DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ)
Environmental Assessment

WATER QUALITY DIVISION
Water Protection Bureau

Name of Project: Stillwater Mining Company East Boulder Mine

Type of Project: Renewal of Montana Pollutant Discharge Elimination System (MPDES) permit MT0026808 for treated wastewater discharge from an underground platinum mine for a five-year renewal cycle.

Location of Project: Latitude/Longitude: 45.502896, -110.085706

City/Town: Approximately 32 miles **s**outh of Big Timber, Montana

County: Sweet Grass

Description of Project: Sibanye-Stillwater, dba, Stillwater Mining Company (SMC) is the owner and operator of the East Boulder Mine (hereinafter Facility), an underground platinum and palladium mine. SMC was first authorized to discharge from an exploratory adit under MPDES Permit No. MT0026808 in 1988. The discharge permit was renewed and reissued in 2000. The subsequent, and current, MPDES permit became effective on November 1, 2015, and expired on October 31, 2020 (2015 Permit). It has remained administratively extended since that time. (See Fact Sheet Part 1.1.)

The Facility has maintained permit coverage for three outfalls: Outfall 001, which has never been constructed but is permitted to be a future direct discharge of treated mine wastewater to the East Boulder River through a diffuser; Outfall 002, which is the infiltration of treated mine wastewater that mixes with groundwater before reaching the river; and Outfall 003, which is septic system discharge upgradient of Outfall 002 that mixes with the Outfall 002 mixing zone. (See Fact Sheet 1.3.2 and 3.7.1.)

In 2021 the Facility upgraded their wastewater treatment facilities by adding a preliminary process step (thickener) and a final process step (10-micron disc filter unit). In addition, since the 2015 permit renewal there have been numerous changes in the regulatory requirements for numeric and narrative nutrients (total nitrogen and total phosphorus). (See Fact Sheet 1.3.1.)

For this renewal, DEQ has modified permitting requirements including the addition of a surface water mixing zone for groundwater discharges from Outfall 002, the use of the maximum actual discharge flow rate rather than the WWTF design rate for the current operating configuration (no Outfall 001), and consideration of pollutants in the septic system discharge that impacts the assimilative capacity for Outfall 002 in mixing zone calculations. (See Permit Part I.A., Fact Sheet Part 3.7.1.)

DEQ prepared a draft permit and fact sheet for the issuance of this renewed permit, and a response to comments document addressing comments received during the public comment period. The fact sheet and response to comments documents include additional detail on the configuration of the outfalls, groundwater and surface water mixing zones, and receiving waters. These documents also describe the mixing zone evaluations supporting compliance with ARM 17.30.501 - .518 and demonstration that the mixing zones do not threaten or impair existing beneficial uses.

The renewed permit authorizes surface and ground water mixing zones for discharges of treated adit wastewater to the East Boulder River both directly through the unbuilt diffuser (Outfall 001) and indirectly through alluvial ground water ultimately discharging to the East Boulder River (Outfall 002). Outfall 001 has a nearly instantaneous surface water mixing zone for future discharge through a properly designed diffuser. Outfalls 002 and 003 discharge first to groundwater, then into surface water in a diffuse manner along 10,420 feet of stream length. The source-specific ground water and surface water mixing zones for Outfall 002 (including any contributions from upgradient Outfall 003 through groundwater) has been analyzed and determined to be nonsignificant at the boundary of the mixing zones.

The permit incorporates technology-based effluent limitations (TBELs) and Water Quality-based Effluent Limits (WQBELs). The fact sheet includes the Reasonable Potential (RP) Analysis and development of WQBELs, based on Montana water quality standards promulgated in ARM 17.30.601 – 670 and Montana's nondegradation policy set forth in 75-5-303, MCA and ARM 17.30.701-715. Outfall 001 will also include Whole Effluent Toxicity (WET) requirements. The renewed permit contains monitoring and reporting requirements that are sufficient for DEQ to ensure compliance with the effluent limits and other conditions of the permit and a compliance plan that allows the mine to have time to achieve new nutrient and total recoverable copper limits.

