CONTINENTAL MINE OPERATIONS PLAN

Montana Resources, LLC
600 Shields Ave
Butte, Montana
USA 59701

March 2023

MONTANA RESOURCES

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List of Acronyms and Abbreviations

ACM	Anaconda Copper Mining Company
AGP	Acid generating potential
amsl	Above mean sea level
ANP	Acid neutralizing potential
AP	Acid potential
AR	Atlantic Richfield Company
ARM	Administrative Rules of Montana
BAMAOU	Butte Active Mine Area Operable Unit
BMFOU	Butte Mine Flooding Operable Unit
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CHPP	Comprehensive Historic Preservation Plan
DEQ	Montana Department of Environmental Quality
EOR	Engineer of Record
EPA	U.S. Environmental Protection Agency
GMMIA	Granite Mountain Memorial Interpretive Area
gpm	Gallons per minute
HDPE	High density polyethylene
hp	Horsepower
HsB	Horseshoe Bend
HsBCS	Horseshoe Bend Capture System
HsB RDS	Horseshoe Bend Rock Disposal Site
HsBWTP	Horseshoe Bend Water Treatment Plant
IRP	Independent Review Panel
KV	Kilovolt
Mbcy	Million bank cubic yards
MCA	Montana Code Annotated
MDT	Montana Department of Transportation
mgd	Million gallons per day
MMRA	Montana Metal Mine Reclamation Act
MPDES	Montana Pollutant Discharge Elimination System
MR	Montana Resources, LLC
MW	Megawatts
NNP	Net neutralization potential
NPL	National Priorities List
PMF	Probable Maximum Flood
POC	Points of Compliance
ppm	Parts per million
RAAR	Remedial Action Adequacy Review
RDS	Rock Disposal Site
ROD	Record of Decision
TOMS	Tailings Operations, Maintenance, and Surveillance
WED	West Embankment Drain
YDTI	Yankee Doodle Tailings Impoundment

1.0 INTRODUCTION AND BACKGROUND

Montana Resources, LLC (MR) operates an open pit copper-molybdenum mine adjacent to the city of Butte, Montana in Silver Bow County (Figure OP-1-1 and Exhibit OP-1). The operation produces copper sulfide concentrate, molybdenum disulfide concentrate, and copper precipitate (cement copper) for sale in U.S. and world markets. Since 1986, MR's operations have resulted in the payment of millions of dollars in revenue and taxes to the economy of Butte-Silver Bow City-County and the State of Montana.

1.1 PURPOSE

MR submitted an Operations Plan in 1994 (later revised in 1998) which consolidated operational information dating back to the initiation of regulatory permitting in 1973. The Operations Plan was developed to demonstrate that current (at that time) regulatory requirements of the Montana Metal Mine Reclamation Act (MMRA) and supporting rules and regulations governing the Montana Hard Rock Mining Reclamation Act were being addressed.

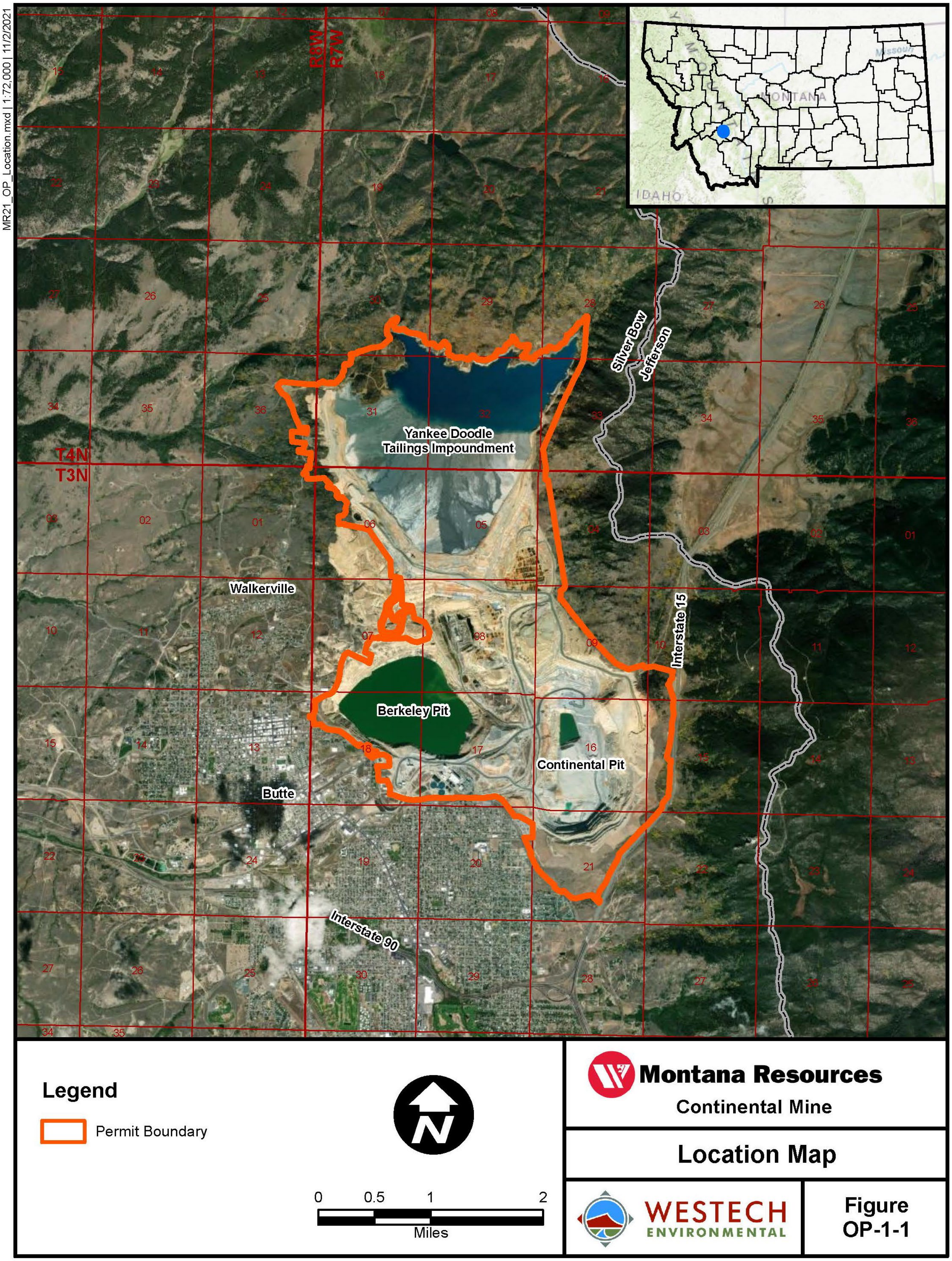
Subsequent Operations Plans submitted by MR in 2017 (updated in 2019, 2021, and this 2023 Operations Plan) address the current Montana MMRA (Title 82, Chapter 4, Part 3, Montana Code Annotated (MCA)) and the supporting rules and regulations of the Montana Hard Rock Mining Reclamation Act (Administrative Rules of Montana (ARM) 17.24.1 *et seq*.). In lieu of replacement pages, this Operations Plan or "Plan" constitutes a revision incorporating changes to operating procedures based on permit and operational modifications to date.

This update of the Operations Plan incorporates changes related to the following:

- 2020 and 2021 Annual Reports.
- 2020 through 2022 MR operations updates.
- Amendment 003 to Operating Permit 00030 and Amendment 10 to Operating Permit 00030A to raise the West Embankment of the Yankee Doodle Tailings Impoundment (YDTI) to the 6450-foot elevation, matching the previously permitted elevations of the North-South and East-West Embankments (approved by Montana Department of Environmental Quality (DEQ) April 22, 2020).
- Minor Amendment 011 to Permit 00030 to allow for the construction of a Rock Disposal Site (RDS) within the Horseshoe Bend (HsB) area at the toe of the YDTI. It includes 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 (approved by DEQ July 14, 2022).

The Plan also incorporates minor revisions approved between 2020-2022, including:

- Minor Revision 20-001: 17-acre permit boundary adjustment to include the Horseshoe Bend Capture System booster pump station and associated infrastructure (pipeline, access roads, powerline) as part of the Superfund remedy (approved by DEQ August 26, 2020).



MR21_OP_Location.mxd | 1:72,000 | 11/2/2021
R8W
R7W
T4N
T3N
MONTANA
IDAHO
Yankee Doodle
Tailings Impoundment
Silver Bow
Jefferson
Walkerville
Interstate 15
Berkeley Pit
Continental Pit
Butte
Interstate 90
Legend
Permit Boundary
0
0.5
1
2
Miles
Montana Resources
Continental Mine
Location Map
WESTECH
ENVIRONMENTAL
Figure
OP-1-1

- Minor Revision 20-002: Disturbance boundary adjustment to construct the YDTI return water barge access road at the north end of the YDTI to a higher elevation (approved by DEQ August 26, 2020).
- Minor Revision 21-001: Permit boundary adjustment to withdraw the area associated with the Berkeley Pit Visitor Center and Viewing Stand (approved by DEQ May 26, 2021).
- Minor Revision 21-002: Consolidation of Operating Permits 00030, 00030A, 00041, and 00108 into a single permit (00030) to facilitate management of the four formerly contiguous units and retention of the June 13th due date for annual progress report submission and fee payment (approved by DEQ in June 2021).
- Minor Revision 21-003: Allows for the continued delivery and handling of Parrot Tailings mine waste and associated water from dewatering activities (approved by DEQ in June 2021).
- Minor Revision 21-004: Resolution to Stipulation 001 to Minor Revision 07-001 by providing justification for not benching the Hillcrest RDS after the fact, and submitting an Erosion Control Plan for the East RDS Complex (approved by DEQ November 19, 2021).
- Minor Revision 22-001: Allows for the relocation of MR's Precipitation Plant to a site approximately 0.5 miles south-southeast from its previous location to facilitate copper recovery from the Horseshoe Bend area seeps and Berkeley Pit water (approved by DEQ October 5, 2022).
- Minor Revision 22-002: "D" East disturbance boundary adjustment to authorize additional disturbance and overburden removal to the east of the current "D" East highwall to mitigate potential highwall instability (approved by DEQ October 26, 2022).

Lastly, this update incorporates changes related to the following:

- Tailings Discharge Plan for the YDTI (MR 2018).
- Butte Mine Flooding Operable Unit (BMFOU) Remedial Action Adequacy Review (RAAR) (Arcadis 2019).
- Montana Resources Emergency Operational Plan 2023 (MR 2023).
- Final On-Site Water Management Work Plan for the Berkeley Pit and Discharge Pilot Project (MR 2020b).
- Tailings Operations, Maintenance, and Surveillance (TOMS) Manual Rev. 5 (Knight Piésold (KP) 2022.
- DEQ's Preliminary 5-Year Bond Determination Comments and Requests for Additional Information, MR's Response in a letter to Garrett Smith, Montana DEQ, dated October 2, 2020 (MR 2020a).
- Montana Resources 5-Year Bond Determination 2020-2025 (DEQ 2021).
- Update to YDTI Dust Control Plan, including an evaluation of additional options, protocols, and tools to control windblown tailings (March 18, 2022).

- Resolution of a stipulation in the approval of Amendment 10 to eliminate the West Embankment Drain (WED) pumpback system at mine closure and manage this water as part of the BMFOU remedy, as agreed to by the Settling Defendants (MR and Atlantic Richfield Company (AR)). Approved by DEQ October 5, 2022.
- Responses to DEQ January 10, 2022 Preliminary Review Comments for the MR Operations and Reclamation Plans dated December 2021 (submitted October 14, 2022; acknowledged by DEQ November 15, 2022).

1.2 MINE SITE HISTORY

Gold placer mining was conducted in the Upper Clark Fork area in the 1860's and 1870's, and included the development of mining camps along Silver Bow Creek. Hard rock mining for silver ore began in the 1870's, resulting in a more permanent settlement of the area. Marcus Daly developed the Anaconda Copper Mining Company (ACM), organized the ACM properties with the assets of the Standard Oil Company in 1899, and included other mine properties owned by Augustus Heinze in 1906 and W. A. Clark in 1910. By 1950, the ACM controlled all mining operations in Butte.

ACM began open pit mining at the Berkeley Pit in 1955. Construction of the YDTI began in 1963, utilizing non-ore rock from the Berkeley Pit. The ACM sold all of its corporate assets to the Atlantic Richfield (AR) Company in 1977. In 1980, AR suspended all smelting activities in Anaconda and Great Falls.

Mining activity in the Berkeley Pit was reduced in the early 1980's due to low metal prices, ultimately ending in April, 1982. District dewatering pumps were shut down, allowing the underground mines and the Berkeley Pit to gradually fill with water from the bedrock/alluvial aquifers and site runoff once mining operations ceased.

Montana Resources, Inc. purchased the property from AR in 1985 and began mining the East Berkeley (Continental) Pit in 1986. Mining permits were transferred from Montana Resources, Inc. to Montana Resources, a general partnership in 1989, which subsequently became Montana Resources, LLC. Non-ore rock from the Continental Pit was used to continue construction of the YDTI Embankment. MR ceased to operate the leach pads in 1999 and suspended mining operations from 2000 to 2003 due to high electricity prices; however, mining and processing operations recommenced in 2003. Limited leaching was resumed in 2004, with gradually increasing volume and leaching of pads by September, 2012.

The majority of the mine site has been previously disturbed (i.e., pre-1985). Descriptions of the existing environment have been addressed in MR's prior permit submittals, discussed in the following section.

1.3 MONTANA RESOURCES PERMITS

1.3.1 Mine Operating Permits

A summary of MR's historical operating permits (00030, 00030A, 00041, 00041A, and 00108) prior to consolidation in June 2021, including amendments, modifications, and revisions, is presented in Appendix OP-A for reference.

1.3.2 Other Montana Resources Permits

A list of existing MR permits and commitments is presented in Table OP-1-1.

Table OP-1-1 Montana Resources Existing Permits and Commitments

Administrative Agency	Agency Bureau/Section (if applicable)	Permit Name	Permit No.
Montana Department of Environmental Quality (DEQ)[1]	Mining Bureau - Hard Rock Mining Section	Montana Metal Mine Reclamation Act (MMRA) Mine Operating Permit Exploration License	00030 00711
	Air Quality Bureau	Air Quality Permit	1749-14
	Underground Storage Tank Section	Montana Underground Storage Tank (UST) Leak Prevention Program Operating Permit	47-13549
U.S. Environmental Protection Agency (EPA)	Superfund	Butte Mine Flooding Operable Unit (BMFOU) Consent Decree	CV02-35-BU-RFC
	Resource Conservation and Recovery Act (RCRA) Information Program	RCRA ID	MTD144180304
	Office of Pollution Prevention and Toxics (OPPT)	Toxic Substance Control Act (TSCA)	TSCA124321 EPA Registry ID 110000428555
	Toxics Release Inventory (TRI) Program	TRI	59701MNTNR600SH
U.S. Department of Labor	Mine Safety and Health Administration (MSHA)	MSHA ID	24-00338
U.S. Department of Justice	Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF)	ATF	9-MT-093-33-2K-00334
Federal Communications Commission (FCC)	FCC	Loadout Frequency Mine Frequency Engineering GPS Frequencies	KOH785 KBV605 WQCC568
Federal Aviation Administration (FAA)	FAA	Letter of Determination for waterfowl mitigation lasers	No designation - letter authorization

[1] Additionally, MR had Montana Pollutant Discharge Elimination System (MPDES) Permit MT-0000191 from the Water Protection Bureau. MR is in the process of providing a Notice of Intent and Stormwater Pollution Prevention Plan for coverage under the Multi-Sector Permit for Stormwater Discharges Associated with Industrial Activity.

1.4 BUTTE MINE FLOODING OPERABLE UNIT AND THE CONTINENTAL MINE

In 1983, the EPA listed Silver Bow Creek as a Superfund Site on the National Priorities List (NPL) pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). In 1987, historic and active mine areas in the vicinity of Butte were added to the Superfund Site and the name changed to Silver Bow Creek/Butte Area. The Silver Bow Creek/Butte Area Superfund Site is separated into several operable units (OUs), one of which is the BMFOU that includes most of MR's overall mine permit area (Figure OP-1-2).

In 2001, the EPA and DEQ issued a "Decision Document Regarding Deferral by EPA to State Authority for the Butte Active Mining Area Operable Unit (BAMAOU), Silver Bow Creek/Butte Area (Butte Portion) NPL Site (EPA 2001)." As a result of the Decision Document, EPA deferred use of CERCLA authority of the BAMAOU conditional upon MR meeting state regulatory requirements and posting of an adequate reclamation bond. Even if these conditions were met, EPA reserved the right to exercise CERCLA authority should the reclamation plan contained in the permits not be implemented by MR and/or enforced by the State, or bonding be inadequate to cover the cost of reclamation required by the permits.

In 2002, the EPA and DEQ issued an "Explanation of Significant Differences" (EPA 2002) for the BMFOU which modified the 1994 Record of Decisions (ROD) (EPA 1994). Pertinent elements of the Explanation of Significant Differences affecting reclamation are:

- the upgradient bypass of streams entering the YDTI was modified to accommodate potential wet closure;
- authority for management and reclamation of the sludge repository was transferred from the DEQ mine permit process to EPA;
- authority for YDTI dam stability monitoring was transferred to the DEQ mine permit process;
- treatment of Continental Pit water would occur in the Horseshoe Bend Water Treatment Plant (HsBWTP);
- allowance for HsBWTP sludges to be placed in the Berkeley Pit without offsetting water withdrawals; and
- modification of the 1994 ROD requirement for reevaluation of treatment technology when the water level in the pit reaches the 5260-foot level.

The primary objective of the remedy is to protect human health and the environment from risks posed by contaminated water in the bedrock aquifer and rising contaminated waters within the BMFOU.

The HsBWTP plant is the primary remedy component for the BMFOU and has an ongoing operations and maintenance component. The water treatment plant was constructed between 2002 and 2003 and was tested and became operational in late 2003. The most recent five-year review report (EPA 2021) states:

> The EPA has decided in this report that the cleanup activities completed to date and additional planned cleanup activities at the Berkeley Pit/Mine Flooding OU will be protective once complete. In the meantime, contaminated mine water is contained and prevented from entering into the alluvial aquifer and Silver Bow Creek. Institutional controls are in place to restrict the use of groundwater in the Butte Water District Controlled Groundwater Area.

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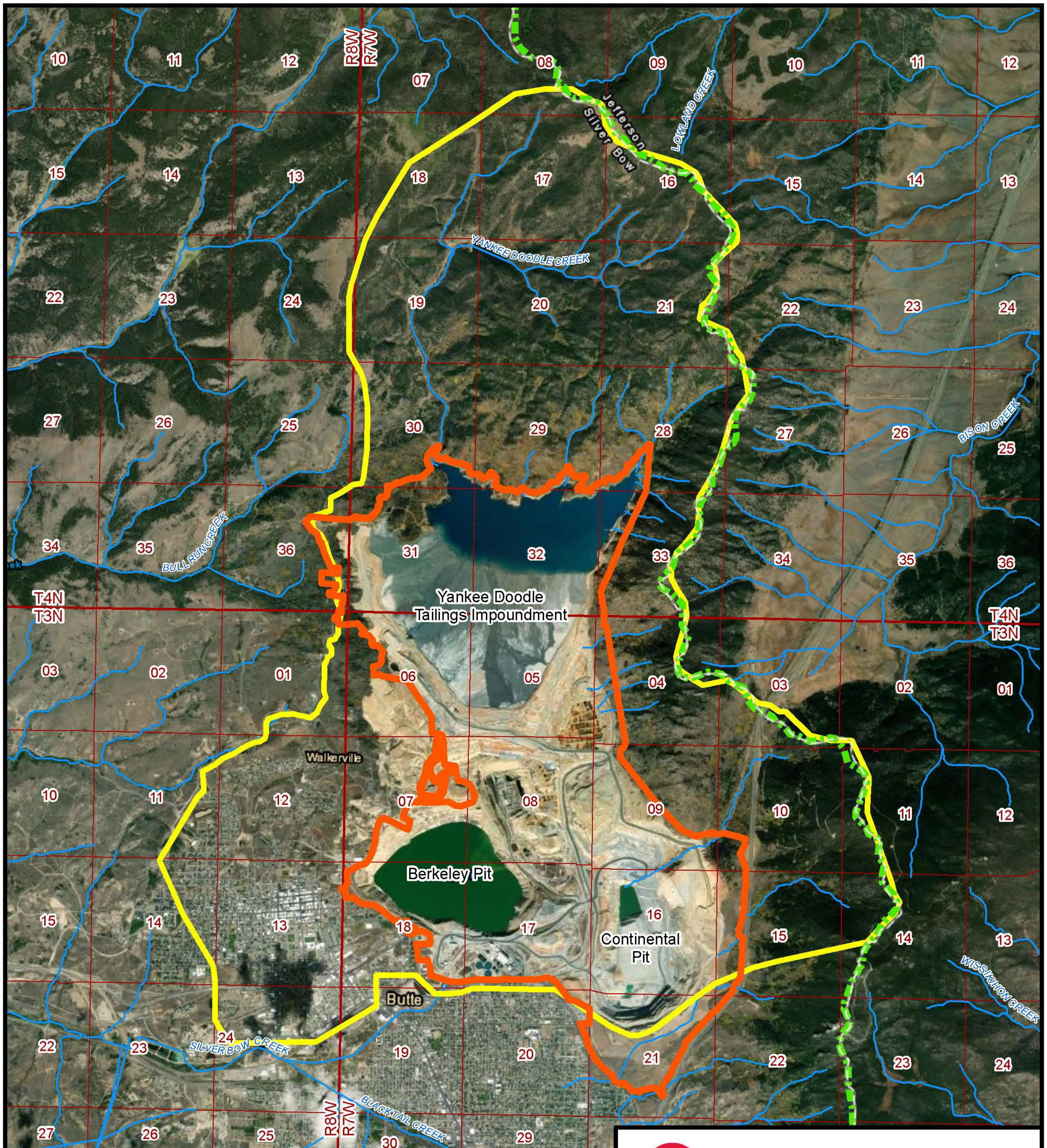


Legend

- Butte Mine Flooding Operable Unit (BMFOU)
- Continental Mine Permit Boundary
- Continental Divide
- Drainage
- Section Line

0 0.5 1 2
Miles

Montana Resources
Continental Mine

Butte Mine Flooding Operable Unit (BMFOU)

WESTECH ENVIRONMENTAL

Figure OP-1-2

BMFOU Settling Defendants, MR and AR, submitted a RAAR Technical Memorandum dated November, 2019 (Arcadis 2019) to EPA and DEQ Remediation Division. A copy was provided to DEQ (Hard Rock Mining Bureau). The RAAR addressed design and operation of the HsBWTP, and additional water treatment facilities, as treatment components for the combined flow of the Horseshoe Bend area, Berkeley Pit, and Continental Pit waters. A pilot project (i.e., the Berkeley Pit and Discharge Pilot Project or Pilot Project) proposed in 2018 to control the rise of water in the Berkeley Pit is discussed in the RAAR. The conclusion of the RAAR states:

> The HsBWTP and its associated facilities, including components of the Pilot Discharge System, comprise a flexible water management and treatment system that can be adjusted and reconfigured for optimization, respond to upset conditions, and incorporate additions to, or improvements of, technologies in the future. (RAAR page ES-14)

As part of the Pilot Project, MR prepared a Final On-Site Water Management Work Plan for the Berkeley Pit and Discharge Pilot Project (MR 2020b). The On-Site Water Management Work Plan was approved with comments by EPA and DEQ (Remediation Division) in a June 18, 2020 letter, with the July 2020 submittal addressing these comments. The infrastructure common to the BMFOU remedy and mine operations is included in this Operations Plan. The Pilot Project is not entirely within MR's control due to a variety of factors; interruptions that could impact the timeline are possible.

