, constructed side slopes of the waste rock pile will incorporate geomorphic landform design. The footprint of the WRSA along the containment toe will not be allowed to overlap the riparian management zone located south of the toe or portions of wetland areas surveyed near the SP-10 and DFSP drainages as shown on **Figure 3.3-4** and summarized in **Table 3.3-24** of the Final EIS. Any footprint increases, if needed, will only be allowed on the northwest and northeast outer slopes where acreage and landscape will allow for such design. The footprint will be allowed to increase up to 10 percent (as compared to Alternative 2). The top elevation of the waste rock pile will be allowed to increase as needed to facilitate crest shaping. DEQ will require the final design to have a reclamation cap that varies in height and resembles naturally-occurring features in the area. Storm water percolation pond locations and the embankment toe will be allowed to be altered as necessary to achieve an overall containment slope steepness objective of 2.5H:1V. Shallower containment slopes will be required to be incorporated into the final design to create lateral undulations and develop swale features with small-scale sub-watershed ridges. The slope swales will delineate small sub-watershed regions along the embankment slopes that will enhance surface water drainage by distributing runoff over several sub-basins that will create diverse vegetative micro-environments and that will mimic natural geomorphic features found in the surrounding area.
- **Soil Salvage and Storage Capacity Expansion:** Geomorphic landform design will be limited to the volume of soil available from newly salvaged and currently stockpiled soil and DEQ will require SMC to salvage all usable topsoil and subsoil within the proposed footprints of both facilities to meet calculated reclamation needs. For both facilities, geomorphic landform design will be limited to the volume of soil available within the proposed footprint. Usable topsoil for geomorphic reclamation in Alternative 3 is considered to contain 2 percent or greater organic matter. The salvage cutoff in the POO of less than 60 percent coarse fragments will remain unchanged. The surface area for associated soil stockpiles may be increased by as much as 20 percent to accommodate the necessary soil volumes needed to meet design objectives. The soil stockpiles, as interim features, will not require geomorphic landform design.
- **Storm Water Sizing Operations:** Dry Fork WRSA storm water channels will be required to be sized to convey a 1-in-200 year, 24-hour precipitation event to be consistent with the storm water sizing requirements proposed by SMC for the Lewis Gulch TSF.
- **Storm Water Sizing at Closure:** Prior to closure, the sizing of closure storm water channels for both the Lewis Gulch TSF and Dry Fork WRSA will be reevaluated by SMC and conclusions provided to DEQ for consideration of design changes based on updated climate information.

East Boulder Mine Facilities

The Selected Alternative will add the Lewis Gulch TSF, East Boulder Road, and Lewis Gulch Road re-routes; storm management ditches; the Dry Fork WRSA; underdrain collection pond (UCP); north side powerline; Dry Fork roads, ditches, and pipelines; and East Boulder Haul Bridge to the plant/mill site facilities. The mining method, ore processing, and waste rock handling methods will remain the same, but the Dry Fork WRSA will be constructed to store waste rock, and the Lewis Gulch TSF will be constructed to store tailings once the East Boulder TSF Stage 6 has reached capacity. Operational transitioning between the existing mine facilities and the new facilities added under Alternative 3 will continue uninterrupted for mining, milling, and water treatment and disposal, while tailings will transition uninterrupted from the East Boulder Mine TSF to the Lewis Gulch TSF once constructed. Waste rock will transition uninterrupted from the existing construction of the TSF impoundment to the Dry Fork WRSA once constructed.

Lewis Gulch TSF

The Lewis Gulch TSF will be constructed on National Forest System lands near the current borrow pit, along the west end of the existing East Boulder TSF, at an elevation of 6,240 feet, using native borrow material excavated from within the basin footprint to construct the embankment. The proposed Lewis Gulch TSF footprint will encompass between approximately 88 and 97 acres, and an additional 39 acres associated with roads and infrastructure will be disturbed, resulting in approximately 127 to 136 acres of total disturbance. The Lewis Gulch TSF expansion will provide 5.8 million cubic yards of tailings storage providing for about 11 years of additional mine life assuming an average daily throughput of approximately 2,300 tons per day and 55 percent of the tailings solids being sent to the TSF. If the TSF operating pond volume is reduced, tailings could be deposited in the TSF for 12 years. If more tailings are used for underground backfill and 45 percent of the tailings are sent to the TSF, the Lewis Gulch TSF will provide storage for more than 14 years.