The environmental impact of the mine was analyzed in the East Boulder Mine Project Final Environmental Impact Statement (FEIS) in 1992 and an EIS to analyze the impacts of various water management alternatives in 2012. Most recently, the East Boulder Mine Stage 6 Tailings Storage Facility Expansion Project Environmental Assessment was issued in 2020. Currently, DEQ and the US Forest Service have released the East Boulder Mine Amendment 004 Draft EIS in June 2023 for public review. This draft EIS is for the mine's proposed Facility's Lewis Gulch Tailings Storage Facility and Dry Fork Waste Rock Storage area. SMC is not proposing any point source wastewater changes in Major Amendment 004.

Alternatives:

No Action Alternative – Under the no action alternative the DEQ would not reissue the discharge permit. In reality, if the permit is not reissued, the mine would cease discharge to the East Boulder River watershed and likely send treated water to the Underground Injection Control (UIC) well located at Boe Ranch. The East Boulder River is listed as being impaired for flow and studies by Boulder River Watershed Association and Montana Department of Natural Resources and Conservation have concluded that the East Boulder River is often dewatered later in the summer and flows are not usually sufficient to meet all irrigation demands. Cessation of discharge of treated mine water to the East Boulder River watershed would cause further flow impairment on the East Boulder River.

A permit may only be denied or terminated for cause as provided in ARM 17.30.1363. Cause for termination include: noncompliance by the permittee with any permit condition; the permittee failure in the application or during the permit issuance process to fully disclose all relevant facts, or the permittee's misrepresentation of any relevant facts at any time; a determination that the permittee's activity endangers human health or the environmental and can only be regulated to an acceptable level by permit modification or termination; or a change in any condition that requires either a temporary or a permanent reduction or elimination of any discharge controlled by the permit. None of these situations are applicable.

Proposed Action Alternative - The proposed action is to issue the MPDES permit renewal. No alternatives to the proposed action were considered.

Applicable Regulations:

ARM Title 17, Chapter 30, Subchapter 5 - Mixing Zones in Surface and Ground Water.
ARM Title 17, Chapter 30, Subchapter 6 - Surface Water Quality Standards.
ARM Title 17, Chapter 30, Subchapter 7 - Nondegradation of Water Quality.
ARM Title 17, Chapter 30, Subchapter 12 – MPDES Effluent Limitations and Standards
ARM Title 17, Chapter 30, Subchapter 13 – MPDES - Permits
Montana Water Quality Act, Section 75-5-101, et. seq., MCA.

Summary of Issues: Excess water from the mine is treated and discharged under the terms and conditions of the Facility's MPDES permit, which is based on nonsignificance levels.

Nitrogen discharges from the facility have non-significance-based limits regulated by two programs:

- MMRA – Operating Permit No. 00149. The facility is required to maintain groundwater total inorganic nitrogen (TIN) to below 7.5 mg/L at the end of the operating permit boundary. There is an action threshold of 6.5 mg/L TIN at upgradient monitoring wells in conformance with the Good Neighbor's Agreement (GNA).
- MPDES – the facility is required to maintain surface water Total Nitrogen (TN) to nonsignificance levels. The numeric limits for the (unbuilt) direct discharge Outfall 001 as well as discharge to groundwater through infiltration (Outfall 002) are developed using dilution allowed through approved groundwater and surface water mixing zones. A compliance plan is required in order to achieve long-term nutrient reduction goals (See Permit Part I.A., Part I.B, and Part I.E and Fact Sheet Part 6.3.3 and Appendix 4) .

Before the 2015 permit, the discharge from the septic system at Outfall 003 was not evaluated and there was limited discharge data. The renewed permit will require additional discharge monitoring from this system. In addition, the groundwater assimilative capacity for the treated discharge at Outfall 002 was reduced based on approximated contribution from the septic discharge, which is upgradient from the mixing zone for Outfall 002. The TN contribution from Outfall 003 appeared to be slightly above the 2 lb/day nonsignificance load based on two data points. DEQ determined that due to intermingled groundwater mixing zones, it is more consistent to aggregate the two TN loads into one facility-wide interim TN limit of 32 lb/day (30 lbs/day for Outfalls 001 & 002 (SUM) and 2 lb/day Outfall 003).