A stipulation was attached to the approval of Amendment 010 to Permit 00030 in April 2020 to discuss and evaluate the feasibility of eliminating the West Embankment Drain (WED) pumpback system at mine closure and manage the water as part of the BMFOU remedy. Managing the WED water through the BMFOU remedy was agreed to by MR and AR, with concurrence from EPA and DEQ Remediation Division. In its conclusion that the Settling Defendants had satisfactorily resolved the stipulation, DEQ stated:

> As demonstrated by the documents that span from March to September 2022, MR and BMFOU parties conducted multiple meetings to discuss and evaluate the feasibility of eliminating the post-closure pumpback of water collected by the West Embankment Drain (WED) system, by handling and treating the WED seepage through the use of existing or upgraded water treatment facilities and infrastructure. In consultation with DEQ, EPA provided a letter on September 12, 2022 which confirms that the water collected by the WED after the cessation of mining would occur within the East Camp system and the agencies agree that this water would be managed as part of the BMFOU remedy.

Construction of the HsB RDS is not expected to impact existing BMFOU water management infrastructure or EPA monitoring. Water will continue to be collected and conveyed to the HsB Pond to tie in with the broader site water management systems, including the HsB Weir, and facilities downstream of the HsB Pond, consistent with BMFOU remedy. Water management associated with the HsB RDS would not interfere with EPA monitoring.

1.5 COORDINATE SYSTEM

Maps and figures presented in this Plan reference the site coordinate system known as the Anaconda Mine Grid established by The Anaconda Company in 1956. The Anaconda Mine Grid is based on the Anaconda Copper Mining Company (ACM) Datum established in 1915. All elevations in this Plan are stated in Anaconda Mine Grid coordinates with respect to the ACM Vertical Datum, which is generally 53 feet higher than the USGS datum. The MR GPS Site Coordinate System is based on the Anaconda Mine Grid and utilizes International Feet.

2.0 MINING AND PROCESSING OVERVIEW

The MR mining process involves ore extraction, ore processing, and tailings and waste disposal. Ore extraction consists of drilling, blasting, loading and hauling ore from the Continental Pit to the Butte Concentrator (Mill). Ore processing is undertaken in the Butte Concentrator, which is a three-division sulfide copper flotation concentrator. Each of the three divisions have similar grinding, flotation, and thickening circuits. After concentrate extraction in the mill process, the remaining tailings are pumped to three thickeners in preparation for pumping to the YDTI. MR previously operated an old Precipitation Plant to recover copper from Berkeley Pit water, HsB area water, and remaining leach pad draindown solution. The old Precipitation Plant was decommissioned in late 2022/early 2023 to allow for construction of the HsB RDS. A relocated Precipitation Plant is being constructed approximately 0.5 miles south-southeast of the original location.

Non-ore rock from the Continental Pit is used for construction of the YDTI Embankment with excess placed in RDSs.

Mining and processing operations are discussed in more detail in following sections of this Plan.

2.1 FACILITIES

Key facilities associated with past and present mining and processing operations at MR include:

- Berkeley Pit (inactive since 1982) and associated pumping systems
- Continental Pit
- Central Zone Alluvium Borrow Area (CZABA)
- Butte Concentrator/Primary Crusher and Processing Facilities (Mill)
- Relocated Precipitation Plant (“old” Precipitation Plant was decommissioned in late 2022/early 2023) and Leach Pad Facilities
- YDTI (Beach/Pond) and Embankment, including tailings delivery and water reclaim systems
- WED and Pond
- RDSs; also known as waste “dumps”
- HsB area, including various water management systems, the HsB Capture System (HsBCS), and the HsBWTP
- HsB RDS
- Topsoil, alluvium, and leached cap stockpiles
- HsBWTP
- Pilot Project facilities (e.g. HsBCS, Pump House and HsBCS Booster Pump House)
- Roads/Railroad
- Power lines and substations
- Tailings lines, water lines, pump houses, booster stations, and pumpback barges.

These facilities are shown on Exhibit OP-1 and described in later sections of this Plan.

2.2 PERMIT BOUNDARY

The permit boundary is located within property owned by MR (Figure OP-1-2). The permit boundary encloses an area of 6,132 acres in Sections 4, 5, 6, 7, 8, 9, 10, 15, 16, 17, 18, 20, 21, and 22 of T3N, R7W; Sections 28, 29, 30, 31, 32, and 33 of T4N, R7W; Section 13 of T3N, R8W; and Section 36 of T4N, R8W. The site is bounded by Interstate 15 and the Continental Divide on the east, Moulton Reservoir Road on the west, and Farrell Street, Continental Drive and Shields Avenue to the south.

The main access route to the guard house for the mine is from Farrell Street. The entrance to the administrative office is from Shields Avenue.

2.3 DISTURBANCE AND ACREAGE

Table OP-2-1 presents total acreages of each feature. In addition, Disturbed, Exempt, BMFOU, and Granite Mountain Memorial Interpretive Area (GMMIA) acreages are specified on the acreage table by feature.

Naming conventions of certain historic facilities were discussed with DEQ during the 5-Year (2020-2025) Bond Review Process in September, 2020. Based on mutual agreement between MR and DEQ, the following was determined (MR 2020a):

- “Pre-1971” areas (based on the year that the Montana MMRA took effect) include processing facilities that are referred to as “Exempt” on the acreage table. These facilities are bonded at $0/acre and include the Concentrator and partially reclaimed areas; and the Primary Crusher and partially reclaimed areas. Inclusion of the Primary Crusher as an Exempt facility was determined based on a comparison of side-by-side aerial photos dated September 1970 and 2020. The Pre-1971 designation does not include Powder Magazines and Explosive Storage Areas, Reclaim Central Water Tower and Water Management structures, or roads associated with these facilities.
- “Pre-1974” areas (based on the year that Amendments to the MMRA took effect) include all disturbed lands within the original Permit Area 00030, exclusive of Exempt, BMFOU, and GMMIA facilities; these areas are bonded at $500/acre.
- BMFOU areas include the Berkeley Pit, HsBWTP, related facilities identified in the RAAR, the WED post-closure, and the Continental Pit below 5410 feet elevation. These areas are under EPA’s authority under Superfund; therefore they are bonded at $0/acre.
- The GMMIA area included in Permit Boundary Adjustment Permit Revision 20-001 incorporated 17 acres into Permit Area 00030 to include the HsBCS booster pump house and associated infrastructure. DEQ determined that since this area is within the GMMIA, it would be appropriate for reclamation to match the post-mining land use of historic preservation, thus, additional bond would not currently be required. Also, decommissioning the booster pump house and related infrastructure would be under EPA’s jurisdiction within the BMFOU.

Acreages shown in Table OP-2-1 are based on the following:

- With the exception of the Continental Pit, the CZABA, the YDTI, the North RDS and the Great Northern RDS, areas are End of Year 2022;
- The Continental Pit is planned to the 2040 footprint;

- The YDTI is planned to end of year 2031; and
- The CZABA is planned at closure.

Table OP-2-1 Acreage of Montana Resources Features at the Continental Mine

Feature	Total Acres
Pits	
Continental Pit - Ultimate	560
Continental Pit - Ultimate (BMFOU)	377
Berkeley Pit (BMFOU)	684
Central Zone Alluvium Borrow Area	181
Subtotal	**1802**
Facilities	
Concentrator Area (EXEMPT) (Partially Reclaimed)	95 (19)
Horseshoe Bend Water Treatment Plant (BMFOU)	9
New Precipitation Plant Area	3
Garage Area	28
Primary Crusher (EXEMPT) (Partially Reclaimed)	44 (14)
Office	2
Subtotal	**181 (33)**
Yankee Doodle Tailings Impoundment	
YDTI Beach	1217
YDTI Embankment	479
YDTI Pond (at closure in 2031)[1]	587
YDTI West Embankment Drain (BMFOU at closure)	1
Subtotal	**2284**
Rock Disposal Sites	
Access	12
East (Partially Reclaimed/Released)	121 (92)
Great Northern	152
Hillcrest (Partially Reclaimed/Released)	48 (48)
Nalley Valley	62
North	249
North East (Partially Reclaimed/Released)	25 (25)
Pittsmont	106
Woodville (Partially Reclaimed/Released)	1 (1)
Horseshoe Bend	121
South Continental Pit	67
Subtotal	**964 (166)**
Reclamation Material	
Alluvium Stockpile	19
Soil Stockpiles	25
Permitted additional topsoil stockpile areas	11
Subtotal	**55**

Feature	Total Acres
Miscellaneous	
Exploration License 00711 East (Partially Reclaimed/Released)	1 (<1)
Historic Preservation (GMMIA)	17
Leach Pads (inactive)	44
McQueen Townsite	3
Miscellaneous Disturbed (Partially Reclaimed/Released)	288 (30)
Roads	81
Subtotal	**434 (31)**
Total Disturbance Acreage	**5720 (230)**
Acreage Summary Totals	
Permit 00030	**6132**
BMFOU	**1091**
EXEMPT	**139**
GMMIA	**17**
Disturbed[2]	**5720**
Undisturbed	**415**
Partially Reclaimed/Released[3] (as of 2021)	**(230)**
Exploration License 00711 North Area outside Permit 00030	**7 (5)**

[1] Subsequent to closure, the size of the pond would gradually decrease until it reaches equilibrium.

[2] Acreages shown are based on the following: With the exception of the Continental Pit, the CZABA, the YDTI, the HsB RDS, the North RDS, and the Great Northern RDS, areas are End of Year 2022. The Continental Pit is planned to the 2040 footprint with additional area for the "D" East Layback. The YDTI is planned to End of Year 2031; and the CZABA is planned at closure.

[3] Reclaimed acreage overlaps disturbance acreage within features; therefore, it is not independently added to the total acreages, but is shown parenthetically and totaled here for reference. Reclaimed acreage changes annually and is documented in Montana Resources' Annual Reports.

2.4 WORKFORCE

Production levels in 2022 were achieved by a total workforce of 387 personnel at the Continental Mine, as shown in Table OP-2-2. MR's workforce may fluctuate on a seasonal and annual basis. MR also utilizes contractors as needed.

Table OP-2-2 Montana Resources 2022 Workforce

Category	Exempt (salaried)	Non-Exempt (hourly)	Total
Operations	41	210	251
Maintenance	22	93	115
Administration	14	7	21
Total	**77**	**310**	**387**

2.5 PROJECT EQUIPMENT

Major equipment used at the MR operations as of 2020 is listed in Table OP-2-3. Equipment may vary as units are retired or replaced.

Road maintenance, bench grading, shovel cleanup, road construction, and concurrent reclamation requirements are met by utilizing crawler dozers, motor graders, and road water trucks as necessary each operating shift.

Topsoil and subsoil salvage is conducted by crawler dozers ripping and pushing soils to the front-end loader, which loads trucks for transport to soil stockpile areas. Soil material is reclaimed from the stockpiles using similar equipment and transported to reclamation sites. Independent contractors working under the direction of MR personnel may be employed to perform soil excavation and stockpiling and may use different equipment than shown in Table OP-2-3.

Table OP-2-3 Montana Resources Major Equipment List

Drills	
2	Pit Viper 271
Shovels	
2	Bucyrus Erie 495HD 40 cubic yard
1	Caterpillar 7495HD 40 cubic yard
1	994F Caterpillar Front End Loader, 25 cubic yard capacity
1	994K Caterpillar Front End Loader, 30 cubic yard capacity
Trucks	
17	Caterpillar 793 Haul Trucks 240 ton
Support Equipment	
1	834K Caterpillar Wheel Dozer
2	Caterpillar D8R Crawler Dozers
4	Caterpillar D8T Crawler Dozers
1	Komatsu D155 Crawler Dozers
3	Caterpillar 16M Motor graders
1	Caterpillar 992G Front-end Loader, 13.5 cubic yard capacity
3	Caterpillar 793 Road Water Truck conversion, 52,000 gallon capacity
1	Komatsu WA 480 Loader
1	Komatsu PC650 Hydraulic Excavator

A list of potential reclamation equipment is presented in Table RP-8-1 of MR's Reclamation Plan.

3.0 SURFACE MINE OPERATIONS

MR is currently mining the Continental Pit, originally developed in 1980 by ACM as the East Berkeley Pit (Figure OP-3-1). The Continental Pit consists of pit slopes ranging from 3:1 to 2:1, and bench heights of 40 feet, primarily utilizing a double-benching method on final excavation. Haulage ramps are constructed at a maximum grade of 10 percent and design haul road widths are typically 120 feet.

The daily mine production rate varies from 80,000 to 110,000 tons of total material excavated with up to 40,000 to 50,000 tons of ore hauled to the primary crusher.

3.1 ORE CHARACTERIZATION AND VOLUME

Two orebodies within the Butte district (Figure OP-3-1) have been evaluated by MR and are considered feasible for open pit mining based on current economics and conservative economic projections. The Continental orebody is being mined by ongoing operations at the Continental Pit and plans are to mine westward to expose the Central Zone. The Central Zone orebody will be phased in as the final pushback is depleted in the Continental Pit. A mine plan for the Central Zone orebody will be prepared prior to depleting Continental Pit reserves.

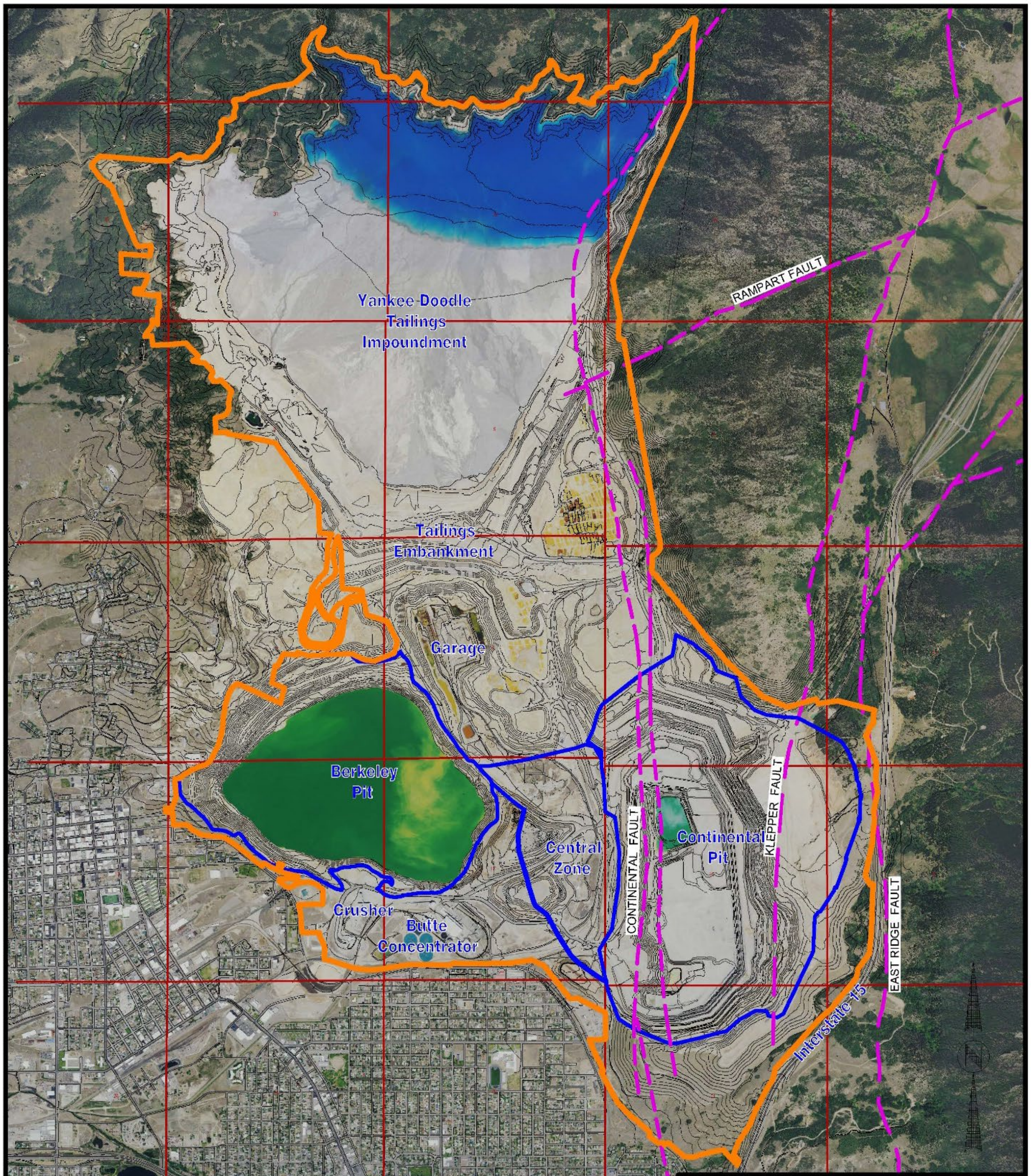
3.1.1 Geology

3.1.1.1 Continental Pit

In the Continental Pit area, 160 to 200 feet of leached cap and overburden are draped over a massive copper-molybdenum orebody bounded on the west by the Continental Fault and on the east by the Klepper Fault (Figure OP-3-1). The deposit is a typical porphyry copper system except that the enriched zone is less pronounced than is commonly observed. Continental Primary Zone copper occurs as chalcopyrite in interlacing veinlet swarms and as disseminations in the Butte Quartz Monzonite, a granitic intrusive some 78 million years old. Continental Primary Zone molybdenum occurs in younger subparallel veinlet swarms and slicks that offset the early copper veinlets. More recent mesothermal veins overprint the early mineralization, but these contain mostly iron, lead, and zinc. Continental Primary Zone copper immediately below the leached cap is weakly enriched by surface weathering where secondary chalcocite occurs as coatings on pyrite and chalcopyrite.

3.1.1.2 Central Zone

The Central Zone orebody is situated between the Berkeley Pit and the Continental Pit and is bounded on the east by the Continental Fault (Figure OP-3-1). This major, north-south trending basin and range fault dips steeply to the west and offsets the Continental orebody by some 3,500 feet. Porphyry-style mineralization has been intercepted in the hanging wall of the Continental Fault at that depth and mapped in underground workings at elevations of 2,000 feet above mean sea level (amsl), beneath the vertical extent of the Berkeley Pit. As in the Berkeley Pit and in the Continental area, mesothermal veins overprint the early mineralization. In localized areas, shear couples have developed “horsetail zones” of minor importance compared to those along the Leonard-Belmont axis that were exploited by underground mining and ultimately mined out in the Berkeley Pit.



Legend

Permit Boundary

Fault Locations from Witkind (1975); Smedes et al. (1962); Smedes (1967); and others.

0 3500 7000 ft

Montana Resources
Continental Mine

Figure OP-3-1
Ore Body and Fault Locations

MR22_OP_Ore_Faults.dwg	1"=3500'	1/6/23

Weathering of mesothermal veins and veinlets, horsetail structures, and porphyry-style mineralization, along with the supergene enrichment of the pyritic alteration halo associated with the deep copper-molybdenum mineralization, has resulted in a tabular orebody in the Central Zone conforming to the paleotopography.

The Central Zone orebody is between 200 and 400 feet thick and is overlain by a leached cap ranging in thickness between 150 and 300 feet. The overburden includes a sequence of alluvial sand and gravel varying in thickness from 200 feet on the north end of the valley near the McQueen Booster Pump House to over 1,000 feet along Continental Drive.

3.1.2 Mining Reserves

Mining reserves apply to the proven and probable ore within a particular mining configuration at an economic cutoff. It is that portion of the geologic resource that can be mined, milled, and the resulting concentrate, metal, or product sold to produce a profit. Reserves have been determined by floating cone analysis, an accepted practice in the mining industry for evaluating open pit configurations, and are based on drilling data as of January 2021.

Continental reserves total some 465 million tons (Table OP-3-1), averaging 0.224 percent net copper and 0.032 percent molybdenum credit with 0.068 ounce per ton silver credit. This Operations Plan is based on mining a portion of the Continental ore reserves.

Central Zone reserves total some 129 million tons, averaging 0.388 percent net copper with a 0.019 percent molybdenum credit, and a 0.100 ounce per ton silver credit. This document does not include a mine plan for the Central Zone orebody.

Table OP-3-1 Mining Reserves as of January 1, 2021

Reserves	Ore (Dry Tons x 1000)	Total Copper (%)	Acid Soluble Copper (%)	Net Copper (%)	Total Molybdenum (%)	Silver (opt)
Continental Pit	465,562	0.230	0.006	0.224	0.032	0.068
Central Zone	128,849	0.388	0.003	0.388	0.019	0.100
TOTAL	**594,411**	**0.264**	**0.005**	**0.259**	**0.030**	**0.075**

3.1.3 2016 to 2040 Material Balance

The expected ore/non-ore material balance for the 2016 to 2040 period is detailed in the following section.

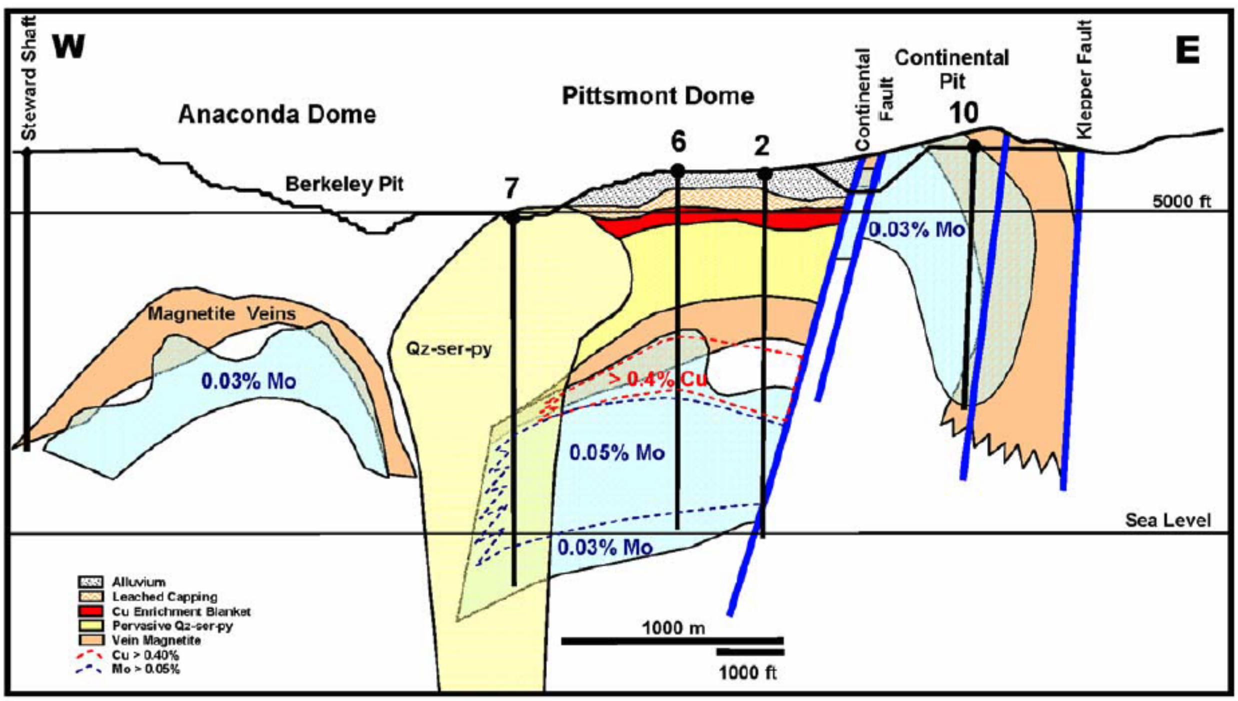
3.2 NON-ORE ROCK CHARACTERIZATION AND VOLUME

3.2.1 Geologic Setting

The purpose of this section is to describe Continental Pit geochemistry. Differences in Butte ore types are important because the current MR operations overlaps a portion of the former ACM/AR operations which mined rocks with higher sulfide abundance, higher metal grade, and lower carbonate content than rocks currently being mined from the Continental deposit.