The existing Lewis Gulch borrow pit is located on National Forest System lands northwest of the East Boulder TSF in the Lewis Gulch basin. This borrow pit will be expanded and the materials and footprint will be used to construct the proposed Lewis Gulch TSF. Existing topsoil storage area A1 will be relocated to Soil Area F southeast of the Lewis Gulch TSF. Subsoil stockpiles A2 and A3 will be relocated to Soil Area E (Final EIS **Figure 1.3-1**). Topsoil and subsoil excavated during construction will be separated and stockpiled individually for use in reclamation. Fill (glacial drift, consisting of sandy gravel with frequent cobbles and boulders) excavated from the proposed Lewis Gulch TSF footprint will be used to construct the TSF embankment. The exterior embankment slopes for the Lewis Gulch TSF will undergo concurrent reclamation as they are constructed. The construction will incorporate geomorphic landform design principles (according to the agency-required design objectives described above) to mitigate visual impacts and mimic natural geomorphology and hydrology features and to facilitate reclamation and to maintain long-term slope stability. The proposed Lewis Gulch TSF will be constructed with a 20-foot-tall boulder diversion berm at the southwest corner of the TSF to mitigate for potential debris flows in the Lewis Gulch drainage.

The Lewis Gulch TSF will be constructed with a geosynthetic lining system to contain the tailings solids. Lining will occur over two stages to prevent deterioration of the liner from prolonged exposure of the liner to ultraviolet light. The initial basin will be lined to a mid-slope elevation of 6,190 feet while the upper slopes of the basin will be lined from mid-slope to the crest elevation of 6,240 feet after about three years of operations. The two liner stages will be welded together to form a continuous liner system. A 20-foot-wide mid-slope bench will be constructed along the upstream slope of the embankment to facilitate the installation of the two-staged geosynthetic lining system.

A basin underdrain system will be installed over the top of the geosynthetic lining system to collect process water and promote tailings consolidation. Seepage of water through the TSF liner system will flow at an estimated rate of 2 to 12 gallons per minute. Because no waste rock will be used to construct the Lewis Gulch TSF, an embankment underdrain system like that constructed at the East Boulder TSF will not be constructed for the Lewis Gulch TSF. The basin floor is about 20 to 30 feet above the highest groundwater level measured in the vicinity and the basin floor elevation can be adjusted during excavation, if necessary, to accommodate a higher groundwater elevation or to accommodate adjustments in borrow material requirements during embankment construction (Knight Piésold Ltd. 2022). Monitoring wells EBMW-3, EBMW-8, EBMW-9, EBMW-10, EBMW-12, and EBMW-13 will be abandoned prior to TSF construction. Currently, the MPDES permit requires quarterly monitoring in EBMW-3, EBMW-8, and EBMW-9; the permit will need to be modified to reflect changing well locations. Additional monitoring wells are proposed outside of the footprint of the Lewis Gulch TSF to provide downgradient monitoring for both the East Boulder TSF and Lewis Gulch TSF.

Tailings will be pumped from the mine's underground sand plant or directly from the concentrator to the Lewis Gulch TSF via separate pipelines. Existing pipelines are located on the west side of the concentrator, and the pipelines will be extended along the southwest side of the existing East Boulder TSF to the Lewis Gulch TSF. The new tailings delivery pipelines will be connected to tailings discharge pipelines on the upstream crest of the TSF embankment. Tailings slurry will be discharged from up to ten spigot locations that will extend down the lined slope of the embankment crest to the tailings surface.

Dry Fork WRSA

The proposed Dry Fork WRSA will be constructed on both private and National Forest System lands to the north of the East Boulder River. Waste rock generated from the mine will be loaded into haul trucks and transported to the Dry Fork WRSA for placement. The proposed Dry Fork WRSA footprint will encompass between approximately 57 and 63 acres, and an additional 44.9 acres associated with roads and infrastructure will be disturbed, resulting in approximately 102 to 108 acres of total disturbance. Infrastructure to support construction of the waste rock facility will include a new haul road, bridge, water pipelines, UCP, and electric power. The Dry Fork WRSA will provide 5.4 million cubic yards of storage (approximately 22 years of waste rock storage). The Dry Fork WRSA will be built in three stages (see Final EIS **Figure 2.2-2**). Under current mining and production volumes, Stage 1 (southwestern portion of WRSA) will provide 3 years of storage, Stage 2 (northwestern portion) will provide 7 years of storage, and Stage 3

(eastern portion) will provide 12 years of storage. Geomorphic landform design principles will be implemented concurrently or for final slopes at each stage of the WRSA development. The side slopes of the waste rock pile will be adjusted in the final design to include varying slopes and lateral undulations to develop surface drainage swales, vegetative micro-environments, and hydrological function of the constructed landforms; and to facilitate reclamation and maintain long-term slope stability. The top shaping of the waste rock pile will mitigate linear crest lines and thus reduce visual impacts of the final landform. Top shaping will also be integrated with sub-watershed ridges and swale topography to enhance the drainage and hydrologic function of the crests and side slopes of the post-closure landforms.