Benefits and Purpose of Action: The permit ensures adequate treatment of wastewater prior to discharge and includes monitoring and reporting requirements for the quality and quantity of effluent discharged from the facility.

Affected Environment & Impacts of the Proposed Project:

Y = Impacts may occur (explain under Potential Impacts).
N = Not present or No Impact will likely occur.

IMPACTS ON THE PHYSICAL ENVIRONMENT	
RESOURCE	**[Y/N] POTENTIAL IMPACTS AND MITIGATION MEASURES**
1. GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE: Are soils present which are fragile, erosive, susceptible to compaction, or unstable? Are there unusual or unstable geologic features? Are there special reclamation considerations?	[N] The discharge of treated wastewater to surface or ground water will not have an effect on geology or soils. No new construction will take place as a result of this renewal.
2. WATER QUALITY, QUANTITY AND DISTRIBUTION: Are important surface or groundwater resources present? Is there potential for violation of ambient water quality standards, drinking water maximum contaminant levels, or degradation of water quality?	[N] The permit contains WQBELs that are based on Montana water quality standard promulgated in ARM 17.30.601 – 670 and Montana's nondegradation provisions set forth in 75-5-703, MCA and ARM 17.30.701-715. WQBELs for the three (3) point source discharges regulated under the MPDES permit are based on protection of existing water quality and will maintain water quality close to pre-mine conditions. Specifically, these WQBELs are based on nonsignificance which is much more stringent than the water quality standard levels needed to protect all beneficial uses. Downstream, the Boulder River below the confluence with the East Boulder River is listed as impaired for chromium, copper, iron, lead, nickel, nitrite plus nitrate and total nitrogen. On September 11, 2009, EPA approved TMDLs for the Boulder River watershed including the East Boulder River. The approved TMDL includes waste load allocations (WLA) for the East Boulder Mine for copper, iron and lead. For this permit renewal, DEQ compared the load limits from the TMDL against the loads calculated from the concentration-based limits and has included the most stringent. In addition, although the segment of the East Boulder River that receives the Mine's discharge has no impairment listings, the downstream segments of the East Boulder River are listed as impaired for *chlorophyll-a*. The 303(d) list has included the listing for these impairments since the mid-1990's; it has not been re-assessed and the causes and sources have not been identified.
3. AIR QUALITY: Will pollutants or particulate be produced? Is the project influenced by air quality regulations or zones (Class I airshed)?	[N] There are no activities regulated by the wastewater discharge permit that will affect air quality. No new construction will take place.
4. VEGETATION COVER, QUANTITY AND QUALITY: Will vegetative communities be significantly impacted? Are any rare plants or cover types present?	[N] There are no activities regulated by the wastewater discharge permit that will affect vegetation. No new construction will take place as part of this permit renewal. Any disturbance of vegetation that would occur from the proposed mine expansion, currently undergoing review through the Montana Environmental Policy Act (MEPA) process, will be evaluated in future permitting actions.
5. TERRESTRIAL, AVIAN AND AQUATIC LIFE AND HABITATS: Is there substantial use of the area by important wildlife, birds or fish?	[N] There are no activities regulated by the wastewater discharge permit that will affect wildlife or birds. To date, no direct discharge to the East Boulder River has occurred at Outfall 001; however, the permit's WQBELs will maintain aquatic habitat and aquatic life without degradation. No new construction will take place with this renewal. The potential for impact to terrestrial, avian, and aquatic life and habitats from the proposed mine expansion, currently undergoing review through the MEPA process, will be evaluated in future permitting actions.