The polymetallic ore complex in Butte consists of different types of mineralization hosted in the late Cretaceous Boulder Batholith, composed mostly of Butte Quartz. The Butte copper porphyry deposit is best known as a high-grade vein system that was mined underground from the late 1800's until the mid-1970's (Gammons et al. 2006). With development of the Berkeley Pit commencing in the 1950s, the focus of mining shifted to a zone of Quartz-Sericite-Pyrite Alteration with pronounced supergene enrichment. In the 1980's, mining was initiated in the Continental Pit in order to blend the high-arsenic Berkeley Pit ore with low-arsenic Continental ores, making the combined concentrate more marketable to smelters. The majority of the Continental Pit that lies east of the Continental Fault is within older mineralization that predates the Main Stage polymetallic vein system. Each of these deposits are geochemically different. The Continental Pit consists of lower copper and higher molybdenum grades, lower pyrite content, and higher calcite content than is found in either the vein system or the Berkeley Pit deposit (Figure OP-3-2).

Figure OP-3-2 East-West Cross-Section through the Butte Hill Complex (from Czehura 2006)



3.2.2 Continental Pit Rock Units and Volumes

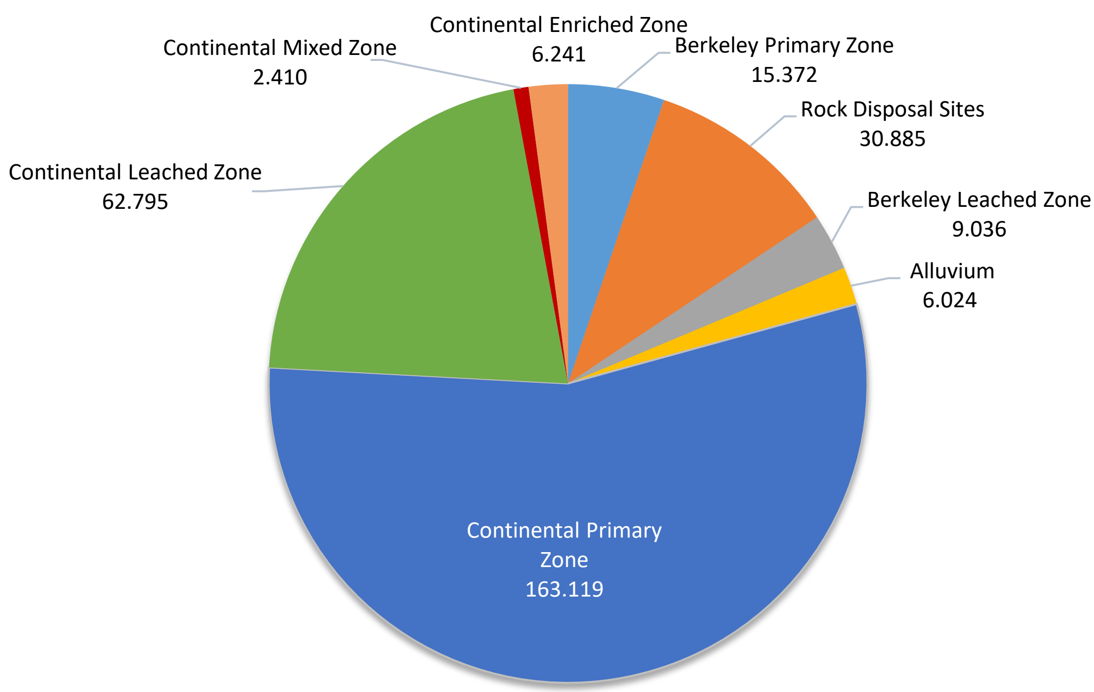
The primary rock units recognized in the Continental Mine include various unconsolidated and bedrock units. Bedrock units differ according to whether they were mined from west or east of the Continental Fault and also differ in terms of their style of mineralization or alteration. Bedrock west of the Continental Fault is termed "Berkeley" while rock from east of the Fault is termed "Continental." From top to bottom, the rock units are described below:

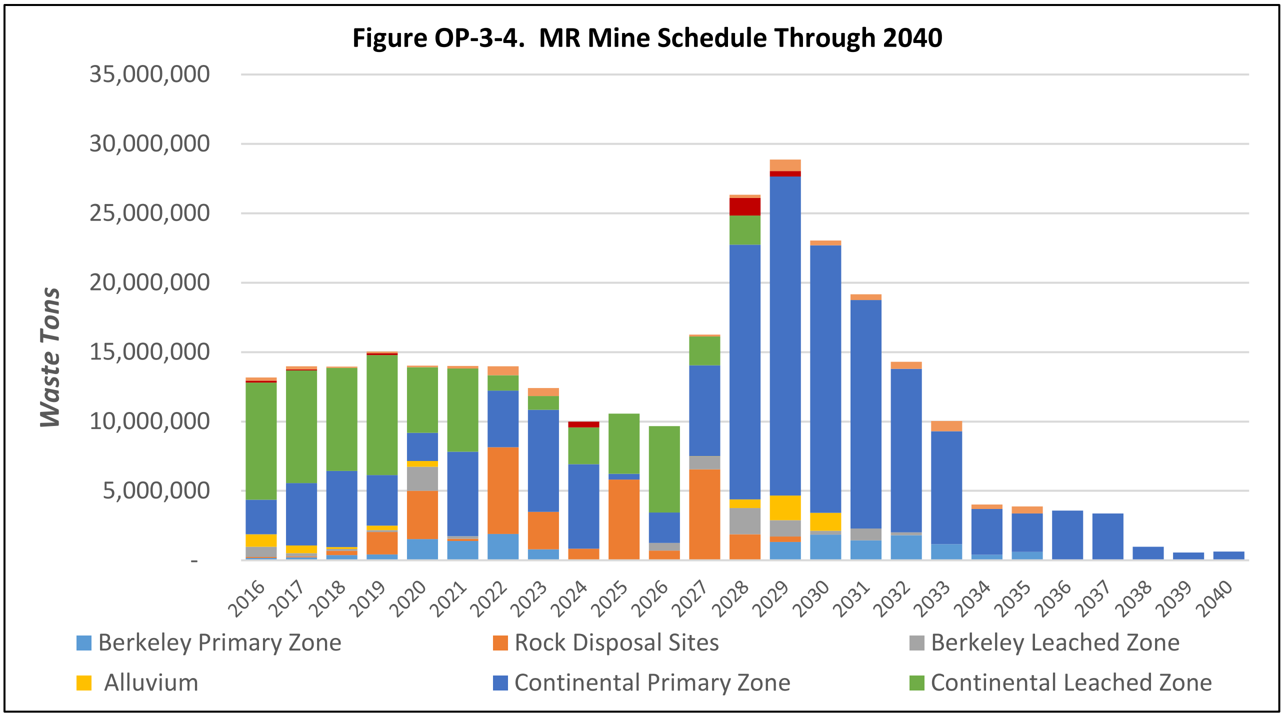
- Extensive alluvial and colluvial material is located between the Berkeley Pit and Continental Pit and in the former McQueen community (termed Central Zone alluvium). Alluvium is scarce to the east of the Continental Fault.

- Pervasive oxidation of the upper several hundred feet of the mineralized system created a thick leached cap zone both east (Continental leached cap) and west (Berkeley leached cap) of the Continental Fault. Leached cap develops as a result of oxidation of sulfide minerals near the surface of copper porphyry deposits.
- Supergene enrichment can occur in copper porphyry deposits beneath leached cap zones where copper that is mobilized as a result of near-surface sulfide oxidation is leached downward by meteoric water and combines with primary sulfides beneath the leached cap. Enrichment creates specific copper sulfide minerals such as chalcocite (Cu_2S) and covellite (CuS). A small amount of supergene-enriched material is found in the Continental Pit.
- Beneath the enriched zone lies the Primary Zone consisting of varying amounts of sulfide enrichment as well as other styles of mineralization, though without alteration by oxidation of supergene enrichment. Sulfide abundance varies between the less abundant sulfides east of the Continental Fault (Continental Primary Zone) and more abundant sulfides west of the Continental Fault (Berkeley Primary Zone).

Approximately 296 million tons of non-ore material will be mined through the planned mine life in 2040 (Figure OP-3-3) with the majority of rock comprised of Continental Primary Zone non-ore material (163 million tons) and Continental leached cap material (63 million tons). A significant amount of material in the RDSs will also be re-located (31 million tons). The leached cap along with the 6 million tons of alluvium represent an important resource that will be used in dam construction and reclamation of the mine facilities at MR. Most of this material will be mined in two phases, including 2016 to 2020 and again from 2025 to 2030. Most material to be mined near the end of mine life will be Continental Primary Zone non-ore rock (Figure OP-3-4).

Figure OP-3-3. Proportion of Rocks to be Mined from 2016 through 2040 at MR (millions of tons)





3.2.3 Geochemical Sampling

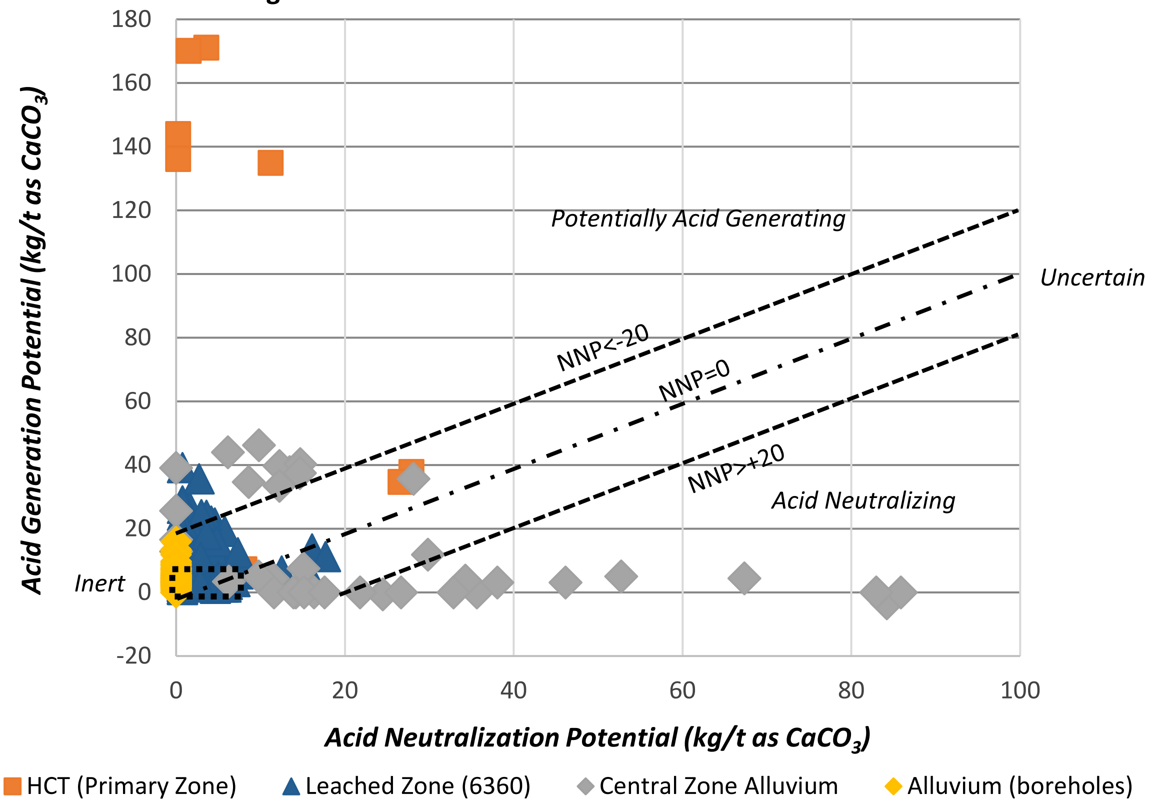
Numerous geochemical sampling programs have been conducted of non-ore rock from the Continental Pit (Table OP-3-2). Results of geochemical characterization is presented in subsections below covering each major type of material. Tailings geochemistry is discussed in MR's Continental Mine Reclamation Plan (MR 2021).

Table OP-3-2 Number and Kind of Geochemical Analyses Performed on Continental Pit and Central Zone Samples

Material Sampled	Source	Description	Number and Kind of Samples
Primary Zone	Newbrough and Gammons (2002)	Study of water-rock interactions of Berkeley Pit and Continental Pit samples.	9 samples including 6 from Berkeley Pit and 3 from Continental Pit. Static tests, some kinetic and batch recirculation leaching tests.
Leached Cap	MR	Assay pulp samples from blasthole drilling in the D1 layback, Continental Pit.	152 samples from the 6360' and 6380' bench with static tests and total metals data and 925 samples from the 6320' bench with total metals data only.
Alluvium	MR	Various surface and subsurface sampling campaigns to characterize alluvium in the Central Zone Alluvium in stockpiles and in place in the McQueen area.	43 samples collected from surface grab samples (depths up to 12 feet), of which 22 are Central Zone Alluvium samples that were collected from the bottom of the McQueen Ditch at regular intervals using conventional hand tools. Samples were also collected from the cut face of the Continental Pit from the 5600', 5640', and 5680' lifts. 30 holes were drilled and sampled in 2018 from the Central Zone (Czehura 2021).

Static tests (Figure OP-3-5) consist of measurements of acid generating potential (AGP), which is based on non-sulfate forms of sulfur and the acid neutralizing potential (ANP) determined by acid-base titration. The net neutralization potential (NNP) is the ANP minus the AGP. All measurements are expressed in kg/t as $CaCO_3$ equivalent. Typically, samples with an NNP of less than -20 kg/t as $CaCO_3$ are considered potentially acid generating while samples with NNP above +20 kg/t are considered acid neutralizing. Intermediate samples are considered uncertain without more detailed site-specific tests.

Figure OP-3-5. MR Non-Ore Rock Static Test Results



3.2.4 Non-Ore Rock Geochemistry

3.2.4.1 Primary Zone

Newbrough and Gammons (2002) conducted a geochemical study on Primary Zone Quartz Monzonite samples collected in or near both the Berkeley Pit and the Continental Pit as shown in Figure OP-3-6. Of nine samples collected, 6 were subjected to 20-week humidity cell tests where a crushed sample is leached with water each week to assess long-term weathering reactions. Static tests and paste pH were also run on the samples as shown in Figure OP-3-5 and Figure OP-3-7, respectively.

Figure OP-3-6 Location of Samples in Newbrough and Gammons Study

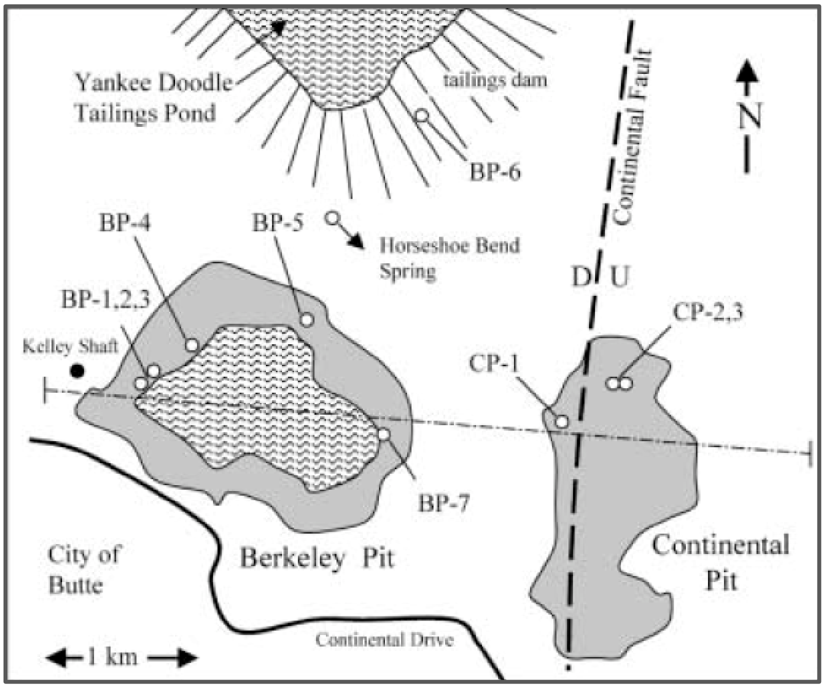
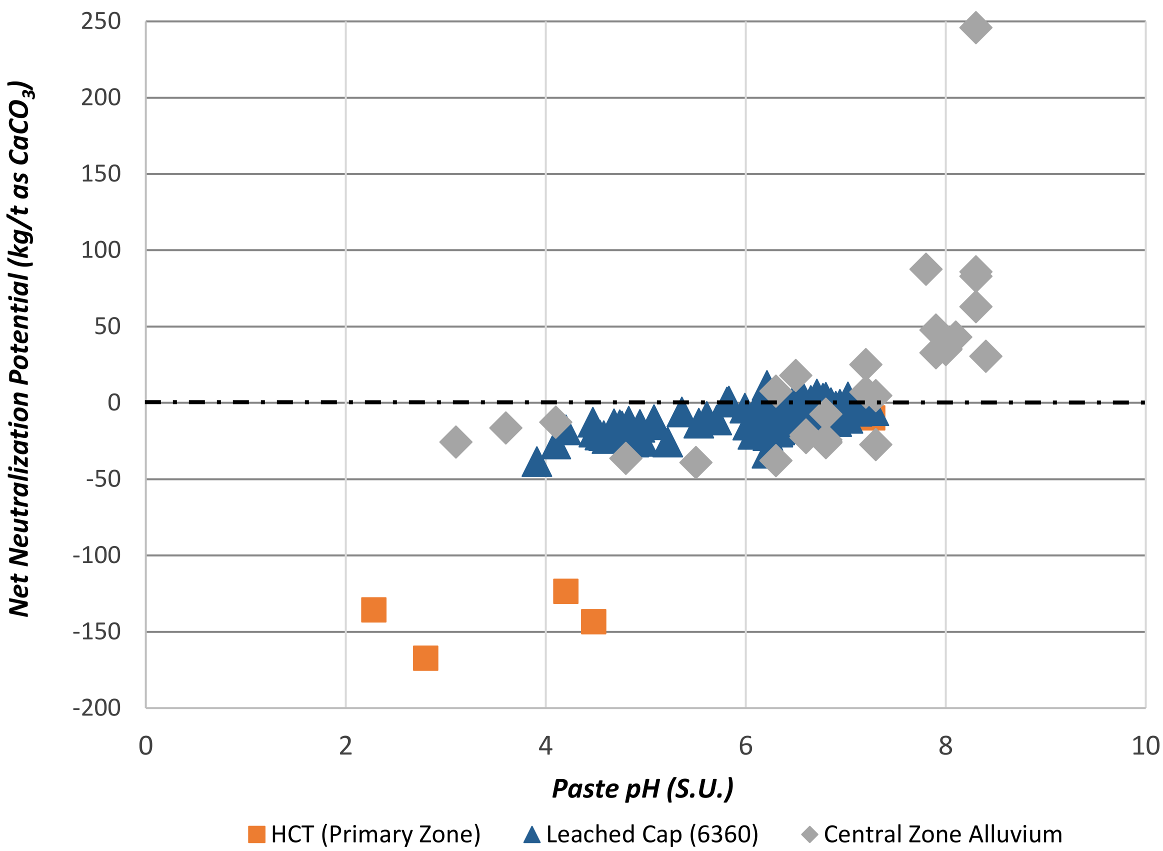


Figure OP-3-7. MR Paste pH and NNP Values



With the exception of BP-5, which was a relatively unmineralized sample of fresh Quartz Monzonite, all samples collected in or near the Berkeley Pit (BP-1, BP-3, BP-4) or west of the Continental Fault Zone (CP-1) had high acid generation risk with very low NNP (averaging -106 kg/t as $CaCO_3$), low ANP (averaging 4 kg/t as $CaCO_3$), and low pH and high sulfate in humidity cell tests. Despite the abundance of sulfide sulfur in mineralized samples east of the Continental Fault (>3 percent sulfur), kinetic tests on mineralized samples BP-1, BP-3, BP-4 and CP-1 had relatively low sulfate released late in the tests with sulfate averaging just 0.03 percent of the remaining sulfur oxidized each week. Similar tests conducted on epithermal gold deposits often show oxidation rates of 1 percent of the remaining sulfides oxidized each week. The relatively slow long-term weathering in Butte rocks is likely a result of 1) sulfides consisting of some portion of chalcopyrite, which is known to react more slowly than pyrite; and 2) because pyrite at Butte was formed at high temperature, which often results in coarser-grained and less reactive forms of pyrite.

Samples collected east of the Continental Pit (CP-2) had lower sulfides and higher carbonates so that NNP averaged just -9 kg/t as $CaCO_3$ and humidity cell tests solutions remained neutral in pH and low in sulfate through 20 weeks of weathering (Figure OP-3-8 and Figure OP-3-9). Based on available testing, Primary Zone rock mined west of the Continental Fault is likely to be acid generating, while Primary Zone rock from east of the Fault may be slightly acid generating to non-acid-generating. East side Primary Zone would likely consist of a mixture of acid generating and non-acid generating material depending on the degree and nature of mineralization.