Salvaged soil within the basin of the WRSA under Stages 1 and 2 will be collected and stockpiled to the southeast within the Stage 3 footprint (Stockpiles H and I) and used for concurrent reclamation of the Stages 1 and 2 slopes. Salvaged soil from the Stage 3 footprint and any remaining soils from Stockpiles H and I will be located outside of the WRSA footprint to the southeast (Stockpiles J and K). The Dry Fork WRSA will be double lined and constructed with a UCS to collect water that percolates through the waste rock. The UCS will be developed in three stages: it will consist of a double-lined underdrain layer in the foundation, underdrain collection pipeworks, and underdrain outlets that will gravity drain to the double-lined UCP with a leakage collection and recovery system. The UCP will store approximately 7.7 million gallons (MG) of water. UCP water will be pumped for treatment and disposal or reuse in mining operations to the Water Treatment Plant (WTP), East Boulder Mine TSF, or Lewis Gulch TSF based on water balance needs and timing of TSF construction via the WRSA water transfer pipeline buried under the UCP access and WRSA haul roads. The UCS will be sized to provide temporary storage of a 1-in-25 year, 24-hour precipitation event of 3.8 inches. The UCS and UCP include swales and spillways to convey overflow up to the 1-in-200 year, 24-hour precipitation event. Runoff water management ditches will be sized to convey runoff resulting from the 1-in-200 year, 24-hour precipitation event.

If percolation through the Dry Fork WRSA exceeds the capacity of the UCS, excess water will be conveyed via a storm water management overflow swale along the WRSA toe to a percolation area. The overflow swale and percolation area will be constructed with coarse riprap and the overflow swale will be underlain by nonwoven geotextile. The overflow swale will be sized to safely convey runoff from a 1-in-200 year, 24-hour precipitation event.

Foundation drains (consisting of slotted HDPE pipe surrounded by aggregate wrapped in nonwoven geotextile) will be constructed beneath the UCS to provide drainage for underlying groundwater. The Dry Fork WRSA will be operated in a drained state with no head on the liner.

To enhance stability and collect storm water, a containment berm will be constructed around the WRSA toe. A rockfall protection berm/ditch will also be constructed along the upslope perimeter of the WRSA to provide additional storm water management.

An 8-foot-high perimeter wildlife fence will be constructed around the Dry Fork WRSA. Double-brace panels will be placed at 400-foot intervals and at all grade breaks as necessary to maintain wire at a 1-inch clearance from ground. Double brace panels will also be installed at all corners and gates, and line fence posts will be spaced an average of 11 feet apart.

Water Management

The Lewis Gulch TSF will introduce additional process water and the Dry Fork WRSA will introduce additional mine water from their respective UCSs (see facility-specific discussion below in the following sections). Management of process water generated at the Lewis Gulch TSF will use similar management and disposal strategies currently in use at the East Boulder Mine. The Lewis Gulch TSF supernatant water will primarily be used in the mill circuit, and Lewis Gulch TSF underdrain water will either be pumped back into the Lewis Gulch TSF supernatant pond or to the mine water recycle pond. Lewis Gulch TSF water will be sent to the existing WTP if necessary. If treatment and discharge of the TSF water is required, SMC will need to submit an application to modify its MPDES permit coverage under MT0026808 to include the discharge of TSF water in the MPDES permit. During initial transition from the existing East Boulder TSF to the new Lewis Gulch TSF, the East Boulder TSF may be used for water balance needs intermittently until the Lewis Gulch TSF is operational or East Boulder TSF is fully reclaimed.

Management of storm water at the Lewis Gulch TSF, Dry Fork WRSA, associated stockpiles, and associated facilities will be diverted via runoff controls installed above and below the facilities to convey the storm water via berms, ditches, and swales to percolation areas where storm water will be infiltrated to groundwater. At the haul road bridge, storm water will be diverted to two proposed detention basins located on either side of the bridge. SMC will submit an updated Notice of Intent application form to DEQ to modify the authorization under the Multi-Sector MPDES General Permit for Storm Water Discharges Associated with Industrial Activity. As part of this action, SMC will also be required to modify the East Boulder Mine Storm Water Pollution Prevention Plan to incorporate the Lewis Gulch TSF and Dry Fork WRSA facilities.

Lewis Gulch TSF

The Lewis Gulch TSF will generate supernatant water (water ponding on the surface of the tailings) and basin underdrain water (water draining from the base of the TSF) that will require separate management systems. Supernatant reclaim water will continue to be used by the mine in the concentrator milling and flotation circuits. Three inclined reclaim pumps and pipelines will be located at the south corner of the Lewis Gulch TSF to collect the supernatant water and transfer the water to the concentrator process water head tank. Basin underdrain water will originate from the underdrain layer and flow by gravity to the underdrain pumphouse where, depending on water balance needs, it could be pumped back into the Lewis Gulch TSF supernatant pond or to the mine water recycle pond for use in the mine. The pond volume for the proposed Lewis Gulch TSF will vary year to year with an estimated operating pond volume between 50 and 120 MG, and will be maintained below the operational freeboard requirements for the TSF. Lewis Gulch TSF water will be sent to the recycle pond if necessary.