IMPACTS ON THE PHYSICAL ENVIRONMENT	
RESOURCE	**[Y/N] POTENTIAL IMPACTS AND MITIGATION MEASURES**
6. UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES: Are any federally listed threatened or endangered species or identified habitat present? Any wetlands? Species of special concern?	[N] There are no activities regulated by the wastewater discharge permit that will affect endangered, fragile, or limited resources. No new construction will take place with this renewal. The potential for impact to endangered species from the proposed mine expansion, currently undergoing review through MEPA process, will be evaluated in future permitting actions.
7. HISTORICAL AND ARCHAEOLOGICAL SITES: Are any historical, archaeological or paleontological resources present?	[N] There are no activities regulated by the wastewater discharge permit that will affect historic or archaeological sites. No new construction will take place with this renewal. The potential for impact to historical and archaeological sites from the proposed mine expansion, currently undergoing review through MEPA process, will be evaluated in future permitting actions.
8. AESTHETICS: Is the project on a prominent topographic feature? Will it be visible from populated or scenic areas? Will there be excessive noise or light?	[N] There are no activities regulated by the wastewater discharge permit that will affect aesthetics or visual resources. No new construction will take place with this renewal. The potential for impact to historical and archaeological sites from the proposed mine expansion, currently undergoing review through MEPA process, will be evaluated in future permitting actions.
9. LAND USE: (waste disposal, agricultural lands [grazing, cropland, forest lands, prime farmland], recreational lands [waterways, parks, playgrounds, open space, federal lands), access, commercial and industrial facilities [production & activity, growth or decline], growth, land-use change, development activity)	[N] The mine is located on an existing mine site on private mining claims and national forest land. No new construction will take place with this renewal. The potential for impact to historical and archaeological sites from the proposed mine expansion, currently undergoing review through MEPA process, will be evaluated in future permitting actions.
10. IMPACTS ON OTHER ENVIRONMENTAL RESOURCES: Are there other activities nearby that will affect the project?	[N] No new construction will take place with this renewal. The potential for impact on other environmental resources from the proposed mine expansion, currently undergoing review through MEPA process, will be evaluated in future permitting actions. Also, if the permit is not reissued, the mine would cease discharge to the East Boulder River watershed and likely send treated water to the Underground Injection Control (UIC) well located at Boe Ranch. The East Boulder River is listed as being impaired for flow and studies by Boulder River Watershed Association and Montana Department of Natural Resources and Conservation have concluded that the East Boulder River is often dewatered later in the summer and flows are not usually sufficient to meet all irrigation demands. Cessation of discharge of treated mine water to the East Boulder River watershed would cause further flow impairment on the East Boulder River.

IMPACTS ON THE HUMAN ENVIRONMENT	
RESOURCE	**[Y/N] POTENTIAL IMPACTS AND MITIGATION MEASURES**
11. HUMAN HEALTH AND SAFETY: Will this project add to health and safety risks in the area?	[N] There are no activities regulated by the wastewater discharge permit that will affect human health or safety. No new construction will take place with this renewal.

