Montana Resources

600 Shields Ave.
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June 13, 2022

Montana Department of Environmental Quality
Hard Rock Mining Bureau
Operating Permit Section
Garrett Smith
P.O. Box 200901
Helena MT 59620

Permittee: Montana Resources, LLP
Operating Permit #: 00030
Location: Continental Mine
Date: June 13, 2022

Re: Application for Permit Modification to Operating Permit No. 00030: Horseshoe Bend (HsB) Rock Disposal Site (RDS) Stage 1 Design

Dear Mr. Smith:

Montana Resources, LLP (MR) requests a permit modification to Operating Permit No. 00030 to construct the Horseshoe Bend (HsB) Rock Disposal Site (RDS). A drainage system designed to manage runoff from the surrounding catchment areas, seepage from the Yankee Doodle Tailings Impoundment (YDTI), and drainage from the rockfill leaching areas would be constructed prior to RDS development. The context and purpose for this permit modification is based on information excerpted from the "Horseshoe Bend Rock Disposal Site Stage 1 Drainage System Report" (Knight Piésold Ltd. (KP) December 6, 2021). This report was submitted as a technical reference to the Montana Department of Environmental Quality (DEQ) by MR on December 7, 2021. DEQ provided MR with Preliminary Review Comments on the report on January 3, 2022; MR's Responses to DEQ Review Comments are presented in **Attachment 1** to this letter. KP's report is included as **Attachment 2.**

The HsB RDS-Stage 1 Drainage System Report was reviewed by the YDTI Independent Review Panel (IRP), who also participated in meetings with KP and MR regarding this proposal. The IRP issued a Memorandum dated December 17, 2021 (**Attachment 3**) supporting placement of additional rockfill in the HsB area and concluding that design concepts were reasonable and well-suited to site conditions.

Figures cited in this permit modification application are presented at the end of this letter.

This permit modification application incorporates criteria in MCA 82-4-342(4) and follows the format of ARM 17.24.119(3) and (4).

(a) General Summary of Proposed Changes

Amendment 10 to MR's Operating Permit was approved in August 2019 to allow for continued use of the YDTI. The long-range mine plan indicated that approximately 160 million tons of rockfill would be

produced during mining between 2022 and 2031 following construction of the 6450-foot embankment lift. As part of a risk assessment of the YDTI conducted by KP in 2018, the selective and strategic use of excess rockfill generated during mining of the Continental Pit was identified as an opportunity to enhance embankment stability. The Horseshoe Bend area was selected as a priority rock disposal site location, as it would result in substantial benefit to the tailings facility by enhancing embankment stability and improving reclamation opportunities.

The Stage 1 HsB RDS is shown in **Figure 1.** Construction would be sequenced in five phases (3 phases of the drainage system and 2 phases of the RDS) as depicted in **Figure 2**. The design presented in KP's report is preliminary, hence, project layout may be subject to minor modifications during construction, but in no circumstances will the total drain capacity be reduced.

Drainage System Design: As discussed with DEQ at a meeting on January 14, 2022, certain water management activities within the Precipitation Plant Exempt area may occur prior to DEQ approval of the HsB RDS, including building demolition and removal, site grading, and ditch, pipe, foundation layer, and rock layer drain installation (Phases 1-3).

The principal design objectives for the drainage system described in KP's Stage 1 report include management of surface water runoff in the HsB area and groundwater discharge within the foundation of the RDS during mine operations and in the long-term following closure. Water would continue to be collected and conveyed to the HsB Pond in a manner that limits impacts to the existing water management infrastructure, including the HsB Weir and facilities downstream of the HsB Pond, consistent with the BMFOU remedy. The beneficial results of flow management are:

- flows would be centralized;
- a portion of HsB flows would be buried beneath the RDS, creating anoxic conditions;
- water management is consistent with the BMFOU remedy;
- as described in **Attachment 2**, water management would not interfere with EPA monitoring activities;
- draindown in the leach pads has resulted in lower flow volumes;
- Seep 10 would be retained; and
- no new volume would be generated.

Activities within Phase 1 involve the decommissioning of the Precipitation Plant; demolition and removal of the plant and other infrastructure such as transmission lines and water management structures; and draining down of the Holding, Surge, and Houligan Ponds.