Figure OP-3-8. Kinetic Test Results for pH

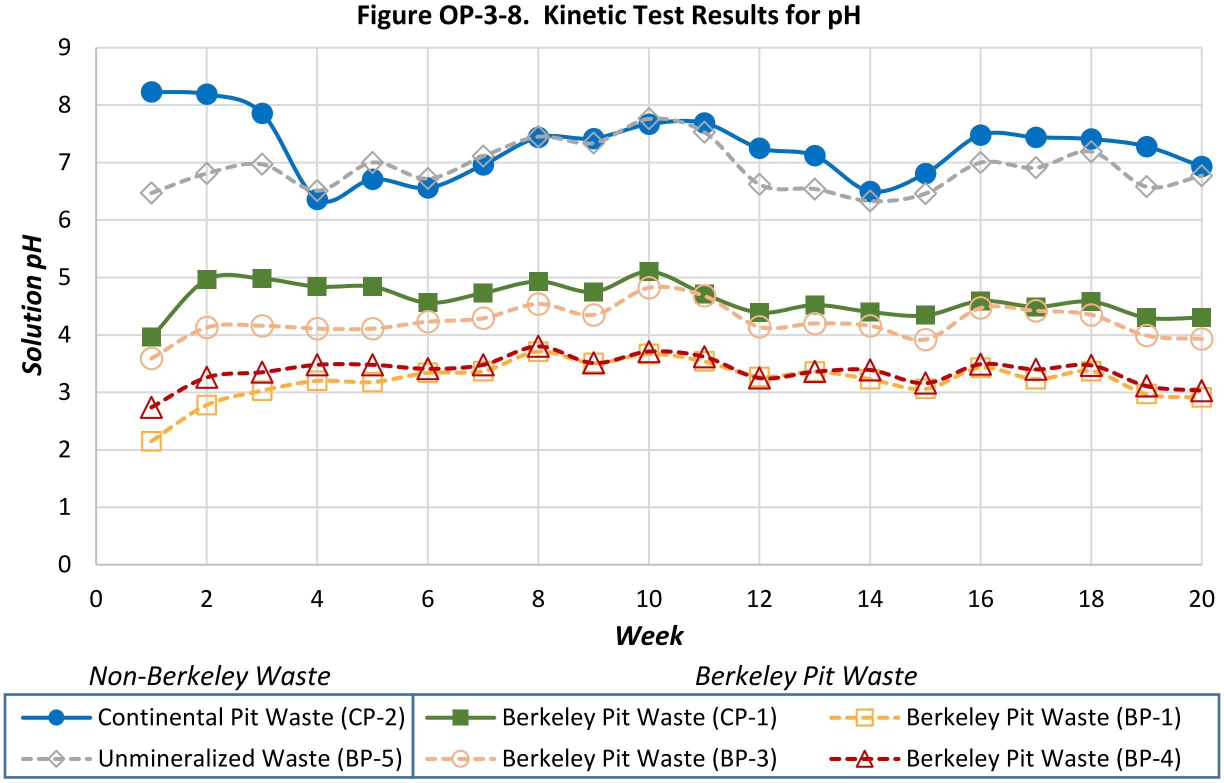
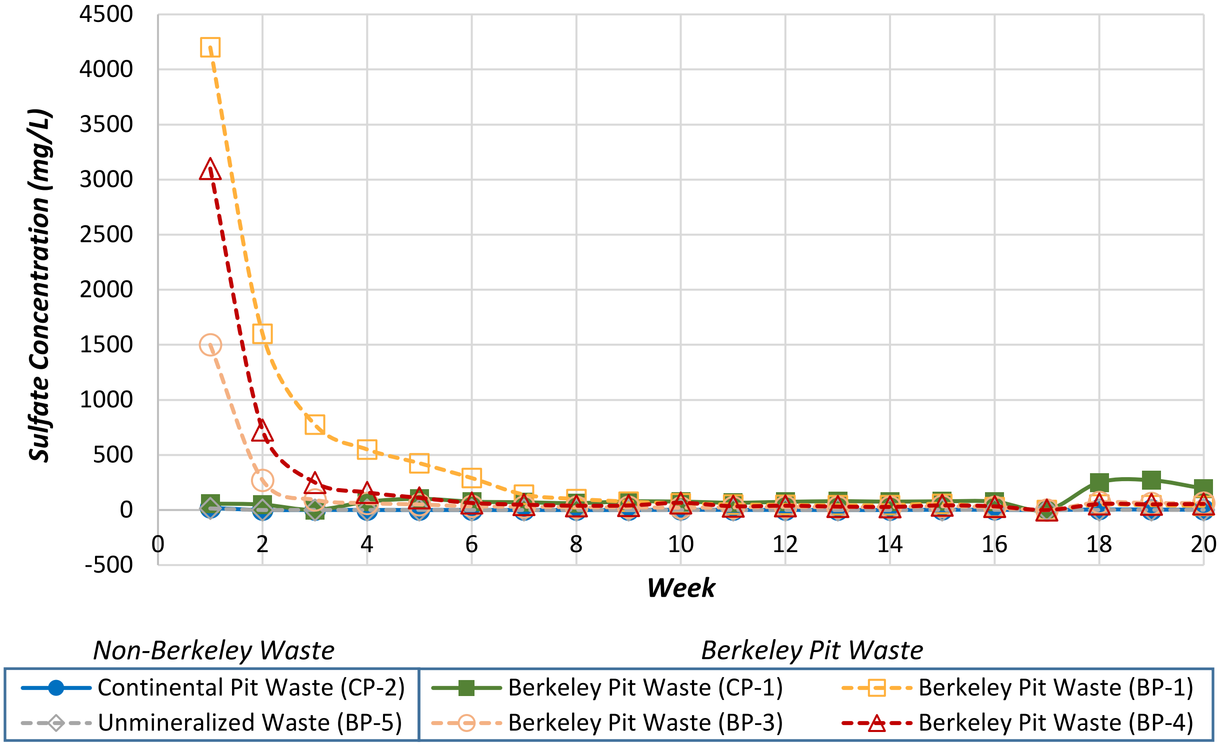


Figure OP-3-9. Kinetic Test Results for Sulfate



3.2.4.2 Leached Cap

Leached cap samples (Figure OP-3-5 and Figure OP-3-7) mostly had low AGP and ANP reflecting the pervasive leaching and oxidation that characterizes this zone. The pH of 85 percent of the samples was above 5.0, indicating that most leached cap material would be suitable for use in reclamation. MR also routinely tests leached cap materials for extractable copper to ensure that bioavailable metals are low enough to be suitable for grass and shrub establishment. Residual sulfides and low pH persist in a small fraction of leached cap materials so that a testing and soil amendment program may be required to ensure that all material used for reclamation is suitable. Leached cap material with a pH of less than 5.0 or Pyritic Sulfur greater than 0.2 percent should be classified as waste or will need to be amended with limestone or other suitable alkaline amendments to facilitate use as cover.

Leached cap is a potential resource for reclamation cover material. However, because of the quantity of better-quality alluvium, and since leached cap is a more suitable material for construction, most leached cap will be used for YDTI Embankment construction.

3.2.4.3 Alluvium

About 6 million tons of alluvium will be mined from the west side of the Continental Pit through 2040. Alluvium extends to the west of the Pit into the Central Zone. A 2018-2021 evaluation was conducted to assess quantity and quality of Central Zone material (Czehura 2021). The material within the footprint of MR's ultimate pit design totals about 50 million bank cubic yards (bcy), of which about 14 million bcy is classified as unknown, 13 million bcy is classified as waste and about 23 million bcy is classified as suitable for use as a coversoil.

Quality of alluvium is variable but, for the most part, is a sandy loam with intermittent gravel layers. Alluvium is low in organic matter and nutrients (N, P, K). Mean pH averaged 6.52 with a range from about 3.0 to 8.4 with most of the 10-foot samples between 6.1 and 7.8. Table OP-3-3 lists alluvium characteristics for the Central Zone and averages alluvium suitable for use as coversoil with material characterized as waste.

Criteria for determining suitability for coversoil and volume of suitable material within the proposed Central Zone mine plan area is presented in MR's Reclamation Plan (Section 4.2.1).

Table OP-3-3 Alluvium Characteristics

Soil Parameter	Mean	Standard Deviation	Minimum	Maximum	Sample Size (10-ft composites)
Paste pH	6.52	0.94	2.70	8.40	846
Moisture Content (%)	15.05	6.89	0.50	36.80	650
Major Cations					
Aluminum (ppm)	13996.8	5797.3	927.0	49900.0	651
Calcium (ppm)	2645.6	4130.0	173.0	48350.0	651
Iron (ppm)	30031.3	16545.1	10500.0	383300.0	651
Magnesium (ppm)	5059.9	2083.2	94.6	12100.0	187
Sodium (ppm)	239.9	113.1	4.0	916.0	651
Minor Cations and Heavy Metals					
Arsenic (ppm)	19.1	22.7	2.4	357.0	651
Cadmium (ppm)	1.6	2.2	0.4	40.2	651
Copper (ppm)	649.7	467.4	40.1	3110.0	651
Lead (ppm)	137.6	250.9	5.0	5910.0	651
Molybdenum (ppm)	43.9	62.8	1.2	709.0	651
Nickel (ppm)	16.8	49.0	1.3	680.0	651
Zinc (ppm)	394.6	364.9	41.4	2990.0	651
Total Sulfur (%)	0.289	0.266	0.010	2.800	521
SMP Lime (t/kt)[1]	3.335	5.123	0.000	31.000	521
AGP (t/kt)[2]	6.218	6.930	0.600	61.300	521
ULR (t/kt)[3]	7.537	11.612	0.000	114.500	521
Electrical Conductivity (µmhos/cm)	1789.39	2566.07	0.00	18530.00	502
Organic Matter (%)	0.198	0.415	0.010	3.520	517

[1] Shoemaker-McLean-Pratt (SMP) Buffer Method is used to estimate lime addition necessary to raise pH in surface soils.

[2] Acid Generation Potential with Jarosite.

[3] Uncorrected Lime Rate defines acid-base account balancing Acid Neutralization Potential (ANP) against Acid Generation Potential (AGP) and active acid expressed by the SMP buffer.

During salvage operations, MR systematically samples and analyzes alluvial materials; those materials determined to be suitable for reclamation are stockpiled or used during concurrent reclamation. Alluvium not suitable for reclamation is discarded in RDSs. If suitable alluvium for reclamation is in short supply, less favorable alluvium is stockpiled separately and amended with lime during redistribution. When possible, salvaged alluvium is direct-hauled from the Central Zone and used as subsoil/soil for reclamation. Quantities of alluvium stored in the Lunch Room and Four Corners alluvium stockpiles are documented in MR's Annual Reports (2014-2021). In 2022, MR provided alluvium from the Lunch Room stockpile as off-site borrow material for the Parrot Waste removal project.

3.3 ROCK DISPOSAL SITES

RDSs are shown on Exhibit OP-1. RDSs are also referred to as waste rock "dumps". Additional details regarding RDSs are presented in Section 8.2 of MR's Reclamation Plan.

3.3.1 North RDS

Non-ore rock generated from the Continental Pit will be used to construct the YDTI Embankment. However, as access to the embankment becomes necessary and when rock production exceeds requirements for embankment construction, rock will be used to construct access ramps and the North RDS.

The North RDS will develop adjacent to the North-South Embankment and overlay existing Leach Area No. 3 and other existing disturbances. The ultimate configuration of the North RDS will cover the North-South Embankment downstream face, as shown on Exhibit OP-1.

As the embankment height increased to the 6450-foot crest, a revised ramp was completed in 2022 to the top of the North-South Embankment. Construction of the North RDS between 2022 and 2031 will provide ramp access to the embankment crest.

Current mine planning projections show about 140 million tons of rock to be placed in the North RDS, primarily between 2022 and 2031. Volumes and schedules may change, however, based on logistics and economics of the operation.

3.3.2 Great Northern RDS

Non-ore rock not placed in the YDTI Embankment or in the North RDS will be added to the existing Great Northern RDS. No new disturbance will be created as the addition is on top of the existing RDS and extends a bit to the east of the existing RDS onto previously disturbed ground. The crest of this RDS is currently overlain by Leach Area No. 1.

Exhibit OP-1 depicts the general arrangement of the footprint of the Great Northern RDS. About 15 million tons of rock will be added to the existing Great Northern RDS, mostly in about 2031, although tonnages and schedules may change to meet future mine planning objectives. The anticipated maximum elevation is approximately 6200 feet.

3.3.3 Pittsmont RDS

The Pittsmont RDS lies between the Berkeley Pit and the Continental Pit, and overlies the western portion of the Central Zone.

Since 2018, the Montana Natural Resource Damage Program has delivered tailings and water removed from the historic Parrot Smelter area to MR. The water is pumped to the Dredge Pond and the tailings are hauled to a location on the east side of the Pittsmont Dump.

A small portion of the east side of the RDS (about 204,000 bcyds) would be removed in conjunction with development of the CZABA. It is comprised of two crests separated by a haul road (Exhibit OP-1). A small amount of Parrot Tailings would be pushed into the 5600 access ramp along the west highwall of the pit. Disturbance to the Parrot Tailings will be minimized.

3.3.4 Nalley Valley RDS

The Nalley Valley RDS is located east of the Great Northern RDS. This RDS is currently overlain by Leach Areas No. 6, No. 7, and St. Helen's.

3.3.5 East RDS Complex

The East RDS Complex is comprised of rock originating in the Continental Pit, and is located in the area east and south of the Continental Pit and west of Interstate 15. It includes the Hillcrest RDS to the south; the East RDS to the southeast; and the North East RDS to the east and north. The majority of these sites have been graded, covered with alluvium, and seeded between 1982 and 2020.

3.3.5.1 Hillcrest RDS

The south slope of the Hillcrest RDS was originally regraded, covered with alluvium, and seeded in 1982; the west slope was reclaimed in 1995-1996. Some additional reclamation occurred in 2002 and 2012.

3.3.5.2 East RDS

Portions of the East RDS were regraded, covered with alluvium and topsoil, and seeded beginning in 2018 and extending into 2020.

3.3.5.3 North East RDS

The North East RDS, located near the Continental Pit D East Pushback, was regraded, covered with alluvium and topsoil, and seeded between 2018 and 2020.

3.3.6 Access RDS

The Access RDS is located on the north edge of the Continental Pit, east of the Great Northern RDS.

3.3.7 Woodville RDS

The Woodville RDS is located in the vicinity of the "D" East Pushback area. This RDS was constructed in the 1990s primarily using leached cap; it was graded, topsoiled, seeded, and planted with trees in 1994-1995. In 2014, much of the previously reclaimed Woodville Dump was covered by mining activities associated with development of the “D” East Pushback. The “D” East highwall reduction will further reduce the size of the Woodville RDS. The remaining RDS is shown on Exhibit OP-1.

3.3.8 South Continental Pit RDS

This RDS, previously referred to as the “Continental Pit Backfill”, lies within the southwest corner of the Continental Pit. It is primarily comprised of sulfide rock. Waste material from the CZABA will be placed in this RDS and will cover portions of the sulfide rock.

3.3.9 Horseshoe Bend RDS

The HsB RDS was designed in conjunction with the HsB drainage system to provide strategic use of non-ore rock from the Continental Pit. The HsB RDS provides for a substantial benefit to YDTI embankment stability and allows timely 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 (see Figure OP-8-2). A subsequent stage (yet to be permitted) would increase the height of the HsB RDS, further enhancing YDTI embankment stability.

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

3.4 CONTINENTAL PIT OPERATIONS

3.4.1 Mine Operations

Mine operations in the Continental Pit are described in the following sections.

3.4.1.1 Drilling and Blasting

Drilling operations consist of two rotary blasthole drills equipped with 9⅞ inch diameter tri-cone bits. Blasthole depths range from 40 to 46 feet deep on 20- to 30-foot centers, with spacing and burden based on rock hardness. Drill shifts vary depending on mine sequence.

Production blasting in the Continental Pit is conducted by an independent contractor. Blasts occur one to four times per week. All production blasts in the Continental Pit comply with ARM 17.24.157, 17.24.158, and 17.24.159 and permit conditions established in 2013 that no blasting would occur within 1,000 feet of the Montana Department of Transportation (MDT) I-15 right of way, unless there is prior approval from DEQ, in consultation with MDT.

As of October 31, 2022, a total of 3,663 production blasts have been conducted in the Continental Pit. The maximum charge weight per delay for each production blast is calculated as specified in ARM 17.24.159(2)(n). The actual maximum charge weight per delay detonated has not exceeded 3,600 pounds per delay.

Many production blasts are monitored by seismographs. Seismograph readings of peak particle velocities as measured at private structures near the Continental Pit range from no trigger of seismograph to a maximum of 0.04 inches per second for vibration (maximum of 1.00 inches per second as allowed by

Montana law) to prevent damage. Airblast readings for the same time period also range from no trigger to 110 decibels airblast (peak of 134 decibels allowed by Montana law).

Blasting records for a three-year period are kept on file at MR's administrative offices, 600 Shields Ave., Butte, MT 59701. These records are available for inspection upon request as stipulated in ARM 17.24.158(1)-(2).

3.4.1.2 Loading and Hauling

Three electric cable shovels with dipper capacities of 40 cubic yards, and two front end loaders with capacities of 25 and 30 cubic yards, are used to excavate blasted rock and load haul trucks for production.

Off-highway diesel haul trucks with a rated payload capacity of 240 tons are utilized to haul ore, non-ore waste rock, topsoil, alluvium, or other materials as necessary. Production goals are met by scheduling an average of nine haul trucks each operating shift. In addition, loaders, dozers, and trucks are used to strip, load, and haul topsoil, alluvium, and other materials necessary to complete reclamation.

3.4.1.3 Water Management

Active mining and dumping areas are dewatered by using diversion ditches and pipe systems to direct surface water. Ground water in the mine area is managed by pumps as necessary. All surface and Continental Pit water is currently being incorporated into the milling circuit (see Section 8.0). According to the BMFOU RAAR, the Continental Pit may be available to temporarily store treated water when needed for subsequent incorporation into the mining circuit or polishing and off-site discharge.

3.4.2 Non-Ore Rock Management

Non-ore rock (waste rock) from the Continental Pit is composed of overburden (non-ore above the ore body) and non-ore rock within the mineralized zone where copper and molybdenum values are below commercial levels. Non-ore rock is comprised of variable material including leached cap, alluvium, and Primary Zone rock, which is discussed in more detail in Section 3.2.

Non-ore rock is removed by blasting (where necessary) and loading into haul trucks. Non-ore rock is hauled to construct the tailings embankment or placed into a RDS.

The tailings embankment is currently being built to raise the tailings level to the 6450-foot elevation, scheduled to be completed in 2023. Non-ore rock will then be placed in the HsB RDS and other RDSs.

3.4.3 Mining Sequences

Pit progression based on the current mine plan through 2040 is shown in 10-year increments in Figure OP-3-10, Figure OP-3-11 and Figure OP-3-12. Mining occurs in a sequence of pushbacks designed to maximize the net present value of the ore reserve without jeopardizing longevity. At present, mining is progressing downward in the "C" East, "D" North, and "D" East pushbacks. The "D" East pushback will be expanded per Minor Revision 22-002 (approved by DEQ on October 26, 2022) to address highwall instability in that area. Future updates will be made to Figures OP-3-11 and OP-3-12 to reflect expanded layback in "D" East.

