MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
HARD ROCK MINING BUREAU
OPERATING PERMIT – FIELD INSPECTION REPORT

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Operator: Montana Resources, LLP | | | | | | Inspection Date: July 18, 2022 | | | |
| Operating Permit #: 00030 | | | Project: Montana Resources-Continental Mine Complex | | | County: Silver Bow | | | |
| Nearest City or Town(s): Butte | | | | | | | | | |
| DEQ Staff: Garrett Smith | | | | | | Company Representative(s): Mark Thompson | | | |
| Agencies w/overlapping Jurisdiction: | | USFS | | BLM | | Other | × | None | |
| Minerals: Copper, molybdenum, minor silver | | | | | | | | | |
| Status: | × | Active | | Inactive | | Suspended | | Other | |
| Weather: Mostly sunny, windy, high temp 82°F | | | | | | | | | |

| Type of Operation: | | Purpose of Inspection: | |
|---|---|---|---|
| × | Open Pit | | Initial (Pre-permitting) |
| | Underground | × | Regular Compliance |
| | Placer | | Amendment # |
| × | Heap Leach- *Leach pads near HSB no longer receiving solution* | | Complaint Received |
| | Vat Leach | | Bond Release |
| × | Mill | × | Other – *Meeting with Superfund parties* |
| | Other: | | NON issued |

INSPECTION CHECKLIST
(N/O = Not Observed, N/A = Not Applicable)
*Additional notes are italicized*

GENERAL:

| | Yes | | No | | N/O | | N/A | |
|---|---|---|---|---|---|---|---|---|
| | | | × | | | | | All mining-related disturbances within permitted and bonded areas. *Construction of new Precipitation Plant may overlap with post-1974 disturbance boundary, which would require additional bond* |
| | | | | | | | × | Incremental bonding requirements have been submitted |
| | | | × | | | | | Following approved mining plan and permit conditions- *Construction of new Precipitation Plant has not yet been authorized* |
| | × | | | | | | | Following approved monitoring plans |
| | × | | | | | | | Reclamation concurrent with mining |

| MATERIAL HANDLING: | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Yes | | No | | N/O | | N/A | |
| | × | | | | | | | Soil salvage according to plan |
| | | | | | × | | | Soil stockpiles properly maintained |
| | × | and | × | | | | | Special handling/stockpiling of materials consistent with plan: *Lunchroom stockpile is providing borrow material for Parrot waste removal. Not a violation, but language in Op/Rec Plan should be updated.* |
| FACILITIES: | | | | | | | | |
| | Yes | | No | | N/O | | N/A | |
| | | | × | | | | | Construction reports properly filed. *Construction of new Precipitation Plant has not yet been authorized, deficiency comments from May 3, 2022 included construction details* |
| | × | | | | | | | Acceptable liner integrity |
| | × | | | | | | | Tailings impoundment/heap leach/dump design as approved |
| | × | | | | | | | Road construction as approved |
| WATER CONTROLS: | | | | | | | | |
| | Yes | | No | | N/O | | N/A | |
| | × | | | | | | | Erosion-control measures (BMPs) concurrent with mining, |
| | × | | | | | | | Erosion/sedimentation mitigations acceptable: |
| | | | | | × | | | Culverts installed and maintained as approved |
| | × | | | | | | | Diversions maintained and functioning as approved |
| | × | | | | | | | Process/storage/settling pond(s) constructed, operating, and maintained. |
| | × | | | | | | | Acid rock drainage controlled |
| | × | | | | | | | Adequate freeboard in all solution storage and process facilities |
| AIR QUALITY: | | | | | | | | |
| | Yes | | No | | N/O | | N/A | |
| | × | | | | | | | Acceptable air quality. *Very windy, some fugitive dust observed, not widespread though. Mitigation efforts were ongoing* |
| OTHER: | | | | | | | | |
| | Yes | | No | | N/O | | N/A | |
| | | | | | × | | | Noxious weeds controlled. |
| | × | | | | | | | Wildlife mitigations in place and functioning. |
| | | | | | | | × | Cultural resource mitigations properly implemented |
| | | | × | | | | | Water sample(s) taken. |
| | | | × | | | | | Materials sample(s) taken |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | × | | | | | | | Photos taken |
| | × | | | | | | | Are revisions or amendments anticipated in the next year? *Revision for new Precipitation Plant pending (deficiency responses from MR), updated CORP as stipulation for Stage 1 HSB RDS minor amendment.* |
| | | | × | | | | | Is comprehensive 5-year bond review due in the next year? Date of next 5-year bond review: *Final due in January 2026* |
| | | | | | | | | Other |