Phases 2 and 3 include a foundation drainage layer and a network of independent engineered rockfill drains and surface water diversion ditches. The network would convey flows to the HsB Pond to tie in with the broader site water management systems. The foundation drainage layer will be formed across the ground surface once existing infrastructure has been removed and the ponds have been drained down. The rockfill drains would then be formed within and above the foundation drainage layer and would discharge into surface water ditches and ultimately the HsB Pond.

The design assumes that the foundation base layer (blanket drain) conveys no flow, however, MR has decided to place Pipestone Quarry rock in selected areas of the blanket drain to provide additional redundancy to the design and excess drainage capacity in the foundation of the RDS. The inclusion of multiple independent drainage systems improves the HsB area water management system in consideration of the long-term design life. The layers of conservatism in HsB drainage design are

detailed by KP in **Attachment 4.** Placement of 150-feet of rockfill in the HsB area will greatly attenuate peak flows that have not previously been attenuated.

HsB RDS: The Stage 1 RDS footprint (**Figure 1**) includes the area directly adjacent to the YDTI E-W embankment, leaching operations, and mine haul ramp (7% ramp), but excludes rockfill placement within the central portion of the HsB area where the truck maintenance workshop, truck wash, water management facilities and other mine facilities will be preserved. The top elevation of the conceptual Stage 1 RDS is approximately 5,900 feet, which is currently limited by a high-voltage transmission line that extends along the Seep 10 bench at this elevation.

The HsB RDS layout was developed in conjunction with the HsB Stage 1 drainage system design to provide strategic use of non-ore rock from the Continental Pit. The HsB RDS will enhance YDTI embankment stability and allows timely and strategic rock disposal after completion of the YDTI 6450-foot embankment lift. Stage 1 of the HsB RDS will be constructed in two lifts: 5700 and 5900 feet. A subsequent stage (yet to be permitted) would increase the height of the HsB RDS.

The HsB RDS overlies a portion of the Precipitation Plant Exempt area and the downstream toe of the YDTI Embankment that was previously proposed to be rip-rapped. The HsB RDS design overall slope of 3H:1V will cover this relatively steep (2H:1V) section, allowing for improved slope stability, erosion control and reclamation.

In addition to enhancing YDTI embankment stability, the HsB RDS would also provide opportunities to:

- reclaim a portion of the Precipitation Plant Exempt area;
- accommodate storage for a large volume of rockfill;
- collect water from ponds and seeps into a central location;
- reduce, cover and revegetate a steep (2H:1V) slope of the YDTI Embankment that was previously proposed to be stabilized by rip-rap;
- improve visual resources by reducing slopes and revegetating; and
- provide improved erosion control on flatter slopes, potentially resulting in higher vegetative cover, thereby reducing meteoric infiltration and overall HsB-area drainage and water treatment requirements.

Schedule: Phases 1 through 3 would begin prior to mid-October 2022 and would be completed prior to placement of rockfill. Non-ore rock placement in the RDS would begin following approval of the permit modification and would continue until the 5900 lift was finished.

(b) Non-Significance pursuant to 82-4-337(5), MCA *(not MCA 82-4-337(7), MCA 82-4-342(5)(a-k), and ARM 17.24.120)*

Surface Disturbance: The foundation drainage system and HsB RDS would occur within the Permit 00030 area on previously disturbed ground, and as such, would be an insignificant impact relative to the entire operation. The permit modification area footprint covers approximately 125 acres out of a total disturbed area of 5700 acres in Permit 00030 (**Figure 1**).

Water Quality: No off-site water quality issues are anticipated as water will be managed consistent with the BMFOU remedy. The HsB area receives runoff from the surrounding catchment areas, seepage from the YDTI, and drainage from the rockfill leaching areas. The seepage daylights as small seeps at various locations along the downstream toe of the embankment and leach dumps. The purpose of the drainage system presented in this permit modification and described in KP's report (**Attachment 2**) is to manage

surface water runoff in the HsB area and groundwater within the foundation of the proposed RDS during mine operations and in the long-term following closure.

Cultural Resources: No cultural resources would be affected.

Air Quality: The proposed activities associated with this permit modification application are consistent with MR's existing MAQP.