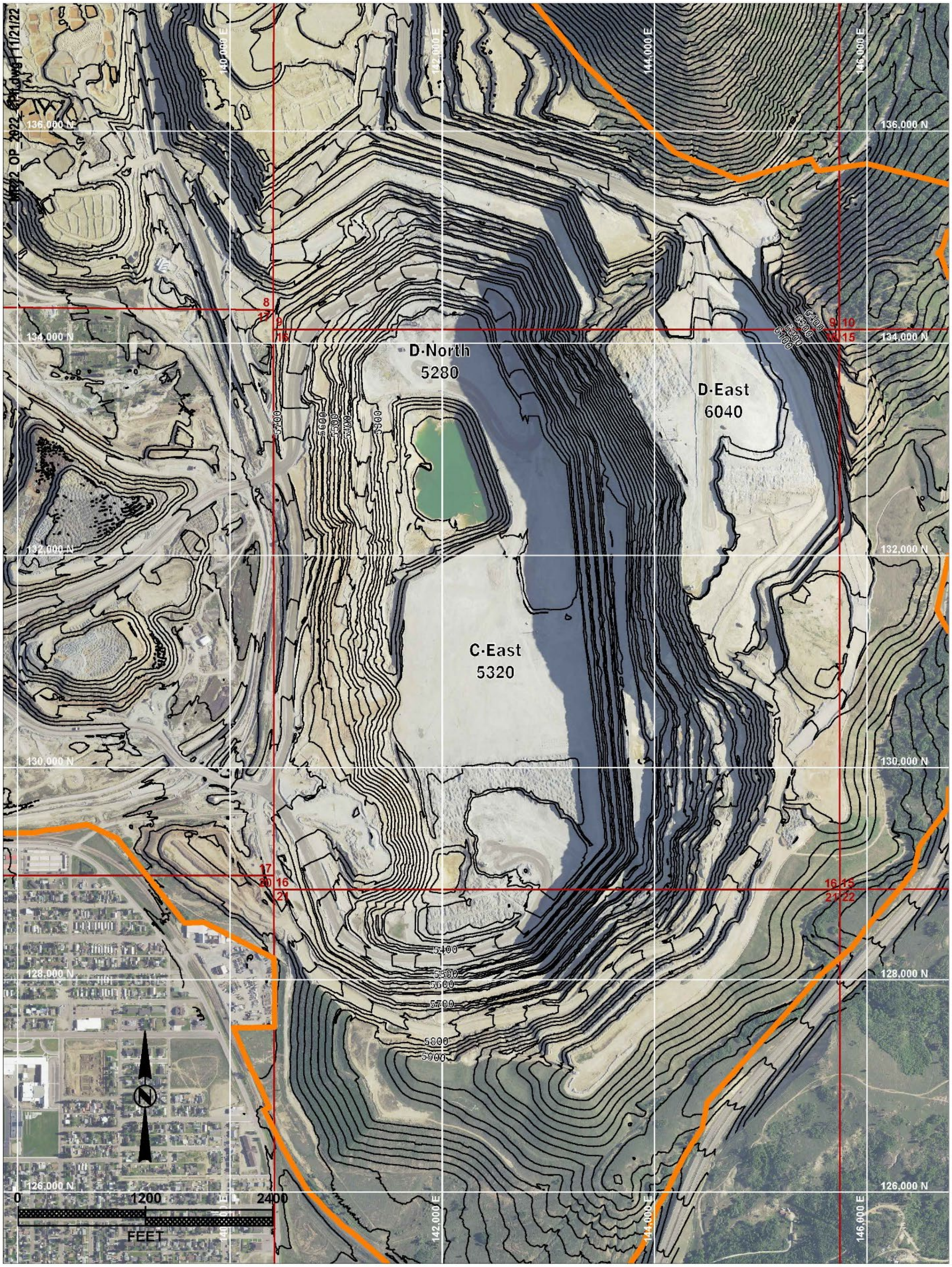


Figure OP-3-10 Continental Pit 2022 Topography

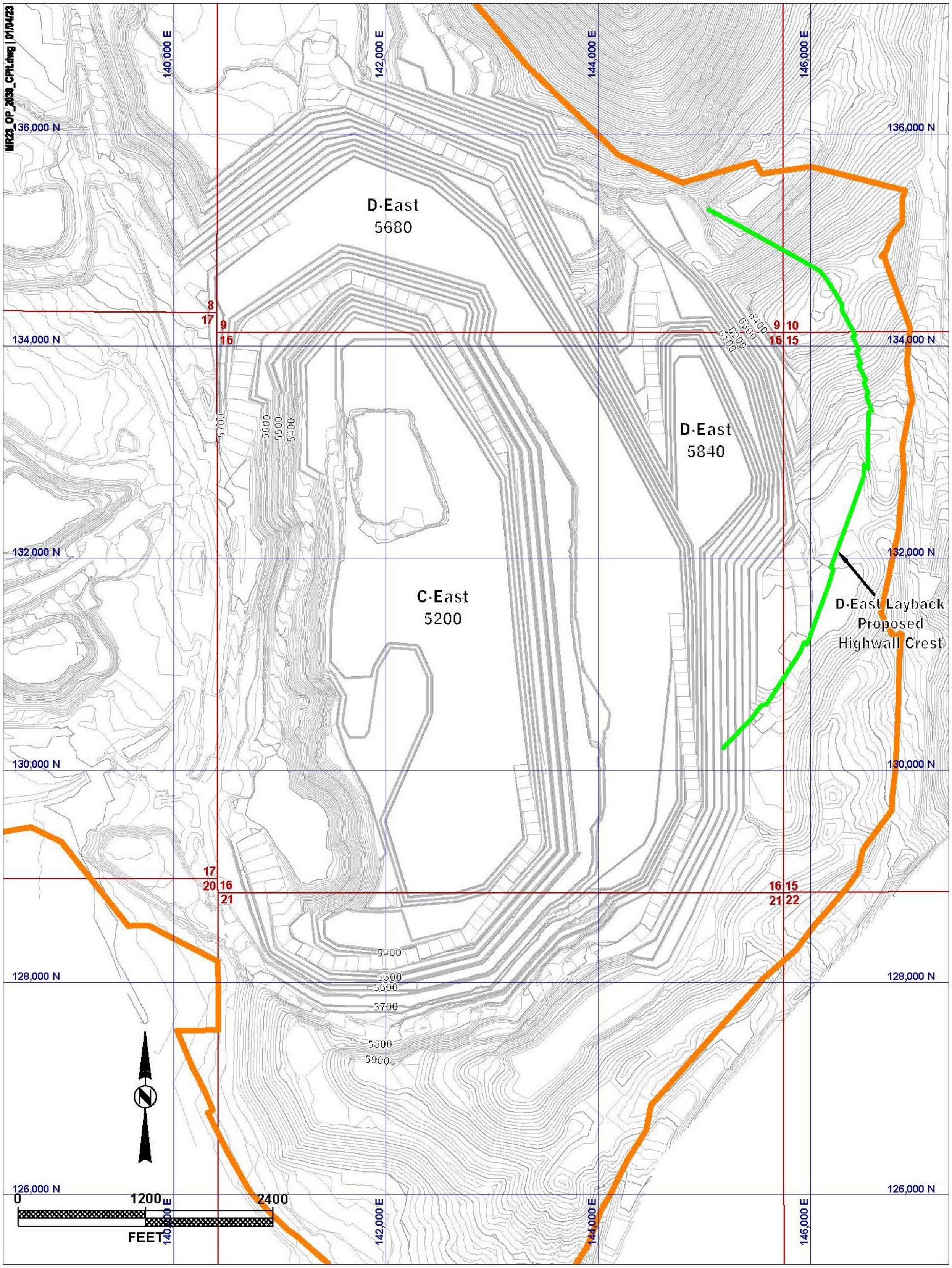


Figure OP-3-11 Continental Pit Planned 2030 Topography

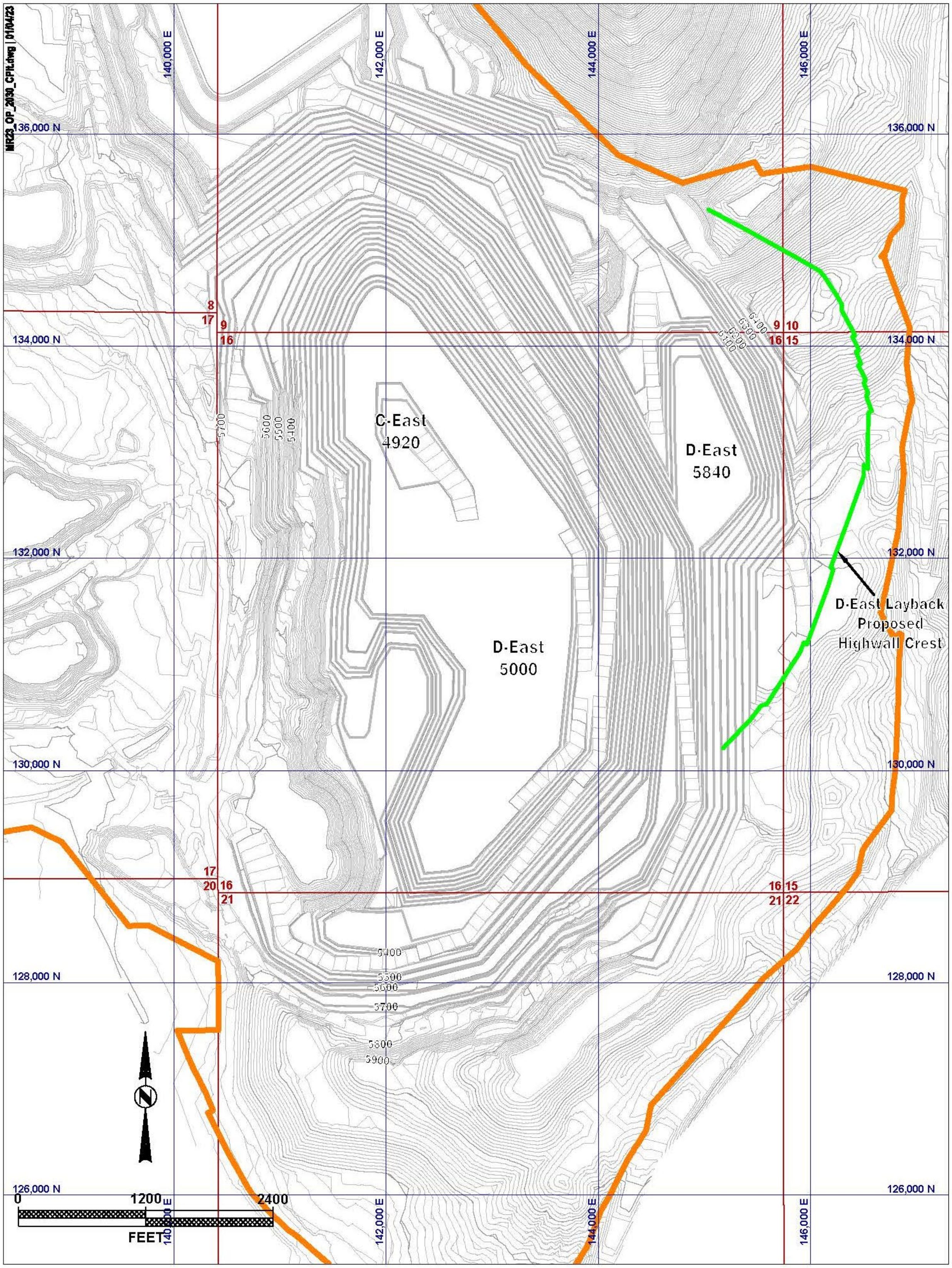


Figure OP-3-12 Continental Pit Planned 2040 Topography

As currently planned, the Continental Pit will be developed north and concentrically eastward, then to the west to develop the Central Zone. Mining sequences are developed within the geometry of the ultimate pit. The 2040 pit limits (footprint), including the “D” East layback, are also shown on Exhibit OP-1.

3.4.4 Public Safety

Public access to the mine property is controlled by fencing, signage, and/or other institutional control. Some remote and rugged areas, such as north of the tailings impoundment and Rampart Ridge, are controlled by terrain. If future blasting is necessary less than 1,000 feet from the I-15 right of way, MR would proactively communicate that information with DEQ and MDT.

3.5 CENTRAL ZONE ALLUVIUM BORROW AREA

The CZABA will be mined to provide reclamation coversoil. Figure OP-3-13 shows a preliminary mine plan footprint for the borrow area and Table OP-3-4 lists design parameter specifications.

Table OP-3-4 Central Zone Alluvium Mine Design Parameter Specifications

Design Parameters	Specifications
Working Room:	
Bench face	210 ft
Pushback	500 ft
Inter-Ramp Slopes:	
Dumps	33.7 °
Alluvium	38.7 °
Bedrock (Leached Cap)	38.7 °
Haul Roads[1]:	
Maximum ramp grade	10 %
Minimum turn radius	75 ft
Travel way	90 ft
Berm width	20 ft
Entrance width	130 ft
In-pit road width	110 ft
Drop Cuts:	
Start Width	160 ft
Toe Width	210 ft

[1] Haul road parameters do not include catch bench widths, but a catch perimeter is included in the Drop Cut toe width. The north access ramp is common to both pits, designed with a grade of 10 percent. The south ramps are at a grade of 9 percent.

The proposed pit design would remove about 29.5 million bank cubic yards (mbcy) of which about 17.7 mbcy is classified as alluvium suitable for reclamation and about 11.8 mbcy is classified as waste (unsuitable alluvium, mine waste and bedrock). Suitability criteria for alluvium use as coversoil is addressed in MR’s Reclamation Plan, Section 4.2.1.

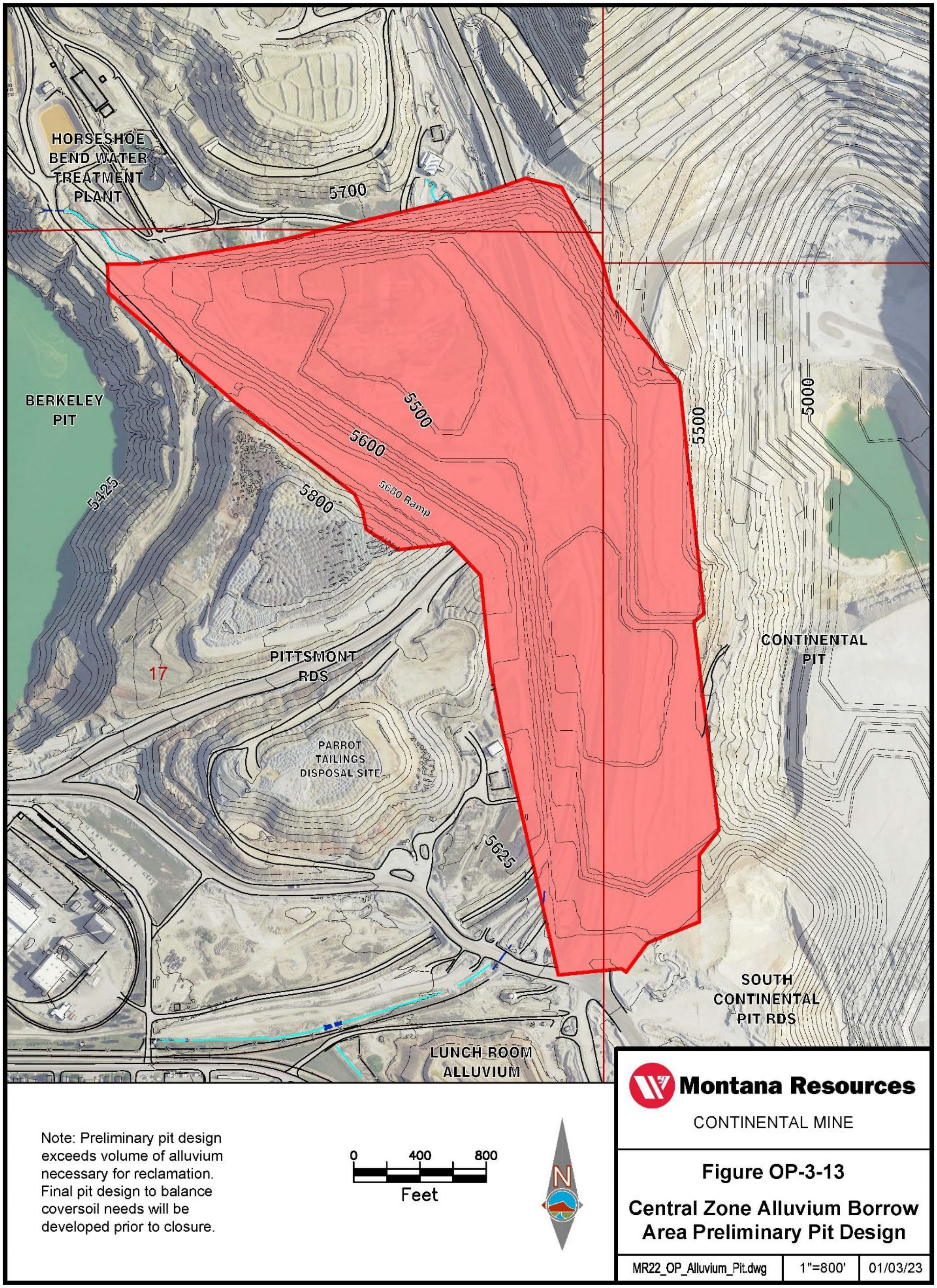


Figure OP-3-13

Central Zone Alluvium Borrow Area Preliminary Pit Design

The strategy would be to mine the northern portion of the pit first; then backfill the initial pit with waste material as mining progresses southward. About half of the waste volume would be placed in the initial pit with the remaining waste end-dumped in the South Continental RDS.

The mine plan affects a small amount (about 204,000 bcyds) of the Pittsmont RDS which will be removed to provide access to the HsBWTP. A small amount of Parrot Tailings would be pushed into the 5680 access ramp along the west highwall of the pit.

The proposed mine plan would provide about twice the amount of suitable alluvium for reclamation as currently estimated (see Table RP-4-7 in MR's Reclamation Plan). The proposed pit design demonstrates that a more than adequate volume of alluvium is available to reclaim the mine. Final volumes of alluvium needed for reclamation and a corresponding mine plan will be developed prior to closure.

Although waste is not uniformly distributed within the proposed pit area, a reduction of suitable alluvium by half would have a corresponding reduction in waste to 5 to 6 mbcy.

4.0 MILL OPERATION

4.1 METALLURGY

The Butte Concentrator is currently milling 40,000 to 50,000 tons per day of ore containing 0.20 percent to 0.40 percent copper and 0.02 percent to 0.05 percent molybdenum. Recoveries are approximately 87 percent for copper and 80 percent for molybdenum. The ratio of concentration is approximately 100:1, producing about 470 tons of copper and 20 tons of molybdenum concentrate per day. The mill operates 7 days per week at approximately 97 percent operating time (remaining 3 percent primarily equates to down days associated with mill maintenance) using 960 flotation machines each with a capacity of 40 cubic feet. Copper and molybdenum milling operations are illustrated on Figure OP-4-1.

4.2 CRUSHING

The Butte Concentrator utilizes two stages of crushing – Primary and Secondary. Run-of-mine ore is initially crushed in a 60 x 89-inch gyratory crusher to a nominal minus size of 6 inches. This ore is conveyed to a 100,000-ton coarse ore stockpile ahead of the secondary crushers. Ore is drawn from the bottom of the stockpile by four apron feeders and conveyed to the secondary crushers for crushing by three Nordberg MP 800 crushers. Crushing is done in open circuit with a final product size of ¾ inch minus which is conveyed to twelve 1,000-ton fine ore storage bins. Maintenance on the primary crusher is performed on day shift three days per week while the secondary draws ore from the coarse ore stockpile. Maintenance on the secondary crushers is performed each weekday morning for about three hours while the mill operates out of the twelve fine ore bins.

4.3 GRINDING

Primary grinding in the Butte Concentrator is accomplished using seven rod mills and thirteen ball mills. The typical grinding circuit utilizes one rod mill and two balls mills operating in closed circuit; one of the seven rod mills operates in a closed circuit with one ball mill. Fine ore is delivered to the seven rod mills each powered by a 450-horsepower (hp) motor. Twelve of the ball mills are each powered by a 1,250-hp motor, and the thirteenth ball mill is powered by a 2,000-hp motor. Fine ore is fed to the seven rod mills from the fine ore bins through a series of seven incline conveyor belts. The ground rock and water slurry from the rod mills is combined with similar material from the thirteen ball mills. This combined slurry is then processed in closed circuit through hydroclassifiers that recycle the coarse fraction back through the ball mills. The fine fraction at 75 percent passing 65 mesh goes to the flotation area.

4.4 FLOTATION

Both copper and molybdenum are concentrated in the initial flotation process. A rougher concentrate is made first. After the rougher concentrate is thickened and reground, two additional stages of cleaning are performed. The final copper/moly concentrate is thickened and stored in holding tanks for further processing in the moly plant.

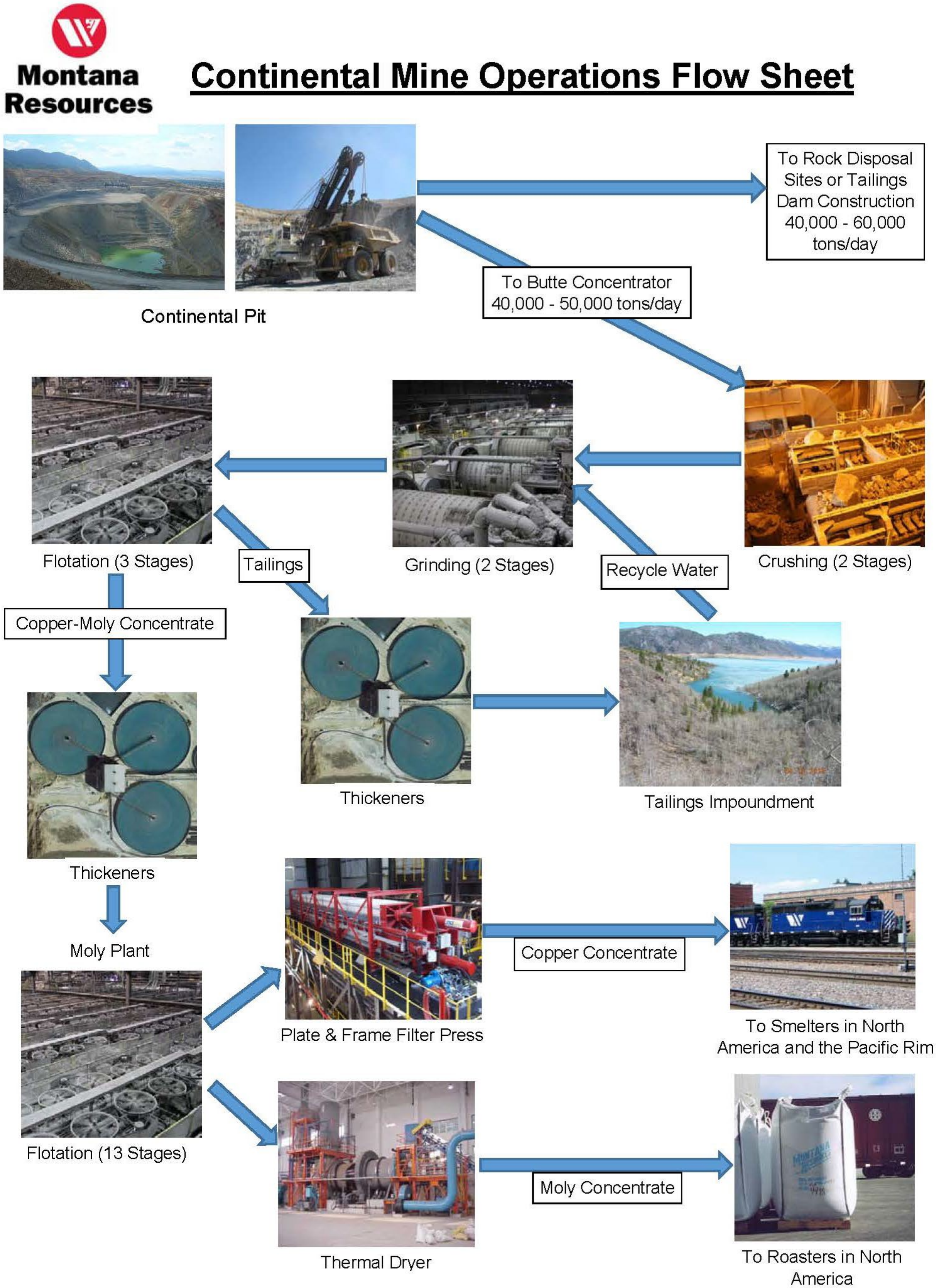


Figure OP-4-1 Continental Mine Operations Flow Sheet

4.5 REAGENTS

MR employs a typical flotation reagent scheme. Milk of lime is added to the rod mill to adjust feed alkalinity. Collectore C386 is used as the copper and moly collector. The frother used is QuadraFroth F-8. The reagents currently used by Montana Resources are:

Reagent	Purpose
Burnt Lime	pH Control
Collectore C386	Copper and Moly Collector
QuadraFroth F-8	Frother
Sodium Hydrosulfide	Copper Depressant
Nitrogen	Flotation Gas
MCO Flotation Oil	Moly Promoter
Activated Carbon	Froth Modifier
N 9714	Antiscalant
N Optimer 83949	Flocculant

Various other chemicals are used, or may be used, in the future.

The major reagent consumptions are:

Reagent	Consumption (Lbs/Ton of Ore)
Lime	2.8
Collectore C386	0.050
Frother	0.025

4.6 MOLY PLANT

The moly plant processes the thickened copper-moly concentrate to separate the molybdenite from the copper minerals. The process uses sodium hydrosulfide (NaHS) and activated carbon to depress the copper and the moly is floated and upgraded by 13 stages of cleaning. The moly plant tailings become the copper concentrate. The moly concentrate is dried in a thermal dryer, bagged in 4,500-pound super bags, and loaded onto trucks for shipment to customers.

The copper concentrate is dewatered in an automated plate and frame filter press. The concentrate is conveyed to a covered A-frame storage building and then loaded into covered 100- to 110-ton railroad cars for shipment to customers.

4.7 CONCENTRATOR TAILINGS DELIVERY SYSTEM

Tailings from the Butte Concentrator are conveyed as a thickened slurry to the YDTI. The tailings delivery system consists of three single-walled steel or high density polyethylene (HDPE) pipelines ranging in size from 22-inch to 26-inch pipe. Two lines operate continuously while the third line remains redundant. The tailings pipelines are installed on the ground surface and locally anchored with mounds of overburden or pipe support deadmen.

Four pump houses - Main Tailings Pump House, McQueen Pump House, No. 2 Booster Pump House and No. 3 Booster Pump House (a total of twelve pump stages), are used to convey the tailings slurry approximately 840 feet vertical and 17,000 feet horizontal to the YDTI. No. 3 Booster Pump House also has the capacity to be expanded with additional pump stages for future embankment raises.

The pump houses are each equipped with tailings drain back discharge areas that are used if the pump houses or tailings pipelines need to be drained or flushed. The tailings pipelines are routed such that the pipelines drain back by gravity flow to the nearest discharge area.

4.8 CONCENTRATOR WATER SYSTEM

The primary water supply to the Butte Concentrator is reclaim water from the YDTI supernatant pond which is conveyed either directly to the Concentrator or to a process water reservoir for storage prior to use. Flows from Continental Pit dewatering, YDTI seepage (post treatment in the HsBWTP) and surface runoff from catchments downstream of the YDTI, also discharge into the Concentrator process water reservoir.

A potable water supply from Butte municipality and a freshwater make-up supply from Silver Lake are also used in the Butte Concentrator to meet specific processing water quality requirements.

The primary water consumptions in order of usage include: 1) water stored in pore spaces within the tailings mass; 2) evaporation from ponded water surfaces; 3) site dust control; 4) HsBWTP sludge discharge to the Berkeley Pit; and 5) water in concentrate shipped off site.

5.0 YANKEE DOODLE TAILINGS IMPOUNDMENT (YDTI) SYSTEM

The YDTI facilities and mine operations are described in detail in the MR Report entitled '*Tailings Operations, Maintenance and Surveillance (TOMS) Manual – Yankee Doodle Tailings Impoundment'*, Rev 5 (KP 2022). The TOMS manual is revised annually.

5.1 SETTING

The YDTI is located about two miles north of Butte, north of the Berkeley Pit (Exhibit OP-1). It is situated in an alluvial basin bordered on the north and east by mountainous terrain. The East Ridge (Rampart Mountain) rises 2000 to 3000 feet above the valley. Three drainages – Silver Bow Creek, Dixie Creek and Yankee Doodle Creek – enter the impoundment from the north.

The basin and surrounding mountains lie within the Boulder Batholith, which is comprised of Butte quartz monzonite, alaskite and aplite. The batholith is approximately 70 million years old and emplaced subsequent to the formation of the Rocky Mountains at the end of the Cretaceous period.