Water balance calculations for the Lewis Gulch TSF indicate it may operate with an annual water balance shortfall or surplus, depending on conditions of mine operations. Water shortfalls will be managed by transferring mine water to the TSF or from water generated from the fresh water supply wells and/or via permitted extraction from the East Boulder River. Water

surpluses will be managed by transferring up to 20 MG per year from the Lewis Gulch TSF to the recycle pond via the basin underdrain system, and through mechanical evaporation.

Upstream runoff catchment areas will be constructed to divert storm water away from the Lewis Gulch TSF. Runoff control ditches will also be constructed along the hillside above the proposed Soil Stockpile F, on the east side of the TSF adjacent to the access ramp and embankment crest, and along NFS Road #6644 (Lewis Gulch Road) on the hillside above the TSF. Runoff around the toe of the TSF will convey storm water toward percolation areas located around the perimeter.

Dry Fork WRSA

Water generated at the Dry Fork WRSA represents storm water infiltration that will percolate through the waste rock and collect in the UCS. Under mean precipitation conditions, water volumes collected by the UCS will range from 7.4 to 27.6 MG per year. Underdrain water will be conveyed by gravity to the UCP. Depending on water needs, water collected in the UCP will be transferred via a water transfer pipeline to the WTP, or the East Boulder TSF or Lewis Gulch TSF, depending on operational timing.

Foundation drains will be installed below the UCS to provide drainage for water below the UCS. Foundation drain pipework will gravity drain to runoff ditches and percolation areas located around the perimeter of the WRSA. If seepage from the Dry Fork WRSA were detected in the foundation, the drain may be used as an additional seepage collection measure.

Storm water runoff will be managed through a series of operational ditches that will be graded to direct the water to perimeter collection ditches and basins for infiltration or discharge to percolation areas. Storm water channels will be designed to pass the peak flows resulting from the 1-in-200 year, 24-hour storm event. It is expected that runoff upstream of the proposed Dry Fork WRSA will percolate into the highly permeable coarse talus and alluvium directly upslope of the facility. A rockfall protection berm/ditch will be established and maintained along the upslope perimeter of the WRSA. Berms, ditches, and swales will be installed around the perimeter of the Dry Fork WRSA, soil stockpiles, and UCP to contain and direct runoff. Runoff from haul roads will be controlled using new and existing storm water ditches and sediment-control features.

Access Roads and Utilities

The proposed Lewis Gulch TSF and Dry Fork WRSA will require relocation of existing roads and mine infrastructure as well as construction of new roads and infrastructure. The total combined disturbance area for roads and infrastructure relocation associated with Alternative 3 will be approximately 43.3 acres. Road relocations and construction will follow current transportation and road infrastructure management agreements.

Lewis Gulch and East Boulder Road Infrastructure Relocation and Construction

To construct the Lewis Gulch TSF, a section of NFS Road #205 (East Boulder Road – main East Boulder Mine access road) and the Boe Ranch pipeline (buried under NFS Road #205) will be

relocated to the perimeter (further north and west) of the proposed Lewis Gulch TSF. NFS Road #6644 (Lewis Gulch Road) will be relocated to the west of its existing location to the toe of the proposed Lewis Gulch TSF. Other infrastructure that will need to be removed or relocated include pumps, pipelines for tailings delivery, reclaim water systems, perimeter fencing, and monitoring wells.

Dry Fork WRSA Haul Road and Bridge Construction and Existing Dry Fork Road Relocation

In Alternative 2, access to the Dry Fork WRSA will be via a new haul road that will be constructed from the East Boulder Mine access road (at the northeast corner of the East Boulder TSF) to the WRSA. Public access will be maintained on the existing Dry Fork Road with a modified entrance and parking area. A water line used to transfer water from the UCP to the WTP will be buried beneath the new haul road along with a 2,500-gallon underground storage tank, auto-valve, and manhole located on the west side of the new haul road bridge for additional temporary containment of the pipeline water in the event of a power outage. The new haul road will cross the East Boulder River via a new three-span bridge equipped with side boards to prevent spillage into the river. The haul road will be approximately 50 feet wide to support one-way haul traffic with pullouts at select locations for vehicles to pass. Where the proposed haul road and Dry Fork Road intersect, a controlled intersection will be constructed and maintained that includes optimal road elevation and sight lines to ensure maximum visibility. A new 20-foot-wide UCP access road will also be constructed along the toe of the Dry Fork WRSA parallel to existing NFS Road #6645 (Dry Fork Road), connecting the new haul road to the UCP for operation, monitoring, and maintenance.

A portion of NFS Road #6645 (Dry Fork Road), located on the north side of the East Boulder River, will be relocated outside of the WRSA footprint. The existing bridge will be maintained, and the new NFS Road #6645 alignment will be offset from the UCP access road to maintain a forested visibility barrier. The new NFS Road #6645 alignment will be constructed on land donated to the Forest Service by SMC.