IMPACTS ON THE HUMAN ENVIRONMENT	
RESOURCE	**[Y/N] POTENTIAL IMPACTS AND MITIGATION MEASURES**
12. INDUSTRIAL, COMMERCIAL AND AGRICULTURAL ACTIVITIES AND PRODUCTION: Will the project add to or alter these activities?	[N] The mine project is allowed under the Metal Mine Reclamation Act. Additions or alterations will be authorized under those statutes. The renewal of this permit will not impact these activities.
13. QUANTITY AND DISTRIBUTION OF EMPLOYMENT: Will the project create, move or eliminate jobs? If so, estimated number.	[N] No jobs would be created, moved or eliminated by the renewal of this permit.
14. LOCAL AND STATE TAX BASE AND TAX REVENUES: Will the project create or eliminate tax revenue?	[N] The renewal of this permit has no effect on tax revenues.
15. DEMAND FOR GOVERNMENT SERVICES: Will substantial traffic be added to existing roads? Will other services (fire protection, police, schools, etc.) be needed?	[N The renewal of this permit will not affect the demand for government services.
16. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS: Are there State, County, City, USFS, BLM, Tribal, etc. zoning or management plans in effect?	[N] The operation of the mine was analyzed in the 1992 and 2012 Environmental Impact Statements and is being analyzed in the 2023 draft EIS. The issuance of the MPDES discharge permit was discussed and considered in these analyses. The Facility has continued to work with the Good Neighbors to ensure conformance with the Good Neighbor Agreement (GNA), including open meeting discussions and cooperative review of permitting decisions. The Good Neighbor Agreement is a private agreement between a company and non-governmental organizations and is non-regulatory and not enforceable by DEQ.
17. ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES: Are wilderness or recreational areas nearby or accessed through this tract? Is there recreational potential within the tract?	[N] The renewal of this permit will not affect the access or quality of recreational or wilderness activities.
18. DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING: Will the project add to the population and require additional housing?	[N] The renewal of this permit would not add to the population or require additional housing.
19. SOCIAL STRUCTURES AND MORES: Is some disruption of native or traditional lifestyles or communities possible?	[N]
20. CULTURAL UNIQUENESS AND DIVERSITY: Will the action cause a shift in some unique quality of the area?	[N]
21. OTHER APPROPRIATE SOCIAL AND ECONOMIC CIRCUMSTANCES:	[N]
22(a). PRIVATE PROPERTY IMPACTS: Are we regulating the use of private property under a regulatory statute adopted pursuant to the police power of the state? (Property management, grants of financial assistance, and the exercise of the power of eminent domain are not within this category.) If not, no further analysis is required.	[N]
22(b). PRIVATE PROPERTY IMPACTS: Is the agency proposing to deny the application or condition the approval in a way that restricts the use of the regulated person's private property? If not, no further analysis is required.	[N]

IMPACTS ON THE HUMAN ENVIRONMENT	
RESOURCE	**[Y/N] POTENTIAL IMPACTS AND MITIGATION MEASURES**
22(c). PRIVATE PROPERTY IMPACTS: If the answer to 22(b) is affirmative, does the agency have legal discretion to impose or not impose the proposed restriction or discretion as to how the restriction will be imposed? If not, no further analysis is required. If so, the agency must determine if there are alternatives that would reduce, minimize or eliminate the restriction on the use of private property, and analyze such alternatives. The agency must disclose the potential costs of identified restrictions.	[N]

23. **Description of and Impacts of other Alternatives Considered:** None

24. **Summary of Magnitude and Significance of Potential Impact**: The renewal of this permit will continue to provide a regulatory framework for the Facility to treat and discharge industrial and sanitary wastewater in conformance at nonsignificance levels found in ARM 17.30.715.

25. **Cumulative Effects:** Total nitrogen (TN) residual from blasting agents is a primary pollutant of concern in the treated wastewater. In addition to the treated adit water and the facility septic discharge permitted under MPDES permit MT0026808, the facility has non-point discharges of TN that are regulated under the Metal Mine Reclamation Act (MMRA), Section 82-4-301, et seq., Montana Code Annotated (MCA) as Operating Permit 00149. Because the treated adit waster is infiltrated into groundwater that flows northwest below the Treatment Storage Facility (TSF), the facility-wide mixed groundwater must meet the nonsignificance values at the end of the MMRA operating permit boundary.

26. **Preferred Action Alternative and Rationale:** The preferred action is to issue (renew) MPDES permit MT0026808.

Recommendation for Further Environmental Analysis:

[ ] EIS [ ] More Detailed EA [x] No Further Analysis

Rationale for Recommendation: An EIS is not required for the issuance of this MPDES permit under the Montana Environmental Policy Act because the action to renew the permit lacks significant adverse effects to the human and physical environment. All of the anticipated effects to the physical and human environment will be mitigated or eliminated during the project implementation.

27. **Public Involvement:** The DEQ will provide for a 30-day public comment period on the draft permit, fact sheet and environmental assessment.

28. **Persons and agencies consulted in the preparation of this analysis:** None

EA Checklist Prepared By: EA prepared by Christine Weaver, April 2023, modified July 2023

Approved by:

Tatiana Davila, Bureau Chief
Water Protection Bureau

August 1, 2023
Date