5.2 DESIGN DOCUMENT/INDEPENDENT REVIEW PROCESS/ENGINEER OF RECORD

A Design Document addressing statutory requirements in MCA 82-4-376(1); (2)(a)-(g) and (j)-(ee); and (3) was prepared for raising the YDTI Embankment to a uniform elevation of 6450 feet. The Design Document is comprised of the following reports, with the most recent version being referenced:

Report	Citation
• Alternatives Assessment	Knight Piésold Ltd. (2017a)
• Design Basis Report	Knight Piésold Ltd. (2017b)
• Site Characterization Report	Knight Piésold Ltd. (2017c)
• West Embankment Drain Design Report	Knight Piésold Ltd. (2017d)
• Stability Assessment Report	Knight Piésold Ltd. (2018a)
• Dam Breach Risk Assessment Report	Knight Piésold Ltd. (2018b)
• Water Management Report	Knight Piésold Ltd. (2018c)
• Construction Management Report	Knight Piésold Ltd. (2018d)
• Reclamation Overview	Knight Piésold Ltd. (2018e)
• Tailings Operation, Maintenance, and Surveillance (TOMS) Manual	Knight Piésold Ltd. (2022)
• Hydrologic Evaluation of the Yankee Doodle Tailings Impoundment West Ridge Area	Hydrometrics (2017)

MCA 82-4-377 requires selection of a three-member independent review panel (IRP) to review the Design Document and provide recommended modifications to the Engineer of Record (EOR). Members of the YDTI IRP are:

- Dr. Dirk Van Zyl – Tailings and Geotechnical Specialist
- Dr. Leslie Smith – Hydrogeology Specialist
- Mr. Jim Swaisgood – Dam and Seismic Specialist

Additionally, Dr. Peter K. Robertson, a tailings and geotechnical specialist, participates with the IRP and EOR in update meetings and reviews documents concerning the YDTI.

MCA 82-4-375 requires designation of an EOR to: review designs and other documents pertaining to tailings storage facilities; certify and seal any designs or documents; complete annual inspections; notify the operator if the tailings facility is not performing as intended; and notify the operator and DEQ when credible evidence indicates that the facility presents or has a high potential for an imminent threat to human health or the environment. The EOR of the YDTI is:

Mr. Daniel Fontaine, P.E. (MT)
Knight Piésold Ltd.
Phone: 604-685-0543
Email: dfontaine@knightpiesold.com

5.3 YDTI COMPONENTS AND OPERATION

The main components of the YDTI include embankments, the impoundment surface (beach and supernatant pond), tailings deposition and water reclaim systems, Horseshoe Bend seepage collection system and closure spillway. YDTI components are shown on Exhibit OP-1.

Besides tailings storage, the YDTI is also used as part of the treatment system for Horseshoe Bend seepage and Berkeley Pit water.

5.3.1 Embankments

The YDTI was originally constructed in 1963 using rockfill from the Berkeley Pit. Lifts have been continuously added to the embankments of the YDTI using rockfill from the Berkeley Pit (until 1982) and from the Continental Pit (beginning in 1986).

The basic criteria for the design, construction, and operation of the YDTI is presented in the Design Basis Report for the YDTI (KP 2017b).

The embankment is incrementally raised using non-ore rock, which is truck-hauled from the Continental Pit and dumped to construct the majority of the embankment. Other material sources, such as alluvium and Pipestone Quarry aggregates, are utilized as necessary to meet engineering objectives. Embankment construction is a relatively continuous activity based on rockfill availability from the pit.

Staged lifts based on elevation are identified as construction milestones. Staged lifts are:

- 6400 feet: This lift was completed during 2020.
- 6450 feet: This lift is under construction and is expected to be completed in 2023.

The embankment is divided into three segments as follows:

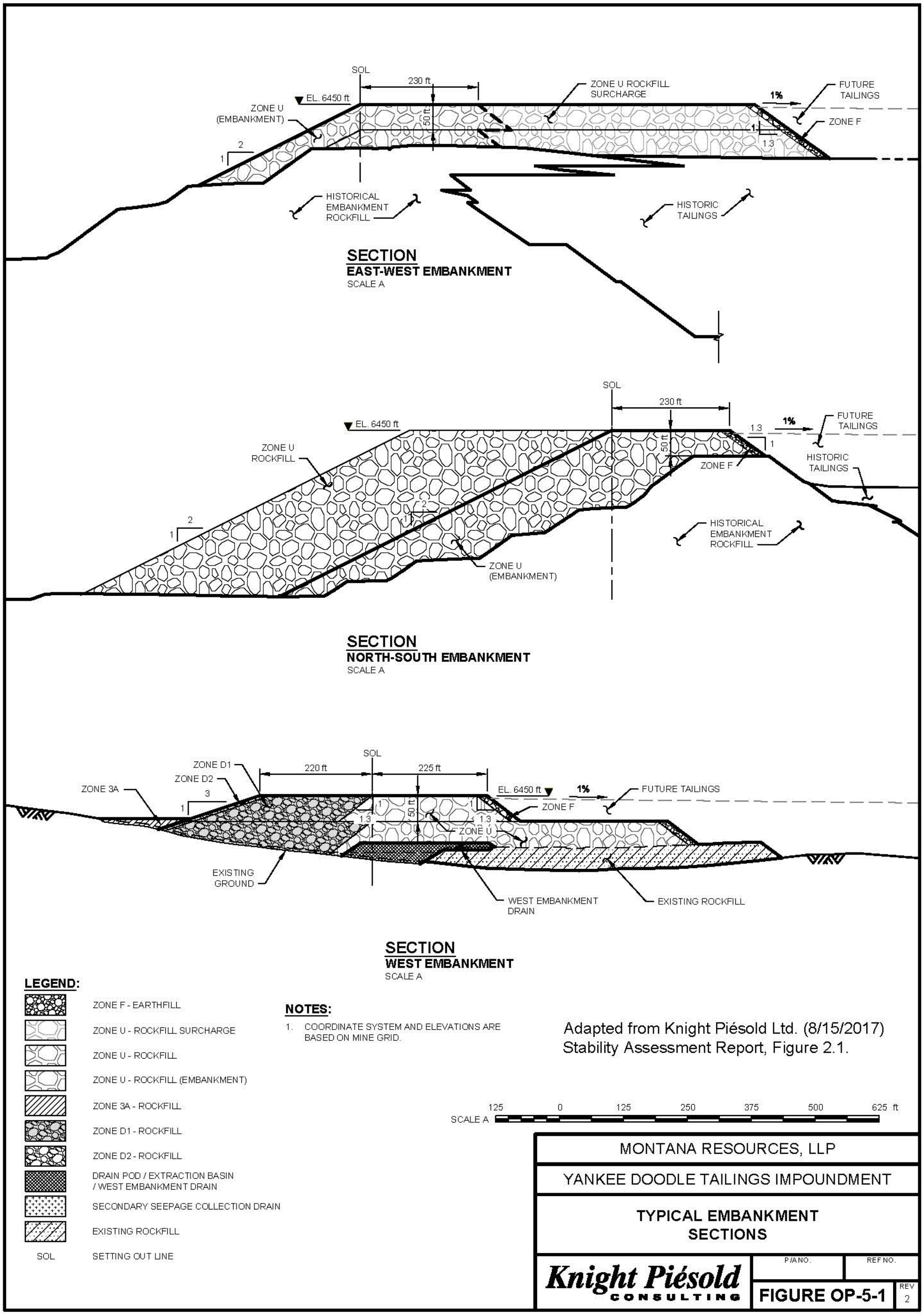
- North-South Embankment: This segment forms the eastern to southeastern limb of the embankment and runs approximately north to south, abutting the base of Rampart Mountain. A 50-foot lift has raised the elevation to 6450 feet using the downstream construction method whereby rockfill was added to the downstream face of the embankment. The upstream slope is at the angle of repose (about 1.3H:1V). The downstream slope is 2H:1V or flatter and crest width is a minimum of 230 feet. Alluvium placed on the upstream face limits tailings migration into the coarser rockfill.
- East-West Embankment: This segment forms the southeastern limb of the embankment and runs approximately east to west. It is situated upstream of Horseshoe Bend and the Berkeley Pit. A 50-foot lift raised the embankment crest to 6450 feet using the centerline construction method whereby rockfill was added to the upstream and downstream faces. Upstream and downstream slopes, as well as crest width, are the same as the North-South Embankment. Likewise, alluvium placed on the upstream face limits tailings migration into the rockfill.
- West Embankment: This embankment is a northern limb extension of the East-West Embankment located between the west side of the impoundment and Moulton Road. Construction of the West Embankment to 6450 feet was mostly completed in 2022. The embankment was raised in two 50-foot lifts (6400 and 6450 feet elevation). The upstream slope is at the angle of repose (about 1.3H:1V) and the downstream slope is designed to be 3H:1V or flatter. As with the other embankment segments, minimum crest width is 230 feet and alluvium is placed on the upstream face to limit tailings migration into the rockfill. The West Embankment design also incorporates a system to manage groundwater by including an upstream collection drain and other seepage management features. The West Embankment Drain (WED) design is discussed in Section 8.0.

The three embankments are permitted to a height of 6450 feet.

Typical cross-sections for the North-South, East-West, and West Embankments are presented in Figure OP-5-1. Detailed cross-sections for the entire embankment at a spacing of approximately 500 feet along the crest are found in Appendix D (Design Drawing Package – 6450 Ft Embankment Crest) of the Design Basis Report (KP 2017b).

The embankment raises will be comprised of the following rockfill zones shown on Figure OP-5-1:

- Zone U rockfill is intended to promote free-draining behavior. The material is hauled from the Continental Pit and end-dumped by 240-ton trucks. Segregation occurs as finer-grained materials tend to accumulate near the top of the lifts while cobbles and boulders roll down the slope and accumulate at the toe.
- Zone F embankment earthfill is placed to construct a separation zone between the tailings and the Zone U rockfill along the upstream face of the embankment. Zone F material consists of variable alluvium, consistent with current practice, to limit tailings migration into the rockfill.
- Zone D1 rockfill is used to construct the downstream zone of the West Embankment. Its design function is to act as an impediment to potential horizontal migration of perched seepage towards the downstream face of the embankment and to encourage free-draining behavior in Zone U such that seepage flows are ultimately collected in the WED. The specification for D1


SOL
230 ft
EL. 6450 ft
ZONE U ROCKFILL SURCHARGE
FUTURE TAILINGS
1%
ZONE U (EMBANKMENT)
50 ft
ZONE F
1.3
2
1
HISTORICAL EMBANKMENT ROCKFILL
HISTORIC TAILINGS
SECTION
EAST-WEST EMBANKMENT
SCALE A
SOL
230 ft
EL. 6450 ft
1.3
1%
FUTURE TAILINGS
ZONE U ROCKFILL
50 ft
ZONE F
HISTORIC TAILINGS
HISTORICAL EMBANKMENT ROCKFILL
ZONE U (EMBANKMENT)
SECTION
NORTH-SOUTH EMBANKMENT
SCALE A
SOL
ZONE D1
ZONE D2
220 ft
225 ft
ZONE 3A
3
1
EL. 6450 ft
1%
FUTURE TAILINGS
ZONE F
1.3
50 ft
ZONE U
EXISTING GROUND
WEST EMBANKMENT DRAIN
EXISTING ROCKFILL
SECTION
WEST EMBANKMENT
SCALE A
LEGEND:
ZONE F - EARTHFILL
ZONE U - ROCKFILL SURCHARGE
ZONE U - ROCKFILL
ZONE U - ROCKFILL (EMBANKMENT)
ZONE 3A - ROCKFILL
ZONE D1 - ROCKFILL
ZONE D2 - ROCKFILL
DRAIN POD / EXTRACTION BASIN / WEST EMBANKMENT DRAIN
SECONDARY SEEPAGE COLLECTION DRAIN
EXISTING ROCKFILL
SOL SETTING OUT LINE
NOTES:
1. COORDINATE SYSTEM AND ELEVATIONS ARE BASED ON MINE GRID.
Adapted from Knight Piésold Ltd. (8/15/2017) Stability Assessment Report, Figure 2.1.
125 0 125 250 375 500 625 ft
SCALE A
MONTANA RESOURCES, LLP
YANKEE DOODLE TAILINGS IMPOUNDMENT
TYPICAL EMBANKMENT SECTIONS
Knight Piésold CONSULTING
P/A NO.
REF NO.
FIGURE OP-5-1
REV 2

material is described in Section 3.3.4 of the Construction Management Plan (CMP) (KP 2018d). The Zone D1 will be comprised of material with a relatively low Acid Potential (AP). An understanding of correlation between bench geology within the Continental Pit and AP will be developed over time and used in planning embankment construction activities. The intent is to utilize the best available geological materials, such as leached capping or other relatively low AP geological units, to facilitate encapsulation of relatively higher AP materials within Zone U. Acid Base Accounting (ABA) or an equivalent test method will be included as a quality control test to provide feedback on the effectiveness of material selection to inform future mine planning. The CMP also defines a minimum testing frequency for Acid Base Accounting (ABA) for Zone D1, Zone UA, and Zone U. MR is presently following this specification by performing control tests on samples from blastholes in the Continental Pit, and by performing record tests for placed materials at the embankment.

- Zone D2 embankment earthfill will be placed to provide a capping layer on the downstream slope of the embankment to promote runoff of meteoric water. Zone D2 material will consist of non-acid-generating alluvium. Following testing, if suitable, the D2 material will be hauled from the Lunchroom stockpile if suitable material is not available for direct-haul from the Continental Pit. If neither suitable Continental Pit nor Lunchroom stockpile material is available, D2 alluvium will be obtained from the Central Zone.

The crest elevation of the YDTI Embankment is maintained at least 22 feet above the normal operating supernatant pond elevation. This design provision provides sufficient storage capacity to accommodate runoff from the Probable Maximum Flood (PMF) while maintaining an additional 5 feet of freeboard. The selected design storm event was based on the 24-hour probable maximum precipitation combined with complete melt of the 100-year snowpack, and the assumption that the upstream reservoirs fail. The runoff volume calculated for the PMF is 19,000 acre-ft.

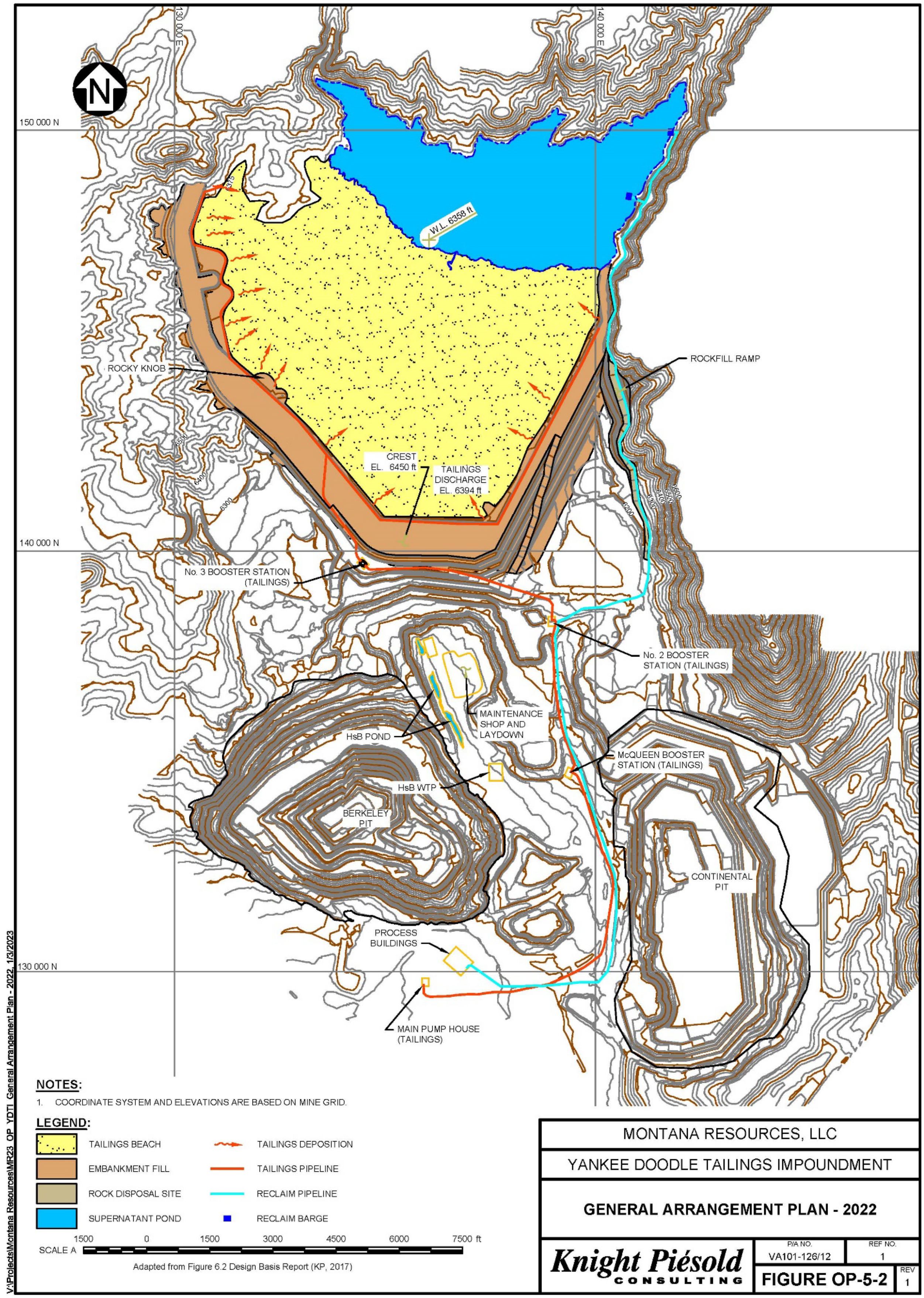
5.3.2 Impoundment Surface

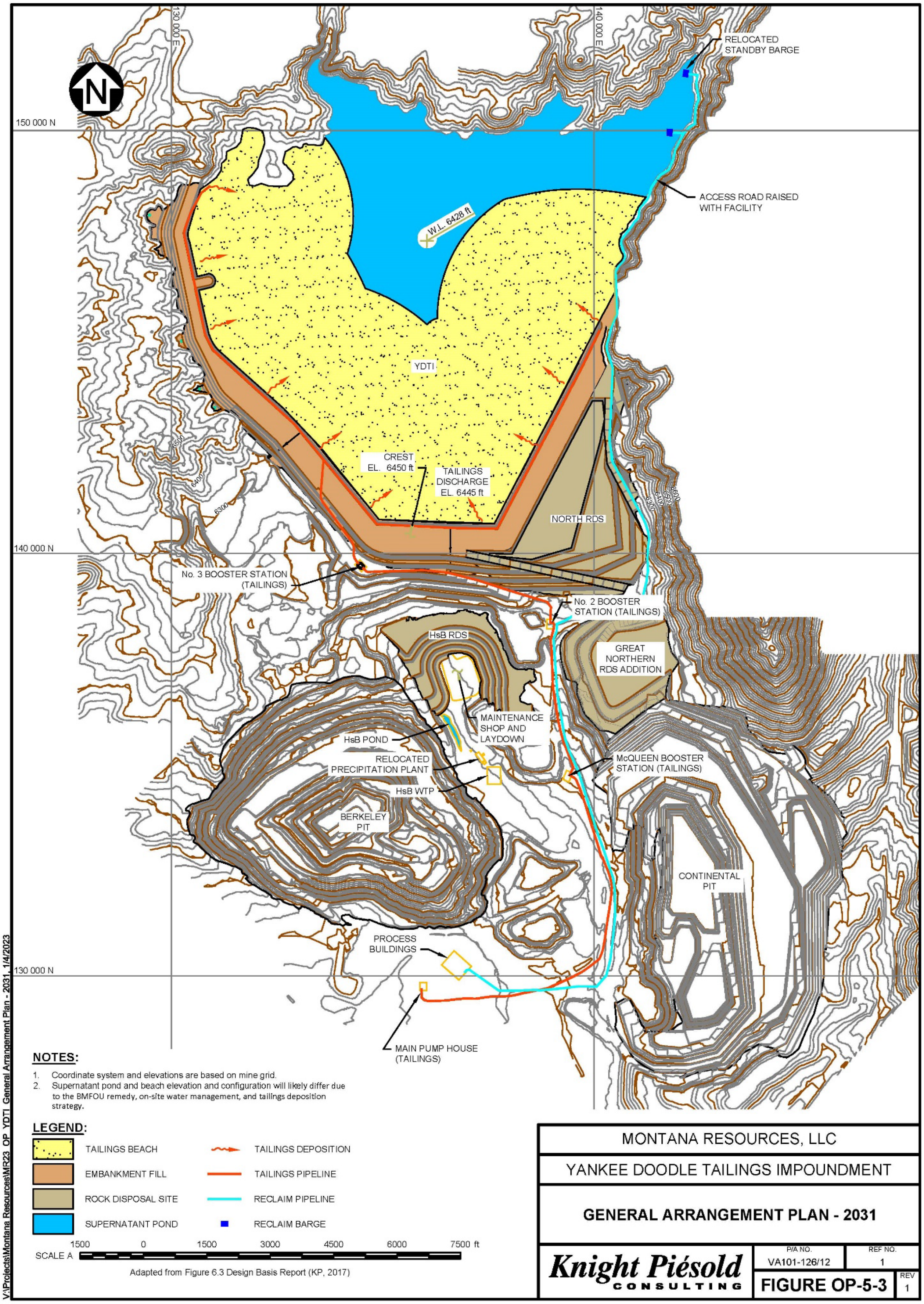
The impoundment surface is comprised of a beach of coarser tailings and a supernatant pond (see Exhibit OP-1).

Figure OP-5-2 and Figure OP-5-3 depict the general arrangement of the YDTI corresponding to the 6450-foot elevation lift in 2022 and 2031. Supernatant pond elevations corresponding to embankment height and year are:

Year	Embankment Elevation (ft, ACC)	Tailings Discharge Elevation (ft, ACC)*	Supernatant Pond Elevation (ft, ACC)*
2022	6450	6394	6360±
2031	6450	6445	6428±

* Modifications in water management due to the BMFOU remedy and on-site water management will likely differ from projected supernatant pond elevation and tailings discharge elevation.