All new (and relocated) roads will be constructed using fill materials excavated and processed from the Dry Fork WRSA footprint. Overhead power to the UCP will run across the East Boulder River from the relocated guard house on NFS Road #205.

Traffic Management Plan

SMC has prepared a Preliminary Traffic Management Plan (SMC 2023b) to describe measures that will be taken to provide and maintain safe public access during relocation of NFS Road #205 (East Boulder Road), NFS Road #6644 (Lewis Gulch Road), and NFS Road #6645 (Dry Fork Road) and during construction of the Dry Fork WRSA haul road and bridge as described in the sections above.

During road construction and relocation, SMC will provide signage and/or traffic control to the extent deemed necessary by the conditions and amount of traffic operating on or accessing the impacted roads. Signs will inform, control, warn, shift, or stop traffic on the impacted roads

when affected by the road work. Traffic control will be used when haul traffic is entering or using the impacted roads. The following will be components of SMC's traffic control and signage (SMC 2023b):

- Traffic speeds shall be limited to a maximum of 20 miles per hour.
- Traffic patterns shall be right-hand traffic.
- Limit construction traffic to designated access roads, construction laydown areas, parking areas, and the Project site.
- Traffic signs will be placed at intersections and along roads, as necessary in accordance with Manual on Uniform Traffic Control Devices.
- During construction of the road section, signs will be placed near the primary bridge along East Boulder Road from Boulder Road and at the Dry Fork parking area to alert drivers of the construction. A sign will be placed to alert traffic of possible access delays "EXPECT 15 MIN DELAY."
- "CONSTRUCTION AREA DO NOT ENTER" signs will be placed at entrances to areas of the haul road, WRSA, access areas, and construction areas off Dry Fork Road and Lewis Gulch Road.
- All construction may be stopped during inclement weather (inclement weather may include rain, snow, hail, sleet, fog, high wind, etc.).
- Communication devices will be the use of radios as the primary device for communications. All equipment/operators and supervisors will have radios.
- Water trucks will be used to control fugitive dust when truck hauling is occurring.
- A grader will be used to maintain a safe running surface of the road.
- Storm water Best Management Practices will be regularly inspected and maintained.
- If in the event of an emergency on the NFS road haul section, the contractor will use the Sibanye-Stillwater East Boulder Mine's EPP (Sibanye-Stillwater 2018).

Soil Stockpile and Borrow Areas

Soil materials will be salvaged and stockpiled from the areas disturbed prior to construction activities, with the exception of the soil stockpile areas. The footprints of the Lewis Gulch TSF and Dry Fork WRSA will supply the majority of the soil volume. Topsoil excavated during construction will be removed and stockpiled separately from subsoil and rock, and both the topsoil and subsoil stockpiles will be vegetated to protect the resource. Salvageable soils from the Lewis Gulch TSF area will be stockpiled south of the TSF at Stockpile F. Salvaged soil from beneath Stages 1 and 2 of the Dry Fork WRSA will be stockpiled southeast of the Dry Fork WRSA in the footprint of Stage 3. This material will be used for concurrent reclamation of the side slopes of Stages 1 and 2 as they are constructed. Salvaged soils from the Stage 3 footprint area will be stored southeast of the Dry Fork WRSA footprint at Stockpiles J and K and used for concurrent slope reclamation during Stage 3 construction and for final reclamation of the WRSA

crest, UCP area, containment berm, percolation ponds, roads, and other disturbances. Soil stockpiles will be seeded with the agency-approved low-elevation reclamation seed mix until needed for final or concurrent reclamation activities.

Merchantable Timber

Alternative 3 will result in the removal of existing vegetation communities along the access roads, topsoil stockpile locations, and throughout the Lewis Gulch TSF and Dry Fork WRSA footprints. These areas will remain cleared of vegetation throughout construction and Project operations with the exception of portions of these areas that are concurrently reclaimed. The Douglas fir/ninebark plant community in the northern portion of the logged Douglas fir forest area is located in the northern portion of the Lewis Gulch TSF and is currently under a timber sale contract (not part of the Proposed Action). This area will be further disturbed, and merchantable trees on National Forest System lands will be removed by commercial loggers and disposed of by CGNF. NFS roads used for timber harvest will be managed per the approved East Boulder Mine - Amendment 004 traffic management plan. Any full road closures for road improvements or timber harvest (associated with road improvements) will be restricted between December 1 and March 1 during weekdays only and will remain open with a safe travel surface during off days or hours. If timber can be removed without the need for full road closure, SMC will be required to follow their traffic management plan to provide signage and/or traffic control to the extent deemed necessary for mixed traffic use. Nonmerchantable trees and shrubs will be removed by felling, bucking, windrowing, and burning. The salvaged material will include organic debris such as residual slash, root wads, and ashes from the burned slash piles. Logs and stumps will be removed prior to stripping and storage of soil.

Land Management

All new disturbances on National Forest System lands associated with Alternative 3 will be managed under the 2022 land management plan (Forest Service 2022), fire rules and regulations, and SMC's existing approved land management plans.