**DISCUSSION:**

DEQ staff arrived and signed in at Montana Resources (MR) offices at 9:00 AM. The site visit included a meeting with Superfund parties and their consultants (MR, Atlantic Richfield- AR, DEQ, CDM on behalf of EPA) and a presentation from MR about future mine planning. The field tour included the Yankee Doodle Tailings Impoundment (YDTI), West Embankment Drain (WED), Horseshoe Bend (HSB) area, and active mining areas within the Continental Pit. **Compliance assistance and recommendations are provided in bold.**

**HSB Area**

On June 14, 2022, MR submitted a permit modification application to DEQ to allow the construction of a rock disposal site (RDS) within the HSB area, at the southern toe of the YDTI (Photo 1). The feature would include a foundation drainage layer and engineered rock drains to capture and convey seepage flows from underneath the RDS, eventually reaching the management and treatment systems required under the Superfund remedy. Reclamation of the RDS would involve grading the surface to a stable slope, covering with soil, and reseeding. The designs for the RDS and underlying drainage system were certified by the designated Engineer of Record (EOR). Even though the project does not constitute an expansion of a tailings storage facility (as defined in 82-4-303, MCA), the Independent Review Panel (IRP) for the YDTI also reviewed the project plans and provided supportive feedback.

DEQ issued a Final Environmental Assessment (EA) and Decision Document within 30 days (July 14, 2022). The EA found no significant adverse impacts from the project and the Decision Document provided approval for the Proposed Action with the following stipulation:

> **Stipulation MA-11-001**: No later than 180 days following the approval of this permit modification (January 10, 2023), MR shall submit an updated version of the Consolidated Operations and Reclamation Plans as a revision to Hard Rock Mine Operation Permit No. 00030. The updated Plans must incorporate the additional details, replacement pages, figures and/or exhibits that are specific to the HSB RDS permit modification and address the preliminary review comments provided by DEQ on January 10, 2022.

The rock drains underneath the HSB RDS would be constructed with layers of durable rock from the Pipestone Quarry, using similar methods as the WED within the West Embankment. As observed on the site tour, stockpiles of drain rock have been staged around the HSB area (Photo 2). Some fill material and drain rock have also been placed around the east side of HSB, to assist with compaction and drainage of the collection ponds at the toe of adjacent leach pads (Photo 3). The former ponds have been drained and residual seepage flows are being collected and conveyed to the primary HSB Pond through diversion ditches (Photos 4, 5, and 6).

The HSB area contains water management infrastructure related to YDTI seepage collection and mine rock leach operations and miscellaneous mine buildings, including the Precipitation Plant, truck maintenance workshop, and truck wash facilities. The old Precipitation Plant is a pre-1971 processing facility that is exempt from the MMRA and reclamation bonding requirements (Attorney General Opinion, 1977). This feature has been depicted as an "exclusion

area" footprint of 73 acres within the permit boundary. The approved permit modification for the HSB RDS requires demolition of the old Precipitation Plant, thus eliminating the pre-1971 processing facility that retained the exempt status (Photo 7). The exemption from permitting and bonding requirements would no longer apply to the area, as the remaining buildings and infrastructure are not processing facilities. **The obligated bond required for the permit modification is $36,500 (73 acres x $500/acre), consistent with the bonding level for pre-1974 disturbance areas surrounding the HSB. Pending an adjustment of the obligated bond amount held by DEQ, the approved amendment allows MR to proceed with the activities associated with the construction and eventual reclamation of the HSB RDS.**

MR submitted a request for permit revision MR22-001 on April 13, 2022 to construct a new Precipitation Plant, approximately 0.5 mile to the south of the old plant within HSB. DEQ provided a deficiency letter on May 3, 2022 with questions about the construction, operation, and reclamation of the plant, as well as the location of the plant in relation to pre-1974 disturbance areas. MR has not responded to the deficiency comments at the time of this inspection, although construction of concrete structures and foundations at the new facility have progressed beyond the ground preparation that was observed on the June 7, 2022 site inspection (Photos 8 and 9).