130 000 E
140 000 E
150 000 N
140 000 N
130 000 N
N
W.L. 6358 ft
ROCKY KNOB
ROCKFILL RAMP
CREST
EL. 6450 ft
TAILINGS
DISCHARGE
EL. 6394 ft
No. 3 BOOSTER STATION
(TAILINGS)
No. 2 BOOSTER
STATION (TAILINGS)
MAINTENANCE
SHOP AND
LAYDOWN
HsB POND
McQUEEN BOOSTER
STATION (TAILINGS)
HsB WTP
BERKELEY
PIT
CONTINENTAL
PIT
PROCESS
BUILDINGS
MAIN PUMP HOUSE
(TAILINGS)
NOTES:
1. COORDINATE SYSTEM AND ELEVATIONS ARE BASED ON MINE GRID.
LEGEND:
TAILINGS BEACH
EMBANKMENT FILL
ROCK DISPOSAL SITE
SUPERNATANT POND
TAILINGS DEPOSITION
TAILINGS PIPELINE
RECLAIM PIPELINE
RECLAIM BARGE
1500 0 1500 3000 4500 6000 7500 ft
SCALE A
Adapted from Figure 6.2 Design Basis Report (KP, 2017)
MONTANA RESOURCES, LLC
YANKEE DOODLE TAILINGS IMPOUNDMENT
GENERAL ARRANGEMENT PLAN - 2022
Knight Piésold
CONSULTING
P/A NO.
VA101-126/12
REF NO.
1
FIGURE OP-5-2
REV
1
V:\Projects\Montana Resources\MR23_OP_YDTI General Arrangement Plan - 2022, 1/3/2023



130 000 E
140 000 E
150 000 N
140 000 N
130 000 N
N
RELOCATED STANDBY BARGE
ACCESS ROAD RAISED WITH FACILITY
W.L. 6428 ft
YDTI
CREST EL. 6450 ft
TAILINGS DISCHARGE EL. 6445 ft
NORTH RDS
No. 3 BOOSTER STATION (TAILINGS)
No. 2 BOOSTER STATION (TAILINGS)
HsB RDS
GREAT NORTHERN RDS ADDITION
MAINTENANCE SHOP AND LAYDOWN
HsB POND
RELOCATED PRECIPITATION PLANT
HsB WTP
McQUEEN BOOSTER STATION (TAILINGS)
BERKELEY PIT
CONTINENTAL PIT
PROCESS BUILDINGS
MAIN PUMP HOUSE (TAILINGS)
NOTES:
1. Coordinate system and elevations are based on mine grid.
2. Supernatant pond and beach elevation and configuration will likely differ due to the BMFOU remedy, on-site water management, and tailings deposition strategy.
LEGEND:
TAILINGS BEACH
EMBANKMENT FILL
ROCK DISPOSAL SITE
SUPERNATANT POND
TAILINGS DEPOSITION
TAILINGS PIPELINE
RECLAIM PIPELINE
RECLAIM BARGE
1500 0 1500 3000 4500 6000 7500 ft
SCALE A
Adapted from Figure 6.3 Design Basis Report (KP, 2017)
V:\Projects\Montana Resources\MR23_OP_YDTI_General Arrangement Plan - 2031, 1/4/2023
MONTANA RESOURCES, LLC
YANKEE DOODLE TAILINGS IMPOUNDMENT
GENERAL ARRANGEMENT PLAN - 2031
Knight Piésold CONSULTING
P/A NO. VA101-126/12
REF NO. 1
FIGURE OP-5-3
REV 1

5.3.2.1 Beach

The YDTI beach is formed by the discharge and deposition of tailings slurry generated from the Butte Concentrator and discharged from spigotting at the embankment. The drained tailings beach is considered part of the impoundment containment system which, collectively with the rockfill embankments, contains the supernatant pond. The tailings beach extends across the YDTI surface area adjacent to the embankment, with the beach surface sloping generally north to the supernatant pond.

5.3.2.2 Supernatant Pond

The YDTI supernatant pond provides storage of process water for reuse in the Concentrator, as well as retention and settling for BMFOU remedy water treatment. A key function of the pond is the water retention capacity which enables suspended tailings solids to settle. A larger pond retention capacity facilitates increased settling and reduces the concentration of tailings solids in the reclaim water which is pumped back to the Concentrator.

The size of the supernatant pond varies seasonally and annually, but as of mid-2022, occupies around 32 percent of the total YDTI surface area. The total volume of the supernatant pond varies depending on the season and annual precipitation but historically has ranged from 10,000 to 30,000 acre-feet. Water inflows to the YDTI supernatant pond include tailings water, BMFOU water, drainage from upstream and adjacent catchments, and direct precipitation.

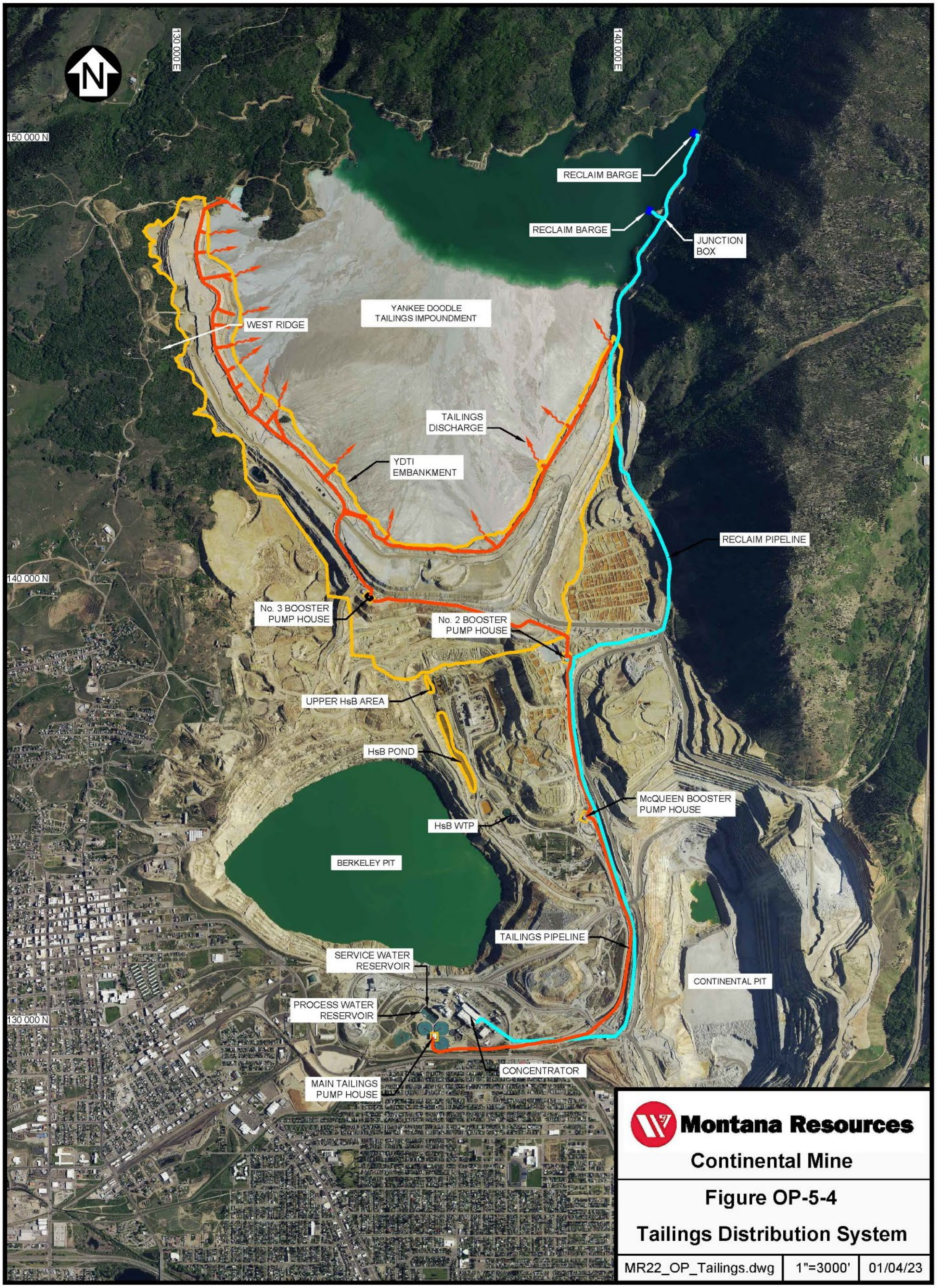
5.3.3 Tailings Deposition System

5.3.3.1 Distribution System

Tailings are pumped from the Concentrator to the YDTI as a by-product of processing. The tailings distribution system is shown in Figure OP-5-4. The tailings distribution system utilizes tailings pumps, booster pump houses, and pipelines to convey tailings from the Concentrator to the YDTI. Four tailings pump house stations (the Main Tailings Pump House, McQueen Booster Pump House, No. 2 Booster Pump House, and No. 3 Booster Pump House) provide the required pressure to pump the tailings up to the YDTI – a total elevation increase of approximately 875 feet.

Three tailings distribution pipelines (two operational and one standby) transport tailings to the YDTI. Approximately 17,000 feet (3.25 miles) of existing tailings distribution pipeline has been installed at the project site, including sections of 22-inch steel pipe and 24- to 26-inch HDPE pipe. The single-walled tailings pipeline is installed on the ground surface and locally anchored with mounds of overburden or pipe support trestles. The tailings slurry flow rate is approximately 18,000 gpm with a solids concentration (by weight) between 33 and 37 percent.

The pipelines are routed up to the YDTI to enable positive drainage back to the pump houses, each of which are equipped with tailings drain-back discharge areas that are used if the tailings pipelines need to be drained or flushed. Drainage from each of the drain-back discharge areas is routed to flow into the site storm water drainage network.


N
130 000 E
140 000 E
150 000 N
140 000 N
130 000 N
RECLAIM BARGE
RECLAIM BARGE
JUNCTION BOX
YANKEE DOODLE TAILINGS IMPOUNDMENT
WEST RIDGE
TAILINGS DISCHARGE
YDTI EMBANKMENT
RECLAIM PIPELINE
No. 3 BOOSTER PUMP HOUSE
No. 2 BOOSTER PUMP HOUSE
UPPER HsB AREA
HsB POND
McQUEEN BOOSTER PUMP HOUSE
HsB WTP
BERKELEY PIT
TAILINGS PIPELINE
SERVICE WATER RESERVOIR
CONTINENTAL PIT
PROCESS WATER RESERVOIR
CONCENTRATOR
MAIN TAILINGS PUMP HOUSE
Montana Resources
Continental Mine
Figure OP-5-4
Tailings Distribution System
MR22_OP_Tailings.dwg
1"=3000'
01/04/23

Infrastructure related to BMFOU water management relevant to mine operations is discussed in Section 8.4.

Tailings were historically discharged as a thickened slurry into the YDTI at a single location at the southern point of the impoundment. In late 2016, the tailings distribution pipelines were extended to the north, along the East-West and North-South Embankments, to facilitate discharge of tailings from additional embankment locations. Discharge along the West Embankment was added in 2017.

The tailings discharge system was converted from a single to a multiple point discharge system between 2016-2022. The active tailings discharge locations are changed depending on the YDTI needs, which include consideration of beach wetting/wind-blown tailings mitigation, supernatant pond location and embankment raise construction. These discharge locations develop a tailings beach adjacent to the embankments and isolate the supernatant pond in the north end of the impoundment. The present configuration includes a multi-point tailings discharge system to provide three separate lines with six 12-inch spigots on each line for a total of 18 discharge points. Increasing options for managing tailings discharges provides more options for beach tailings management and optimization of dust control. Tailings are continuously discharged during Concentrator operation. The northwest, northeast, and southeast discharges will initially operate for a greater duration to develop beaches in existing low areas. Tailings discharge frequency will become more evenly distributed between the discharge locations as the tailings beach develops by rotating the active discharge locations on a planned basis. The volume and duration of tailings discharged from each location will vary depending on the year and beach conditions.

YDTI tailings beach and water management are described in MR's Dust Control Plan, Appendix OP-B.

5.3.3.2 Filling Schedule

Tailings production has ranged from about 17 to 18 million tons (dry) annually since 2008; the filling schedule is based on a continued output of 18 million tons.

The projected filling schedule for the YDTI is presented Table OP-5-1; Figure OP-5-5 presents a filling curve. The rate of rise of the tailings is expected to be approximately 6 feet per year, although changes in tailings and water management could affect the future filling schedule.

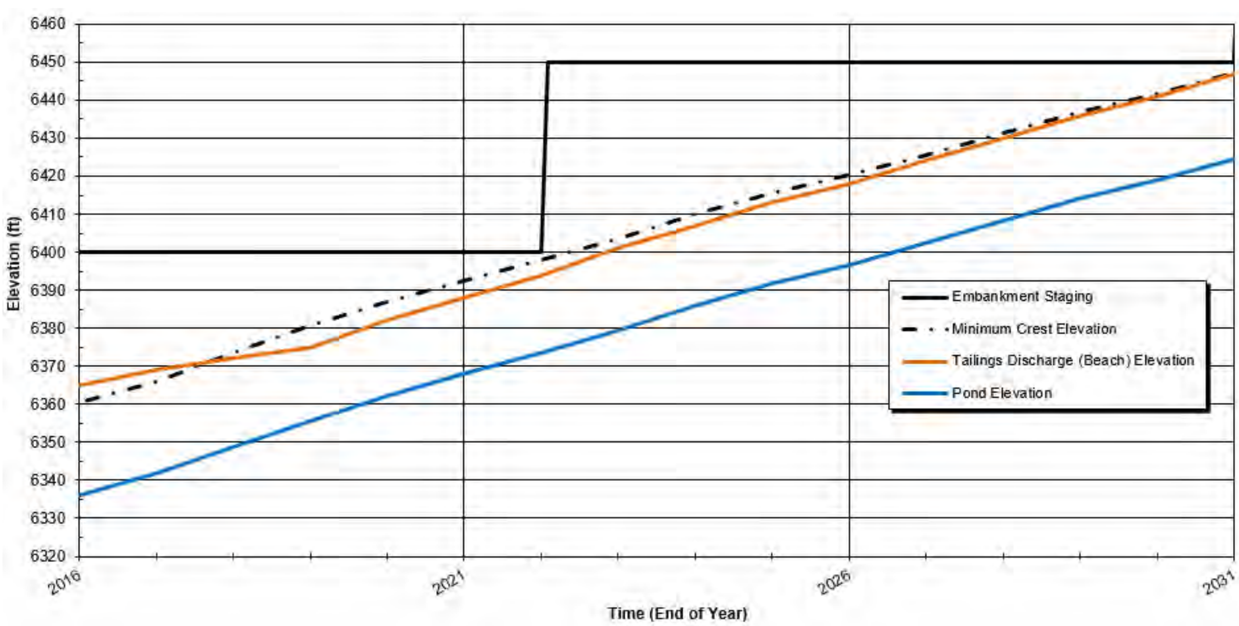
Table OP-5-1 Filling Schedule

Year	Cumulative Tailings Storage[1]		Total Storage[2]
	Million Tons	Million Cu Yd	Million Cu Yd
2021	682.7	593.7	634.0
2022	700.7	609.3	649.6
2023	718.7	625.0	665.3
2024	736.7	640.6	680.9
2025	754.7	656.3	696.6
2026	772.7	671.9	712.3
2027	790.7	687.6	727.9
2028	808.7	703.2	743.6
2029	826.7	718.9	759.2
2030	844.7	734.5	774.9
2031	862.7	750.2	790.5

[1]Tailings dry density for filling schedule development = 85 pcf (pounds per cubic feet) = 1.15 tons/yd^3.

[2]Assumed supernatant pond volume for filling schedule development = 25,000 acre-feet (40.3 million cubic yards).

Figure OP-5-5 YDTI Filling Schedule with Embankment Lift Sequence



5.3.4 Water Reclaim System

Supernatant water is reclaimed for reuse in the mill process from the northeast end of the YDTI using floating barges. MR maintains two reclaim water pump barge units in the supernatant pond (for redundancy). Each of the barges is equipped with four vertical turbine pump units. The barge pumps deliver a total of approximately 12,000 gpm of reclaim water into a junction box located on the side slope of Rampart Mountain, approximately 1,500 feet away (50 feet elevation increase). From the junction box, reclaim water gravity discharges to the mill at an elevation decrease of approximately 875 feet, and at a distance of 5.1 miles away. The reclaim water is initially conveyed back to the Concentrator via two 36-inch diameter HDPE pipelines (0.7 miles long). As the pipeline grade steepens down to the mill, the reclaim water is conveyed by a single 42-inch-diameter HDPE pipeline. Approximately the last mile of reclaim pipeline is further downsized to a 36-inch-steel pipeline for conveyance into the Butte Concentrator facilities.

The reclaim pipeline alignment follows the access road along the eastern edge of the YDTI. Immediately south of the Tailings No. 2 Booster Pump House, the reclaim pipeline enters the site pipeline corridor, which extends from the Butte Concentrator to the YDTI. As part of BMFOU water management (Pilot Project), a take-off valve has been installed in the reclaim pipeline near the McQueen Booster Pump House and a pipeline installed to the polishing facility.

The reclaim water is delivered to two locations at the Butte Concentrator: to the Concentrator building for direct use in processing and to the process water reservoir located west of the Butte Concentrator and Lime Slaker Silos. During the Pilot Project and potentially beyond mine operation, water will also be delivered to the polishing facility.

5.3.5 Horseshoe Bend Seepage Collection System

A drainage system has been designed as part of development of the HsB RDS to manage runoff from the surrounding catchment areas, seepage from the YDTI, and drainage from the rockfill leaching areas. The principal design objectives for the drainage system 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 is 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.

A foundation drainage layer and a network of independent engineered rockfill drains and surface water diversion ditches 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. Much of the YDTI seepage is collected in a single surface drainage ditch and flows south to the HsB Pond. The HsB Pond is a long, thin basin approximately 100-feet-wide and 2,000-feet-long. A diversion structure at the south end of HsB Pond diverts the water by gravity to the equalization basin for the HsBWTP. From the equalization basin, this water is either conveyed to the HsBWTP or the HsBCS (see Section 8.4.3).

The HsBWTP effluent is pumped to the Water Reclaim Line after treatment where it mixes with reclaimed water from the YDTI and flows by gravity to the Butte Concentrator.

5.3.6 Closure Spillway

A closure spillway is proposed to integrate the design of the YDTI with a closure plan that enhances dam safety. The need for, and design of, the spillway will be reevaluated in light of any future CERCLA requirements for upgradient diversions. The YDTI spillway will not be operated as a routine water discharge system, and in all likelihood will never convey flow. It will only convey flow if an exceptionally unlikely sequence of storm events were to occur in combination with a starting pond volume equal to the 95% percentile wet steady state pond volume. This storm sequence involves the 1 in 1000 year 30-day rainfall event immediately followed by the Probable Maximum Flood (PMF) event (probable maximum precipitation plus snowmelt), which is in turn immediately followed by an additional storm event.

If spillway construction proceeds, it will follow cessation of operations with an invert elevation at approximately 6430 feet that provides approximately 26,000 acre-feet water storage capacity prior to discharge over the spillway. This storage capacity provides an allowance of 8000 acre-feet for the estimated average post-closure pond volume and approximately 18,000 acre-feet for storm storage.

The spillway dimensions provide sufficient capacity to pass all extreme storm events including the PMF. The spillway was modelled as a trapezoidal channel with a grade of one percent. The upstream segment of the spillway channel will be cut into bedrock, then extend past the toe of the North RDS to a point where the local regraded topography creates a flow path leading to the Continental Pit. The spillway, 5000-foot-long channel in bedrock, and 8000-foot-long segment into the Pit is shown in concept on Figure OP-5-6. This alignment is conceptual and will need to be optimized for hydraulic considerations during detailed engineering of the spillway at closure. Limited spillway maintenance will be required in the long term, although periodic inspection will be necessary to verify the spillway is operational.

5.4 RISK ASSESSMENT AND MANAGEMENT

The following reports included in the Design Document assess potential risks associated with construction and operation of the YDTI:

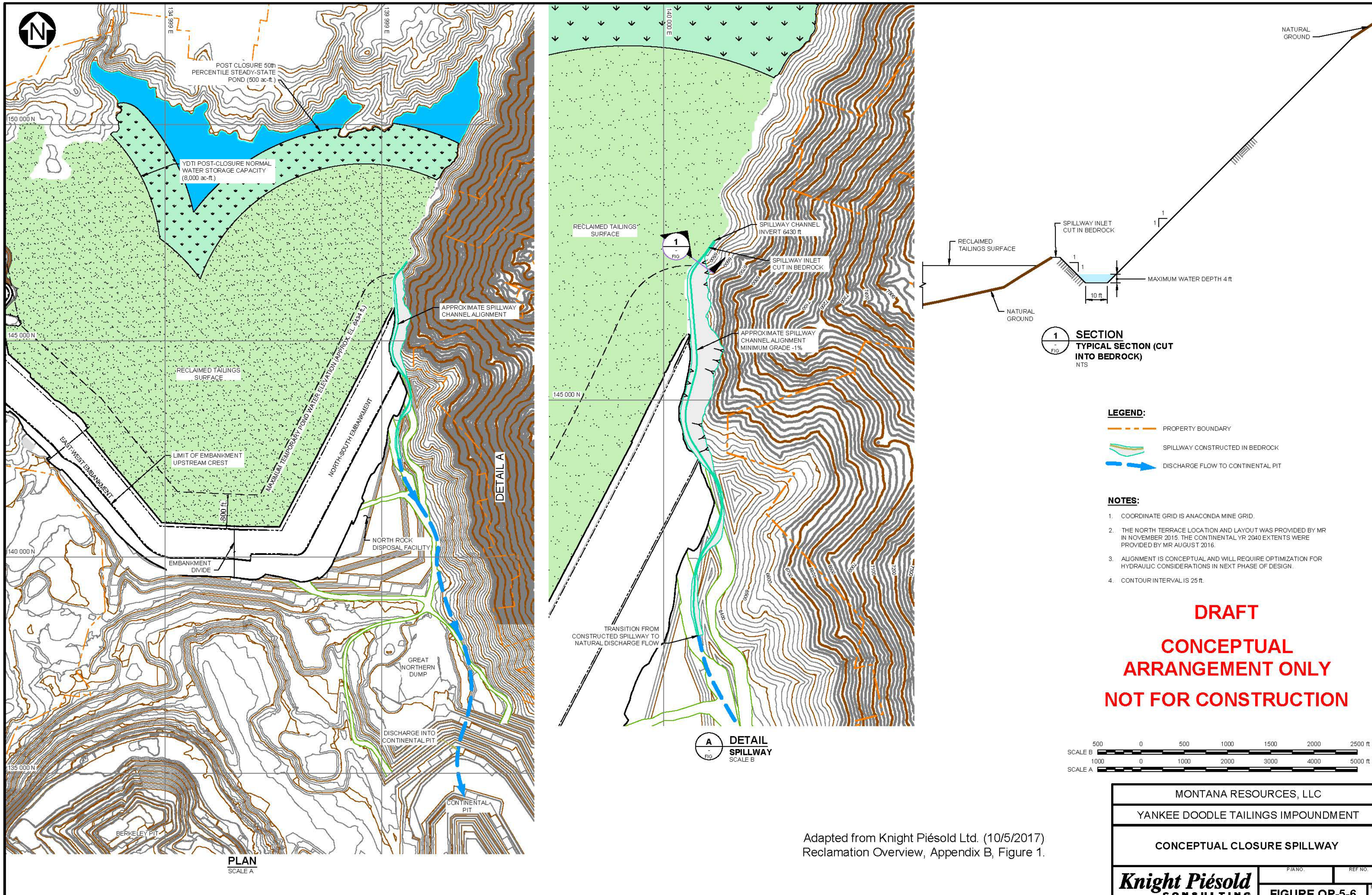
- Knight Piésold Ltd. (KP 2018a). Yankee Doodle Tailings Impoundment, Stability Assessment Report (KP Reference No. VA101-126/12-2), Vancouver, BC.
- Knight Piésold Ltd. (KP 2018b). Yankee Doodle Tailings Impoundment, Dam Breach Risk Assessment (KP Reference No. VA101-126/12-3), Vancouver, BC.

The risk assessment evaluated foundation and embankment instability, overtopping the embankment crest, and internal erosion and piping within the embankment.

The assessment considered loading during maximum normal operating conditions, loading from seismic events and flood events, and malfunction of the reclaim water and tailings distribution systems.