As designated by the 2022 land management plan, the mine is within the "Stillwater Complex" allocation of the AB GA. Plan directives for this GA include standards for recreation, scenic integrity, and timber. The SWC outlines DCs (AB-DC-SWC) to prioritize the "exploration, development, and production of palladium and platinum" (see Final EIS **Appendix A**).

All activities associated with the East Boulder Mine within and outside of the permit boundary will be managed for appropriate fire protection. SMC will be required to comply with all state, county, and Forest Service fire rules and regulations, and company policies regarding these activities.

SMC's existing, approved Weed Management Plan outlines management actions SMC must follow to control noxious weeds inside and adjacent to the mine area (see Final EIS **Appendix A**). All chemicals used in controlling dust and vegetation along NFS Roads #205, #6644, and #6645 will require approval by the Forest Service prior to application.

Reclamation, Closure, and Post-Closure

Under Alternative 3, the CORP will be revised to include proposed Project components. The current East Boulder TSF TOMS Manual will remain and the Lewis Gulch TOMS Manual will be approved and implemented. A planning phase for transition from operations into closure will occur during the final two years of operations. Closure of the Lewis Gulch TSF and Dry Fork WRSA facilities will each take up to 15 years and will occur when mining activities are complete or the facility capacities have been met. A total of 25 years is assumed for the closure and post-closure phases. The existing WTP will remain active during closure to treat collected water until Montana Water Quality Act standards are met; MPDES permit modification will be required prior to discharge of treated process water during closure. Monitoring of the Lewis Gulch TSF and Dry Fork WRSA will occur as required for annual reporting.

Disturbances associated with Alternative 3 will be reclaimed in accordance with the approved methods and regulatory requirements detailed in the CORP. Adequate volumes of soil and capping materials are available onsite for closure and reclamation as well as all existing facilities and disturbed areas. Under Alternative 3, the Lewis Gulch TSF cap will receive 24 inches of waste rock with 28 inches of replacement soil overlaid (22 inches of subsoil and 6 inches of topsoil). The Lewis Gulch TSF embankment and crest will receive 12 inches of replacement soil. The Dry Fork WRSA will receive a minimum of 18 inches of replacement soil (12 inches of subsoil and 6 inches of topsoil). Concurrent reclamation of soil stockpiles, cut-and-fill slopes, borrow areas, percolation pond slopes, power line right-of-way, final TSF embankment slopes, WRSA outer slopes and roads, laydown areas used for construction, pipeline corridors, debris flow deflector berm, and edges of new roads will occur throughout operations. The haul road to the WRSA will be reclaimed in place.

Post-closure will last approximately 10 years for the Lewis Gulch TSF and Dry Fork WRSA. The IRP's periodic monitoring, maintenance, and inspection review of the Lewis Gulch TSF will occur at least once every five years during this period (Section 82-4-380, MCA), while IRP review frequency after closure may be adjusted. Monitoring and maintenance inspections conducted by the EOR will occur throughout post-closure.

Facility-specific closure processes are described in the following sections.

Lewis Gulch TSF

In addition to the following closure design specifications, additional closure requirements may also be added by the IRP as part of its review process prior to closure. At the start of closure of the Lewis Gulch TSF, excess supernatant water from the TSF will be pumped to the WTP to minimize the volume of supernatant water requiring dewatering. Tailings deposition during the final years of a planned closure will establish a surface that generally slopes, allowing storm water runoff to drain toward the inlet of a constructed swale that will transport runoff downgradient to a percolation area or to the East Boulder River (1-in-200 year, 24-hour event). The final stage of the TSF embankment will be constructed to meet geomorphic landform design and long-term slope stability requirements. At closure, the Lewis Gulch TSF will be capped with a 24-inch layer of waste rock sourced from the Dry Fork WRSA and random fill

from the Lewis Gulch TSF embankment, with 28 inches of replacement soil overlaid (22 inches of subsoil and 6 inches of topsoil), along with installation of a geosynthetic reinforcement layer to improve trafficability over select areas of the TSF surface. The Lewis Gulch TSF embankment and crest will receive 12 inches of replacement soil. To assure nitrogen residue has been removed from waste rock, near-surface waste rock that has been in place for multiple years will be used for the Lewis Gulch TSF cap. SMC will be required to conduct additional investigations and analysis for the Lewis Gulch TSF by no later than 18 months before closure to ensure proper cap design, ensure proper execution of cap contouring, and facilitate a successful positive surface drainage. The sizing of closure storm water channels for both facilities will also be reevaluated by SMC and conclusions provided to DEQ for consideration of design changes during detailed closure design, and will consider relevant updated design protocols (if any) related to updated climate information and updated climate projections.

A closure diversion ditch will be constructed on the south side of the Lewis Gulch TSF to convey runoff from upgradient catchment areas around the TSF. A closure swale will be constructed near the southeast corner of the TSF to convey runoff from the reclaimed TSF into constructed percolation areas.