(c) Previous Environmental Analysis

The HsB water has previously been extensively studied and reported in various BMFOU reports. This permit modification application does not propose disturbance to previously undisturbed areas. All proposed activities occur on previously disturbed ground within the Precipitation Plant Exempt area or adjacent areas previously disturbed within Permit 00030. The HsB RDS provides enhancements to the YDTI which was analyzed in the Amendment 10 EIS.

(d) Prior Commitments to Reclamation and Approved Standards

Changes associated with this permit modification would alter prior commitments to reclamation or approved standards. MR's Consolidated Operations and Reclamation Plans for the Continental Mine were preliminarily submitted to DEQ on December 10, 2021. These Plans will be revised to address changes associated with the HsB RDS. Revised text, figures, and exhibits are listed in tables in **Attachment 5**. The primary reclamation change is to convert a portion of the Precipitation Plant Exempt Area to an RDS with reclamation procedures to be revised as discussed below.

Reclamation of the Stage 1 HsB RDS will be completed unless subsequent stages are proposed by MR and approved by DEQ. In that case, a revised reclamation plan would be prepared to address additional rock placement.

Reclamation of the HsB RDS is based on design components of Stage 1 and will include:

- Conversion of pipelines to open ditches post-closure. Consistent with the operational phase drainage system design, post-closure drainage ditches and structures will be designed to handle the 200 year/24 hour storm event; a design capacity deemed "reasonable" in the IRP's Stage 1 Drainage System Report review memo (**Attachment 3**). Although stormwater runoff rates are expected to decrease post-closure due to regrading, capping and revegetation of most mine features and disturbed areas, the 200-year/24-hour design criteria will be maintained to provide the long-term functionality of the surface water drainage system. If stormwater runoff from the RDS is of suitable quality, it will be directed into the stormwater ditch system separate from the BMFOU system.
- Angle of repose faces of the RDS will be graded to an approximate angle of 3H:1V. Intervening benches will be dozed and incorporated in resloping, except portions of one or two benches between the base at 5650 feet and the top at 5900 feet will be retained for erosion control. The slopes immediately above and below the retained benches may be slightly steeper than 3H:1V since the overall slope angle (angle of repose lift plus benches) is 3H:1V.
- The regraded slope and benches of the RDS and sides of ditches (above rock armoring) will be covered by 20 inches of suitable alluvium, amended if necessary based on testing, and seeded.

- Reclamation of the HsB RDS will be completed within 2 years of final rock placement unless subsequent stages are permitted or in the permitting process, in which case reclamation will be completed following cessation of rock placement.
- Post-closure topography is shown on **Figure 3**. **Figure 4** shows locations of cross-sections and **Figures 5** and **6** show cross-sections of the HsB RDS.

(e) Bonding

The Stage 1 HsB RDS design would affect 45 acres of the Precipitation Plant Exempt area (see **Figure 1**). In a meeting with MR on January 14, 2022, DEQ indicated that the Exempt status of the Precipitation Plant area would be removed and revert to pre-1974 status. Removing a portion of the Exempt status would result in an increase in bond.

(f) Replacement Pages and Maps

Replacement pages (text and figures) and exhibits for the Consolidated Operations and Reclamation Plan resulting from changes perpetuated in this permit modification are summarized in tables presented in **Attachment 5.** Replacement pages will be submitted in conjunction with responses addressing DEQ comments on plans submitted to DEQ (December 10, 2021).

(g) Construction, Operations, Reclamation, Monitoring, and Contingency Plans

Construction and monitoring of the HsB RDS and drainage system is discussed in KP's December 6, 2021 report (**Attachment 2**). Reclamation of the Stage 1 HsB RDS is addressed in section (d) of this application. MR's Consolidated Operations and Reclamation Plans were preliminarily submitted to DEQ December 10, 2021 and will be formally submitted to DEQ as a permit revision later in 2022. Revised pages and exhibits in both plans that are specific to this permit modification are listed in **Attachment 5**.

(h) Updated Map

Figures 1 through **6** cited in this permit modification application are presented following this letter.

MR appreciates DEQ's input and timely review of this permit modification application. Please contact me at (406) 496-3211 if you have questions or concerns regarding the application.

Sincerely,

Mark Thompson
Vice-President of Environmental Affairs, Montana Resources, LLP

Cc: Dan Walsh, Eric Dahlgreen, DEQ
Jeremy Fleege, Mike Harvie, MR
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