The new plant location is no longer within the exempt HSB footprint, it is located on previously disturbed ground where no structures exist in the currently approved permit. **Although the precipitation process would continue in a similar manner at the relocated plant, an entirely new facility constructed in a new location constitutes a change to the details of the approved Operations and Reclamation plans. Additional bond may also be required to address reclamation for portions of the facility that occur outside of the pre-1974 disturbance area (82-4-338, MCA and ARM 17.24.141). DEQ contacted MR on July 19, 2022 and explained that this activity is considered a violation of 82-4-336(4), MCA, for departing from an approved plan without obtaining department approval for the proposed change. DEQ will soon provide additional correspondence regarding this noncompliance.**

**YDTI and WED- Superfund Interactions**

The site tour continued to the YDTI, where the crest elevations are being constructed to an elevation of 6,450 feet. Tailings discharge along the west side of YDTI continues to develop a wide beach between the West Embankment and the supernatant pond (Photos 10 and 11). As the beach surface area increases, additional measures are needed to reduce the potential for blowing dust. MR has installed storage bladders for magnesium chloride around the YDTI, to speed up the process to deploy and refill tracked vehicles onto the beach (Photo 12). During this site visit, wind gusts began around 10:00 AM and exceeded 40 mph through midday. Proactive application of magnesium chloride on the beach took place earlier in the day, although the high winds resulted in fugitive dust blowing from the beach (Photos 13 and 14). The severity of blowing dust would likely have been worse in the absence of the mitigation methods being employed. MR reported that the volume of magnesium chloride used in the first 6 months of 2022 (>600,000 gallons) has exceeded the annual totals used in 2020 and 2021.

At the south end of the West Embankment, the lined extraction pond continues to receive the outflow from the WED installed within the embankment's foundation (Photo 15). The drain also collects a lesser amount of groundwater, which generally follows topography and flows eastward from the West Ridge to the West Embankment. The flow rate into the WED extraction pond was typically between 300 and 450 gpm during 2019-2021, but the rate has increased from 450 to 575 gpm in the first quarter of 2022. This increase is likely due to additional tailings discharge along the West Embankment and rapid/direct infiltration of water into the coarse tailings that are adjacent to the WED. The measured flows remain below the design capacity of the WED (4,500 gpm).

Water quality monitoring results from the extraction pond are provided in the 2021 Annual Progress Report. Although the TSF pond had an average pH of 10.3, the water reporting to the extraction pond had an average pH of 3.31 and the concentration of sulfate and some metals (Al, Cd, Cu, Fe, Mn, Pb, U, Zn) are enriched in the extraction pond as

compared to the tailings pond. This indicates the current level of reactivity of the materials that are encountered by water entering the WED. **Monitoring the WED water quality and flow rates should continue as specified in the Operating Plan. The monitoring results should also be compared to the modeling assumptions that were included in Amendment 010. This information will further inform the development of future plans to expand the TSF, with respect to evaluating the performance of the WED and the potential options to manage the long-term outflow.**

DEQ completed an Environmental Impact Statement for the expansion of YDTI through Amendment 010 in August 2019. As part of evaluating post-closure water management scenarios, DEQ considered an alternative to the Proposed Action that would involve diverting flow away from the WED extraction pond, instead of recirculating the water back into YDTI. As described in the Final EIS:

- "The concept of eliminating WED pumpback at closure would not affect the sequence of mining nor the timeframe of active operations, but would instead shorten the post-mining reclamation timeline and modify the management of impoundment water following mine closure."
- "This alternative presents a different scenario for YDTI water management at closure, which necessitates recognition of EPA's authority over long-term water management and treatment at the site under the BMFOU. Discussions and coordination with all parties involved in the 2002 BMFOU Consent Decree would be needed to 1) review the options and feasibility for handling and treating this water, 2) discuss the potential use of existing or upgraded facilities and infrastructure (e.g. HsB Water Treatment Plant) to treat this water, and 3) to amend the agreement accordingly to allow for such a change."