Once suitable TSF underdrain water quality has been attained, the underdrain system will be decommissioned through removal of sumps and pumps and grouting of the transfer pipe. Underdrains at the base of the TSF will remain unplugged and will discharge to a constructed percolation basin to facilitate tailings consolidation.

Dry Fork WRSA

The outer slopes of the Dry Fork WRSA will be reclaimed concurrently with waste rock placement and staged construction of the WRSA. Final placement of waste rock along the top of the Dry Fork WRSA will be sloped to blend in with existing topography and to accommodate surface water drainage. Final placement of waste rock during a planned closure will be performed in a manner that precludes the need for additional final grading of the Dry Fork WRSA crest, and no additional grading of the outer slopes will be required. The containment berm around the Dry Fork WRSA perimeter will be graded to match the WRSA side slopes. An overflow swale will be constructed along the toe of the Dry Fork WRSA to convey seepage of suitable water quality and runoff from the storm water ditches to a percolation area or to the East Boulder River.

During closure, the UCS will remain operational to transfer meteoric water directly to the WTP. If monitoring and modeling in support of the final design demonstrates achievability, during Year 4 of closure, a subsurface passive bioreactor system (passive system) will be constructed. SMC will need to submit and obtain approval of the final passive system design documents before it can be implemented for post-closure treatment. Current modeling assumes the effluent of the passive system will be expected to achieve nitrogen nondegradation status and meet water quality nondegradation standards. Tech Memo 1 reviewed nitrate attenuation and SMC's analysis of the duration of active water treatment at the Dry Fork WRSA (Haley & Aldrich, Inc. 2023). The final design will be refined depending on the final post-closure discharge

volumes and will be installed in the proximity of the UCP to create a passive nitrogen treatment system.

As currently conceived, the passive system will consist of wood chips or other readily obtainable carbon sources to support anaerobic denitrification. The UCS will be tied into the passive system through buried piping, and the effluent of the system will discharge to groundwater in the footprint of the reconstructed UCP via an infiltration trench. The UCP will be decommissioned during the installation of the passive system, the UCP liner will be removed, and the water transfer pipeline will be decommissioned via grouting. SMC will review source control technologies throughout the lifespan of the Dry Fork WRSA to determine if any technologies are feasible to promote a shorter timeframe to meet water quality standards than the currently estimated 13 years. Following confirmation of suitable water quality, the passive treatment will be decommissioned and removed, the area will be regraded and revegetated, and the underdrain outlet pipework will drain to percolation areas.

Monitoring and Maintenance

Under Alternative 3, the Water Resources Monitoring Plan and all other pertinent monitoring plans will be updated to be consistent with all new monitoring requirements detailed by agencies.

Alternative 3 monitoring will include the following:

- Measuring the TSF filling rate;
- Monitoring tailings characteristics (e.g., grade and dry density) and water recovery;
- Monitoring supernatant pond depth, area, and volume;
- Collecting meteorological (rain, snow, and evaporation) and air quality data;
- Monitoring flow in the basin underdrain system;
- Monitoring vibrating wire piezometers;
- Monitoring survey monuments; and
- Monitoring water quality and quantity.

Geotechnical monitoring for the proposed Lewis Gulch TSF will include installation of seven wire piezometers in the basin underdrain layer to monitor the response in the basin underdrain layer to the basin underdrain pumping rate. Nine survey monuments will be located on the TSF embankment crest to monitor potential movement. Nine slope inclinometers and 14 vibrating wire piezometers will be installed in the TSF embankment to monitor for potential movement in the foundation and embankment fill, as well as pore pressures in the embankment foundation and fill.

Ten vibrating wire piezometers will be installed at the base of the proposed Dry Fork WRSA, along with five piezometers, which will be installed below the HDPE geomembrane to monitor pore pressures in the foundation. Five piezometers will be installed above the HDPE geomembrane to monitor pore pressures in the underdrain layer. The containment berm will be monitored by four slope inclinometers and eight piezometers.

The Lewis Gulch TSF will continue to have the following oversight from the IRP and/or EOR:

- Quality assurance during construction (Section 82-4-378, MCA);
- Periodic review of the TSF (at least every five years) by the IRP members or by a panel meeting the requirements of Section 82-4-337, MCA; and
- Annual inspections of the TSF by the EOR during operations.

Water quality and quantity monitoring will include monitoring process water from the tailings pond and basin underdrain collection sump, groundwater from monitoring wells, and surface water around the Lewis Gulch TSF and Dry Fork WRSA.

Emergency Preparation and Notification

SMC prepared an Emergency Preparedness Plan (EPP) in case of a tailings dam breach at its existing East Boulder TSF (Sibanye-Stillwater 2018). The EPP was prepared to identify emergency and hazard conditions threatening the facility, expedite effective response actions to prevent failure, and reduce loss of life and property damage should failure occur due to an earthquake or any other event resulting in the release of tailings materials.