The Final EIS and Record of Decision included a stipulation for the approval of Amendment 010:

- "No later than September 1, 2022, Montana Resources, LLP (MR) shall conduct at least one meeting with parties to the BMFOU Consent Decree to discuss and evaluate the feasibility of eliminating the post-closure pumpback of water collected by the WED system, by handling and treating the WED seepage through the use of existing or upgraded water treatment facilities and infrastructure. No later than September 30, 2022, MR shall submit a report to DEQ Hard Rock Mining Bureau, which details MR's efforts to conduct the meeting(s), and the outcome, if any, reached by BMFOU parties. Based upon the outcome and a consensus by the BMFOU parties, the mine permit may be modified accordingly through a future revision or amendment. If any BMFOU parties are unwilling to participate in the discussions or it is determined that alternative WED seepage management methods are unacceptable, then MR shall meet this stipulation requirement by submitting documentation of the efforts made to convene all parties."

**In addition to this onsite meeting (July 18, 2022), DEQ has participated in previous meetings with BMFOU parties to discuss the options for post-closure management of water that reports to the WED extraction pond. In order to satisfy the stipulation provided above, MR must submit a report to DEQ by September 30, 2022, which details MR's efforts to conduct the meetings, and the outcome, if any, reached by BMFOU parties.**

**Mining Activities**

The tour concluded with the Continental Pit, where mining continues within the D East, D North, and C Block portions of the pit (Photo 16). This also provided a good view of the west highwall, which reveals the Central Zone alluvium above an iron-rich oxidized cap, which occurs above an enriched ore zone that occurs in the area between the Berkeley and Continental Pits (Photo 17). This area may be developed as part of future mining, which would likely be a component of a pending major amendment.

**Permit Actions (Pending)**

- Site-Wide Reclamation Plan- As described in the application for the HSB RDS, "MR's Consolidated Operations and Reclamation Plans were preliminarily submitted to DEQ on 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." In order to establish a timeframe for the submittal of the Consolidated Operations and Reclamation Plans, DEQ included Stipulation MA-11-001 (see beginning of report discussion) for the approval of this permit modification on July 14, 2022.
- Precipitation Plant Relocation- Application for permit revision was submitted on April 13, 2022. Responses are pending from MR to the deficiency comments DEQ provided on May 3, 2022. Construction of the new plant has continued without DEQ's authorization, and potentially without being adequately bonded. DEQ will provided additional correspondence about noncompliance.

The site inspection concluded by 12:00 PM. Recommendations and action items are shown in bold above.

| | | | |
|---|---|---|---|
| Signature of Inspector(s): | | Date: | 7/27/2022 |
| Signature of Reviewer: | | Date: | 7/28/2022 |
| Copy reports to: | Permittee (c/o Mark Thompson, Montana Resources); eFile 00030.3 | | |