In 2021, SMC worked with Sweet Grass County to update the Reverse 911 system with the Code Red emergency notification system. Code Red emergency notifications come through landline phone, cell phone, and text (SMC 2023c). SMC is currently working with Sweet Grass County to evaluate other types of emergency warning systems and determine if they are a good fit for the East Boulder Valley (SMC 2023c). Emergency notification for the Lewis Gulch TSF will be the same as described for the East Boulder TSF.

In 2020, IRP recommended that appropriate downstream flood warning protocols be included in the Lewis Gulch EPP (see the Final EIS **Appendix C, Independent Review Panel Documentation**); SMC has committed to including these protocols in the Lewis Gulch TSF EPP (see the Final EIS **Appendix D, Emergency Preparedness Plan**).

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ATTACHMENT 2—PERMIT STIPULATIONS

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DEQ HARD ROCK MINING OPERATING PERMIT NO. 00149 STIPULATIONS

SMC will proceed with the fourth amendment to DEQ Hard Rock Mining Operating Permit No. 00149 for the East Boulder Mine according to the Selected Alternative, Alternative 3, as described in this ROD Attachment 1. The table below summarizes and highlights key measures that DEQ will require as permit stipulations for the Project.

Mitigation measures were developed by DEQ and the Forest Service after consideration of the potential impacts of the Selected Alternative and represent additional measures beyond SMC's AM4 proposed design features to reduce impacts on resources (see Final EIS **Table 2.4.1**). To implement mitigation measures, DEQ may add stipulations to the final amendment approval pursuant to Section 82-4-337(2)(b), MCA. Stipulations may be added to the permit either with SMC's consent or by providing to SMC, in writing, the reason for the stipulation, a citation to the statute or rule that gives DEQ the authority to impose the stipulation, and the reason that the stipulation was not contained in the draft permit amendment.

DEQ consulted with SMC about the need to include permit stipulations in the final permit. On June 19, 2024, SMC agreed to the stipulations developed by DEQ for the permit amendment. The DEQ-required permit stipulation measures for the Selected Alternative are listed in the table below. Other mitigations are required by the Forest Service and are outlined in the CGNF's Final ROD. For citation purposes, each line item in the following table is assigned a unique number (first column on the left). To avoid confusion, the numbering of stipulations below is consistent with the numbering of Final EIS **Table 2.4.1**; and may not be sequential to account for measures that are required by the Forest Service but not by DEQ. The table also provides a description of each condition (second column), the responsible agency (third column), and affected resources (fourth column).

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Stipulation Number	Stipulation Description	Responsible Agency	Resource(s) Affected
1	Within 180 days of the issuance of the RODs, SMC must submit a revised CORP to the agencies for approval. Prior to initiating construction, SMC must submit and receive approval from DEQ for updated geomorphic landform designs for the Dry Fork WRSA and the Lewis Gulch TSF.	DEQ CGNF	All
2	Within 30 days of the issuance of the agencies' RODs, SMC must update the Water Resources Monitoring Plan to incorporate the following: <ul style="list-style-type: none"> • Groundwater dependent ecosystems and surface water monitoring locations related to monitoring for the East Boulder Plateau. • The two new baseline monitoring wells drilled for the Dry Fork WRSA (EBMW-16 and EBMW-17) and a third well (EBMW-21) approved on December 2, 2022. • Proposed locations for monitoring wells to be installed downgradient of the mill site permit/POO area to demonstrate compliance with water quality standards. 	DEQ CGNF	Surface Water, Groundwater
4	In each annual report to the agencies, SMC shall provide a general description of near-surface (within 200 feet vertically or laterally of the ground surface) stope elevations for the next 12 months of mining and provide detailed reporting where mining occurred within 200 feet (vertically or laterally) of the ground surface in the previous 12 months. At a minimum, detailed reporting should include information concerning encountered ground competency, estimated distance to surface till, nearby surface water structures, and bolting/grouting/backfilling procedures shall be provided.	DEQ CGNF	Surface Water, Groundwater, Geotechnical Stability
5	SMC must reclaim the Lewis Gulch TSF embankment and crest surface with 6 inches of subsoil and 6 inches of topsoil for a total of 12 inches of replacement soil.	DEQ CGNF	Soils and Reclamation, Vegetation
8	Similar to East Boulder TSF reclamation requirements, SMC shall conduct additional investigations and analysis for the Lewis Gulch TSF and Dry Fork WRSA by no later than 18 months before closure to ensure proper cap design, ensure proper execution of cap contouring, and facilitate a successful positive surface drainage. If the investigations identify necessary changes to the reclamation plan to ensure proper cap design, ensure proper execution of cap contouring, or facilitate a successful positive surface drainage, then SMC shall modify the reclamation plan in accordance with the MMRA.	DEQ CGNF	Surface Water, Geotechnical Stability, Soils and Reclamation

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