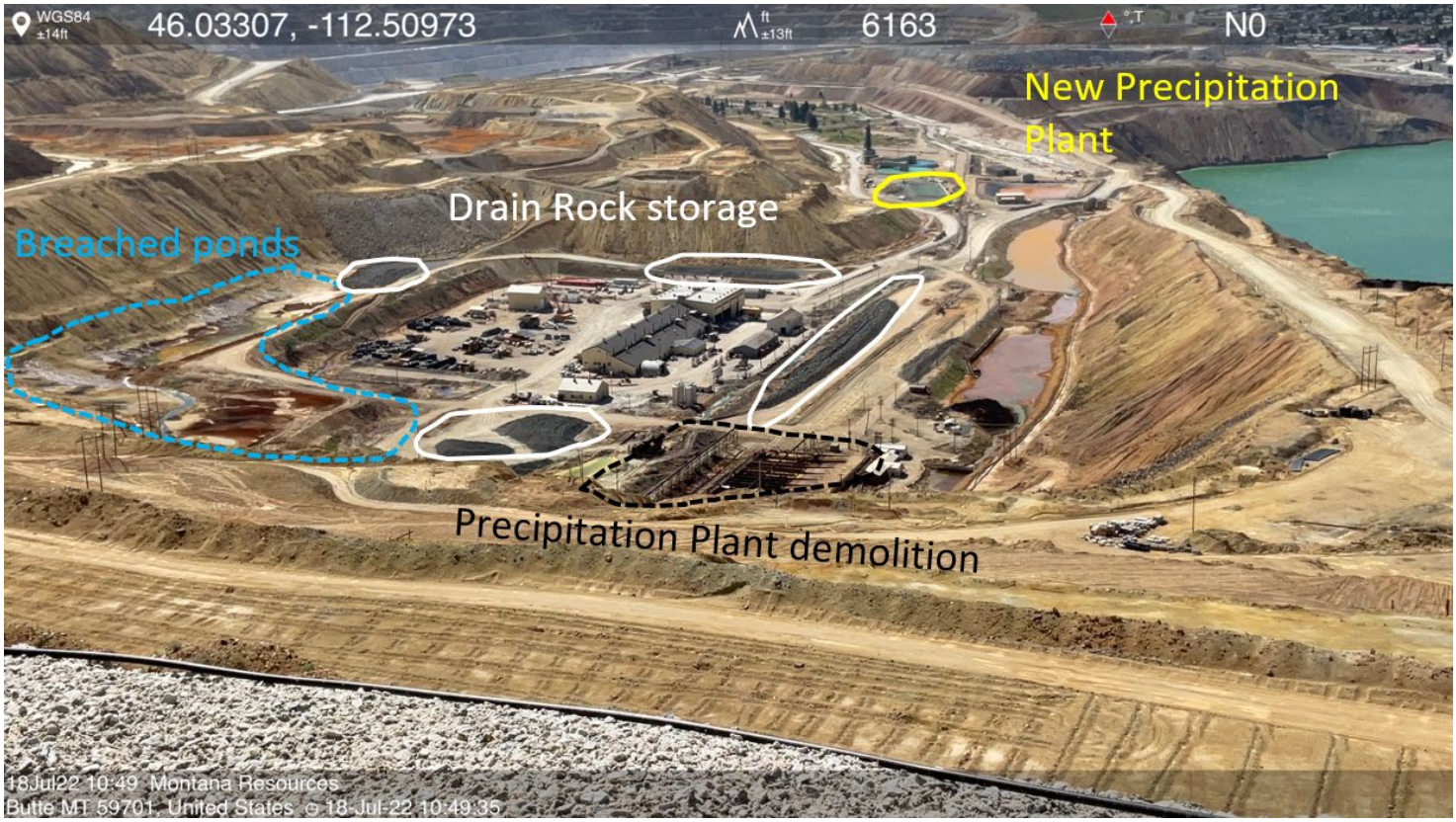
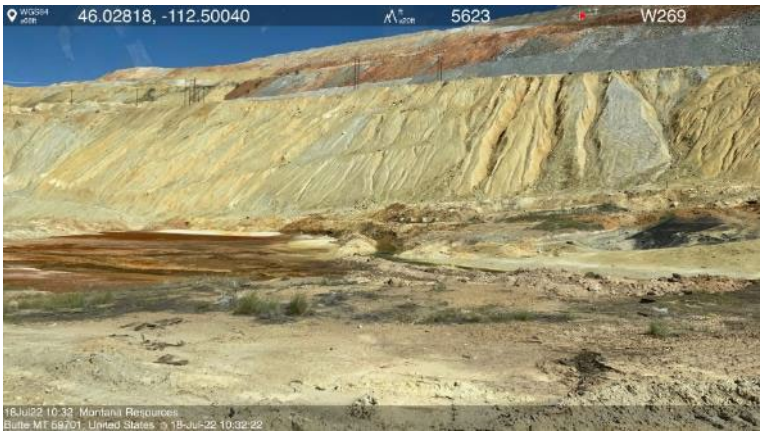



**Photo 1-** Looking south over the HSB area: the former Precipitation Plant is being demolished (lower center, black); water collection ponds at the toe of adjacent leach pads have been breached and drained (left, blue); drain rock from Pipestone Quarry has been placed in stockpiles around the area (white); the construction of the new Precipitation Plant near the HSB Water Treatment Plant (yellow); Berkeley Pit to the distant right.


**Photo 2-** Stockpiles of drain rock from the Pipestone Quarry have been staged around the HSB area for future construction of a foundation drainage layer and engineered rock drains. **Photo 3**- Some fill material and drain rock have also been placed around the east side of HSB, to assist with compaction and drainage of the collection ponds at the toe of adjacent leach pads.




**Photos 4 and 5-** The former collection ponds have been drained and residual seepage flows are being collected and conveyed to the primary HSB Pond through diversion ditches

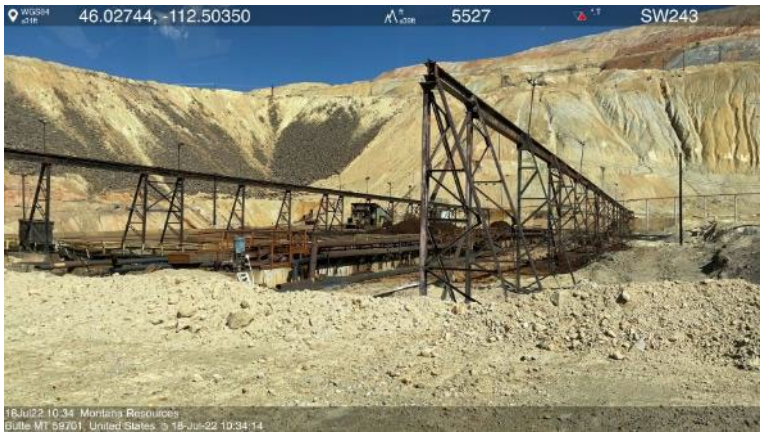



**Photo 6-** The primary HSB Pond, which contains the multiple sources of seepage that eminate from HSB. From this holding pond, water may be diverted to the HSB Water Treatment Plant or pumped into the YDTI. **Photo 7-** The old Precipitation Plant is in the process of being demolished, a few components still remain.



**Photos 8 and 9-** Construction continues at the proposed location for the new Precipitation Plant, to the north of the HSB Water Treatment Plant. Concrete structures and foundations have been created, although the associated permit revision (MR22-001) has not been approved and a bond adjustment may be necessary.



**Photo 10-** The interior/upstream face of the West Embankment, with tailings discharge lines across the slope. **Photo 11-** The extraction pond at the south end of the WED, where a pump barge is used to circulate water back into the YDTI.



**Photo 12-** MR has installed storage bladders for magnesium chloride around the YDTI, to speed up the process to deploy and refill tracked vehicles onto the beach. **Photo 13-** Tracks across the tailings beach and darkened surfaces indicate the proactive efforts to apply magnesium chloride and limit the potential for fugitive dust.

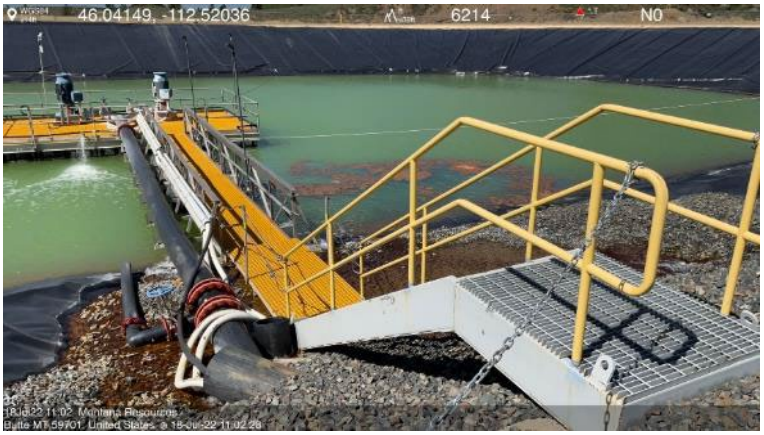




**Photo 14:** Wind gusts began around 10:00 AM and exceeded 40 mph through midday. The severity of blowing dust would likely have been worse in the absence of the application of magnesium chloride. **Photo 15:** At the south end of the West Embankment, the lined extraction pond continues to receive the outflow from the WED installed within the embankment's foundation.



**Photo 16-** Mining continues within the D East, D North, and C Block portions of the Continental Pit. **Photo 17-** The west highwall of Continental Pit, which reveals the Central Zone alluvium (brown) above an iron-rich oxidized cap (red), which occurs above an enriched ore zone.