The following reports included in the Design Document, in addition to those listed above, include practices to manage risk:

- Knight Piésold Ltd. (KP 2017b). Yankee Doodle Tailings Impoundment, Design Basis Report (KP Reference No. VA101-126/12-1), Vancouver, BC.
- Knight Piésold Ltd. (KP 2017d). Yankee Doodle Tailings Impoundment, West Embankment Drain Design Report (KP Reference No. VA101-126/13-3), Vancouver, BC.
- Knight Piésold Ltd. (KP 2018d). Yankee Doodle Tailings Impoundment, Construction Management Plan (KP Reference No. VA101-126/12-5), Vancouver, BC.


POST CLOSURE 50th PERCENTILE STEADY-STATE POND (500 ac-ft.)
YDTI POST-CLOSURE NORMAL WATER STORAGE CAPACITY (8,000 ac-ft.)
RECLAIMED TAILINGS SURFACE
APPROXIMATE SPILLWAY CHANNEL ALIGNMENT
MAXIMUM TEMPORARY POND WATER ELEVATION (APPROX. EL. 6434 ft.)
NORTH-SOUTH EMBANKMENT
EAST-WEST EMBANKMENT
LIMIT OF EMBANKMENT UPSTREAM CREST
800 ft.
EMBANKMENT DIVIDE
NORTH ROCK DISPOSAL FACILITY
GREAT NORTHERN DUMP
DISCHARGE INTO CONTINENTAL PIT
CONTINENTAL PIT
BERKELEY PIT
DETAIL A
150 000 N
145 000 N
140 000 N
135 000 N
134 999 E
139 999 E
PLAN
SCALE A
RECLAIMED TAILINGS SURFACE
SPILLWAY CHANNEL INVERT 6430 ft
SPILLWAY INLET CUT IN BEDROCK
APPROXIMATE SPILLWAY CHANNEL ALIGNMENT MINIMUM GRADE -1%
TRANSITION FROM CONSTRUCTED SPILLWAY TO NATURAL DISCHARGE FLOW
140 000 E
145 000 N
A DETAIL SPILLWAY
SCALE B
NATURAL GROUND
RECLAIMED TAILINGS SURFACE
SPILLWAY INLET CUT IN BEDROCK
MAXIMUM WATER DEPTH 4 ft
10 ft
NATURAL GROUND
1 SECTION
TYPICAL SECTION (CUT INTO BEDROCK)
NTS
LEGEND:
PROPERTY BOUNDARY
SPILLWAY CONSTRUCTED IN BEDROCK
DISCHARGE FLOW TO CONTINENTAL PIT
NOTES:
1. COORDINATE GRID IS ANACONDA MINE GRID.
2. THE NORTH TERRACE LOCATION AND LAYOUT WAS PROVIDED BY MR IN NOVEMBER 2015. THE CONTINENTAL YR 2040 EXTENTS WERE PROVIDED BY MR AUGUST 2016.
3. ALIGNMENT IS CONCEPTUAL AND WILL REQUIRE OPTIMIZATION FOR HYDRAULIC CONSIDERATIONS IN NEXT PHASE OF DESIGN.
4. CONTOUR INTERVAL IS 25 ft.
DRAFT
CONCEPTUAL ARRANGEMENT ONLY
NOT FOR CONSTRUCTION
SCALE B 500 0 500 1000 1500 2000 2500 ft
SCALE A 1000 0 1000 2000 3000 4000 5000 ft
Adapted from Knight Piésold Ltd. (10/5/2017)
Reclamation Overview, Appendix B, Figure 1.
MONTANA RESOURCES, LLC
YANKEE DOODLE TAILINGS IMPOUNDMENT
CONCEPTUAL CLOSURE SPILLWAY
Knight Piésold CONSULTING
P/A NO.
REF NO.
FIGURE OP-5-6
REV 1

- Knight Piésold Ltd. (KP 2018c). Yankee Doodle Tailings Impoundment, Water Management Report (KP Reference No. VA101-126/12-7), Vancouver, BC.

A seismic hazard analysis was conducted in conjunction with raising the YDTI Embankment (Al Atik and Gregor 2016, Appendix B to the Site Characterization Report, KP 2017c). The design earthquake used in the stability assessment was the maximum credible earthquake with a magnitude of 6.5 on the Richter scale. The flood event used for the risk assessment was the probable maximum flood (PMF), which is a combination of the 24-hour probable maximum precipitation combined with complete melt of the 1 in 100-year snowpack, with full failure of the upstream Moulton reservoirs. The PMF runoff volume was calculated to be 19,000 acre-feet.

Table OP-5-2 summarizes risk ratings by failure mode and identifies risk management design criteria. The following summary is extracted from the Dam Breach Risk Assessment (KP 2018b).

Table OP-5-2 Summary of Risk Ratings by Failure Mode, and Design Criteria for Risk Management

Failure Mode	Loading Condition	Likelihood		Consequences[3]	Risk Management Design Criteria
		Probability of Loading Conditions[1]	Probability of Coincident Failure[2]		
Foundation and Slope Instability[4]	Normal Operating Conditions	Likely	Very Low	Moderate	-Maintain overall downstream embankment slope angles of 2H:1V or flatter; -Maintain minimum embankment crest width of 200 feet; -Monitor pore pressures/water levels.
	Earthquake Events	Very Rare	Very Low	Moderate to Major	
	Flood Events	Very Rare	Very Low	Moderate to Catastrophic	
Overtopping	Normal Operating Conditions	Certain	Not Credible	-	-Maintain ≥15 feet of elevational difference between tailings discharge and pond[5]; -Maintain minimum freeboard above tailings discharge ≥5 feet; -Operate tailings and reclaim pipelines at design flow rates and pressures; -Construct spillway channel at 6430-foot elevation at closure.
	Pipeline Rupture	Likely	Not Credible	-	
	Earthquake Events	Very Rare	Very Low	Moderate to Major	
	Flood Events	Unlikely[6]	Very Low	Catastrophic	
		Very Rare[7]	Very Low	Catastrophic	
Internal Erosion and Piping	Normal Operating Conditions	Certain	Not Credible	-	-Face upstream slope of embankment with alluvium to limit tailings migration; -Maintain pond elevation ≥15 feet below tailings discharge elevation[5]; -Keep pond more than 200 feet from embankment during operations by managing spigotting; -No ponded water within 800 feet of the embankment following closure. Monitor pore pressure/water levels.
	Tailings Stream Leakage	Likely	Moderate	Minor to Moderate	
	Earthquake Events	Very Rare	Very Low	Minor to Moderate	
	Flood Events	Unlikely[6]	Low	Catastrophic	
		Very Rare[7]	Moderate	Catastrophic	

Table OP-5-2 Summary of Risk Ratings by Failure Mode, and Design Criteria for Risk Management

[1] **Probability of Loading Conditions definitions:**

Very Rare:	One event per 10,000 years or deterministic-based maximum credible.
Unlikely:	One event per 1000 years.
Possible:	One event per 100 years.
Likely:	One event per 10 years.
Certain:	One or more events per year.

[2] **Probability of Coincident Failure definitions:**

Not Credible:	Failure mode not credible for loading condition and initiating events under consideration.
Very Low:	Robust analysis demonstrates stable condition, exceeds FS requirements; with appropriately conservative assumptions and with consideration of sensitivity analyses.
Low:	Analysis demonstrates marginal performance in considered loading condition, meets FS requirements; however, analysis technique is not as robust or sensitivity range does not capture full range of conditions.
Moderate:	Does not meet minimum requirements under loading conditions or failure mode cannot be analyzed in a practical manner.

[3] **Consequence definitions**

Minor:	Minor deformation, local area of impact.
Moderate:	Serious deformation, but no uncontrolled release of containment.
Major:	Uncontrolled release, contained within project area.
Catastrophic:	Uncontrolled release, off-site impact.

NOTE: A Consequence rating is not provided if failure is not credible for the loading condition under consideration.

[4] Foundation and slope instability considers the maximum driving force and the minimum resisting force for static stability, which is present only periodically either following a lift of the embankment for upstream stability or at the ultimate filling level for each lift (downstream stability). The loading condition will occur roughly every ten years during operations, and therefore the probability of the loading condition is "Likely".

[5] The tailings discharge elevation is typically progressively raised as tailings accumulate. This difference in elevation relates the anticipated elevation difference between the supernatant pond and tailings discharge points with extensive tailings beaches developed in between, which allows for storage of spring runoff and flood inflows on the tailings beach without approaching the embankments.

[6] The 1 in 1,000-year return period flood event meets the criteria for "Unlikely".

[7] The PMF event meets the criteria for "Very Rare".

The likelihood of embankment failure and uncontrolled loss of tailings due to foundation and slope instability under static conditions is very low. Overtopping of the embankment is only a credible failure mode for severe flood events and earthquake-induced deformation. The risk of flood-induced overtopping is very low, and is managed by maintaining the prescribed design freeboard through continued embankment construction up to the final design elevation. A closure spillway will prevent overtopping in the long-term after operations cease. The risk of earthquake-induced deformation leading to overtopping is very low. The seismic loading analysis considered both the operating conditions and long-term conditions following closure. The robustness of the free-draining embankment, design freeboard, and extensive drained tailings beaches are sufficient to manage this risk. The pond will reduce in size following closure because outflows will exceed inflows until equilibrium is reached. Pore pressures will reduce over time and the tailings surface will be covered, further limiting the potential for overtopping following an earthquake.

Internal erosion and piping of the embankment under normal operating conditions is not a credible failure mode. The tailings beaches work in conjunction with the free-draining embankments to limit pore pressures at the interface between the tailings and embankment materials, and eliminate any substantial phreatic surface from developing in the embankment. Piping cannot develop without a continuous source of water eroding material along a seepage flow path. The risk of internal erosion and piping will increase if the supernatant pond or tailings stream is allowed to approach one of the embankments due to improper beach development or natural flooding.

The potential for internal erosion and piping initiated by natural flooding carries the greatest uncertainty for the YDTI. The flood events considered in this risk assessment are rare and therefore the likelihood of the flooded condition actually developing is very low. An analysis of internal erosion and piping potential under flooded conditions is difficult due to the variability in embankment fill consistency combined with the uncertainty of timing for development of such a condition. This uncertainty highlights the importance of water management and tailings beach development to manage risk. The alluvium facing, wide crest width, and the well-graded particle size distribution of most of the embankment fill would provide some protection against internal erosion in many areas of the embankment. However, the ponding of water adjacent to the embankment could provide a pathway to a very large source of water that has the potential to cause concentrated leakage through gap-graded rockfill zones or coarse boulder layers within the embankment. These zones are known to exist and have been subjected to leakage caused by the tailings stream in the past.

The YDTI operates by keeping the pond separated from the embankments and by constructing free-draining embankments. This concept, which has been successful over many decades to date, can be applied to the future development of the facility to mitigate the potential for internal erosion and piping under flooded conditions. Reducing the normal operating pond volume or improving the uniformity of tailings beach development will increase the storm storage that can be contained on the tailings beach without reaching the embankment. This will decrease the potential for internal erosion and piping under flooded conditions for the YDTI and will further enhance the safety of the facility under normal operating conditions.

5.5 OPERATIONAL MONITORING

MR routinely monitors components of the current operation and this routine monitoring will continue. Table OP-5-3 presents a summary of routine operational surveillance requirements as identified in the TOMS Manual (KP 2022). Operational monitoring is also addressed in the Design Document (Construction Management Report (KP 2018d) and Dam Breach Risk Assessment (KP 2018b)).

Table OP-5-3 Operational Surveillance Requirements

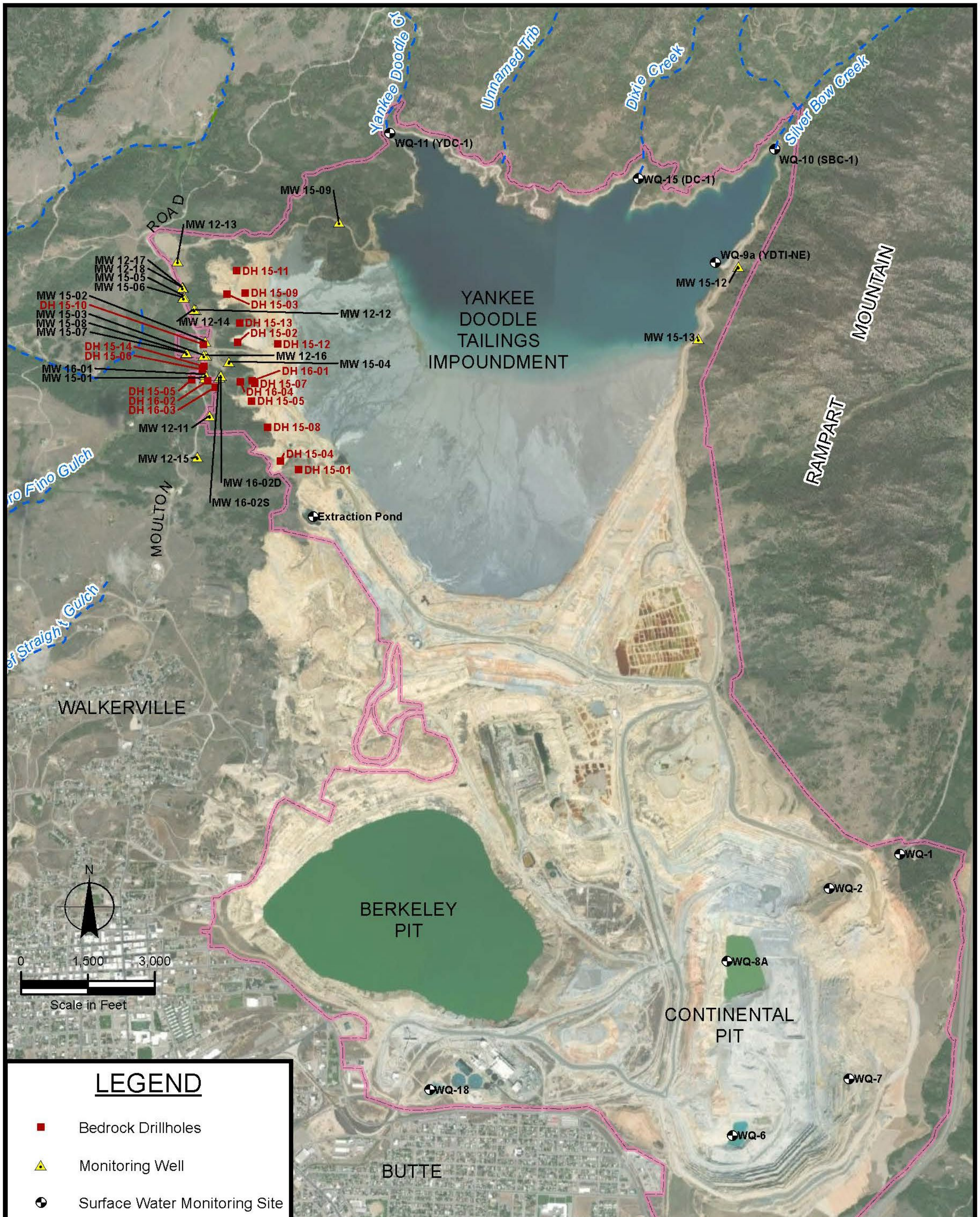
Location	Inspection	Frequency[1]
Supernatant Pond	Measure pond water level	weekly
	Evaluate pond storage volume	annually
	Complete bathymetric survey of the tailings pond	annually
Tailings Beach	Inspect beach surface for dusting risk/potential	daily
	Complete survey of tailings beach elevation at active discharge points	weekly
	Collect aerial image and topographic survey of the facility	annually
Tailings Delivery System	Observe discharge flow looking for whirlpools or indication the discharge flow is entering the embankment when a discharge stream is adjacent to the embankment	daily

Table OP-5-3 Operational Surveillance Requirements

Location	Inspection	Frequency[1]
	Observe the active tailings discharge pipes to confirm discharge is not blocked by beach/tailings sand.	daily
	Monitor tailings pump electrical current draw for changes in pump system demand. Visually inspect the tailings pipelines for leaks.	twice daily
	Record tailings line and discharge point use	twice daily
	Sample tailings slurry and analyze index properties	quarterly
	Inspect for cracking, slumping/deformation, erosion, slope failure, and any other changes in the embankment shape and surface. Inspect the upstream slope, downstream slope, and embankment crest.	monthly
Embankments	Inspect for daylighting seeps on the downstream embankment slope/benches, water pooling/ponding, soft/wet areas	monthly
	Inspect the embankment upstream slope and the integrity of the facing materials, particularly when the tailings discharge stream is flowing adjacent to the embankment	monthly
Embankments	Record water levels in standpipe piezometers	daily
	Record water levels from vibrating wire piezometers	daily
Water Reclaim System	Record the reclaim water meter (flowrate and total volume pumped)	daily
HsB Seepage Collection System	Record the Precipitation Flume flowrate	daily
	Record the Precipitation Weir flowrate	daily
	Record the Number 10 seep flowrate	daily
	Record the HsBCS flowrate	daily
	Record the Berkeley Pit Pumping System (BPPS) flowrate	daily
	Record the HsBWTP flowrate	daily
Site Wide Water Management	Observe surface drainage ditches and culverts for erosion, blockage, damage	periodically

[1] MR will make every effort to comply with the general monitoring frequency specified in the table. However, the schedule can be modified should circumstances temporarily preclude monitoring at the desired frequency.

Figure OP-5-7 shows the extent of MR's current operational water resources monitoring program; current operational groundwater and surface water monitoring sites and schedules are shown in Table OP-5-4. The current monitoring program includes semi-annual water quality sampling at 22 monitoring wells, 20 of which are located along or north of the West Ridge. Surface water monitoring includes semi-annual sampling at 10 sites, including the tailings pond, Silver Bow Creek, Yankee Doodle Creek and Dixie Creek upstream of the tailings pond, and six sites located in and around the active mining/milling area including the Continental Pit. Operational monitoring is conducted in the spring and fall seasons and includes measurement of stream flow (where possible) or static water level (monitoring wells), field measurement of pH, specific conductance, dissolved oxygen and water temperature, and collection and testing of water samples for an extensive suite of metals, general chemistry and nutrients.



MONTANA RESOURCES	OPERATIONAL GROUNDWATER AND SURFACE WATER MONITORING SITES	FIGURE OP-5-7

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V:\12020 MR\GIS\1202001h01.mxd

Hydrometrics, Inc.
Consulting Scientists and Engineers

Table OP-5-4 Current Operational Groundwater and Surface Water Monitoring Sites

Groundwater Monitoring Sites					
Monitor Well	**Location**	**Screen Interval feet bgs**	**WQ Sampling Schedule**	**Manual SWL Schedule**	**Continuous SWL Recording Interval (hrs)**
MW 12-11	West Ridge	145-195	Spring/Fall	Monthly	6
MW 12-12	West Ridge	165-200	Spring/Fall	Monthly	6
MW 12-13	West Ridge	150-200	Spring/Fall	Monthly	6
MW 12-14	West Ridge	100-150	Spring/Fall	Monthly	6
MW 12-15	West Ridge	150-200	Spring/Fall	Monthly	6
MW 12-16	West Ridge	141-191	Spring/Fall	Monthly	6
MW 12-17	West Ridge	155-195	Spring/Fall	Monthly	6
MW 12-18	West Ridge	80-115	Spring/Fall	Monthly	6
MW 15-01	West Ridge	182-222	Spring/Fall	Monthly	6
MW 15-02	West Ridge	147-197	Spring/Fall	Monthly	6
MW 15-03	West Ridge	345-385	Spring/Fall	Monthly	6
MW 15-04	West Ridge	170-220	Spring/Fall	Monthly	6
MW 15-05	West Ridge	240-290	Spring/Fall	Monthly	6
MW 15-06	West Ridge	350-400	Spring/Fall	Monthly	6
MW 15-07	West Ridge	162.5-202.5	Spring/Fall	Monthly	6
MW 15-08	West Ridge	81.5-101.5	Spring/Fall	Monthly	6
MW 15-09	NW of YDTI	92-142	Spring/Fall	Monthly	6
MW 15-12	East of YDTI	68.5-98.5	Spring/Fall	Monthly	6
MW 15-13	East of YDTI	81-101	Spring/Fall	Monthly	6
MW 16-01	West Ridge	485-517	Spring/Fall	Monthly	6
MW 16-02D	West Ridge	489-549	Spring/Fall	Monthly	6
MW 16-02S	West Ridge	244-264	Spring/Fall	Monthly	6

Surface Water Monitoring Sites		
Site	**Description**	**Water Quality Sampling Schedule**
WQ-1	Woodville Ditch East; upstream of the reclaimed Woodville RDS.	Spring/Fall
WQ-2	Woodville Ditch West; southwest side of the Woodville RDS.	Spring/Fall
WQ-6	Ponded water at southern end of Continental Pit.	Spring/Fall

Surface Water Monitoring Sites		
Site	**Description**	**Water Quality Sampling Schedule**
WQ-7	Pavilion Seep on 5840 bench of Continental Pit.	Spring/Fall
WQ-8A	Ponded water at northern end of Continental Pit.	Spring/Fall
WQ-9A	Northeast tailings pond near decant barge.	Spring/Fall
WQ-10	North Silver Bow Creek upstream of tailings pond and disturbance.	Spring/Fall
WQ-11	Yankee Doodle Creek upstream of tailings pond and disturbance.	Spring/Fall
WQ-15	Dixie Creek upstream of tailings pond and disturbance.	Spring/Fall
WQ-18	Dredge Pond in SW corner of property north of Texas Ave.	Spring/Fall
Extraction Pond	Lined holding pond at WED discharge	Spring/Fall

bgs: below ground surface; SWL: static water level; WQ: water quality. Site locations shown on Figure OP-5-7.

Groundwater levels will also be recorded in all operational monitoring wells and from vibrating wire piezometers installed in 19 bedrock drillholes (Figure OP-5-7). The water level monitoring sites and continuous recording intervals are shown in Table OP-5-5.

The WED discharge will be sampled semi-annually for drainage water chemistry as part of the operational monitoring program. The WED discharge rate will be recorded continuously through appropriate instrumentation of the extraction pond pumping system as well as any other contingency WED discharge points (such as the extraction basin). The extraction pond will also be instrumented for continuous water level monitoring.

In addition to the operational monitoring program, MR currently conducts semi-annual sampling at more than 20 residential wells located along and west of Moulton Road. Residential well monitoring is conducted voluntarily by MR and provides additional information on baseline groundwater conditions and groundwater usage in the West Ridge area. Residential well sampling follows the same protocol described above for the operational groundwater monitoring program. Sampling of individual residential wells is contingent on homeowner permission; results are considered confidential. The exact number of wells sampled each year may vary based on landowner participation.

Operational and residential well monitoring described above represent MR's current primary water monitoring programs. The scope of monitoring, including monitoring sites, frequency and parameters may be modified in the future if ongoing data evaluation or site conditions warrant.

Table OP-5-5 Bedrock Drillhole Operational Water Level Monitoring Sites

Drillhole Designation	Easting (feet)[1]	Northing (feet)[1]	Elevation (feet)[1]	Azimuth (degrees)[2,3]	Dip (degrees)[3]	Total Depth (feet)	Installations	VWP Recording Interval (hrs)
DH15-01	131,599.2	143,505.4	6,408.5	-	-	200	3 VWPs	12
DH15-02	130,226.2	146,367.3	6,374.1	-	-	300	3 VWPs	12
DH15-03	129,989.5	147,448.6	6,328.3	-	-	250	3 VWPs	12
DH15-04	131,190.9	143,704.6	6,351.4	-	-	200	3 VWPs	12
DH15-05	130,540.0	145,047.8	6,338.6	-	-	200	3 VWPs	12
DH15-06	129,435.4	145,751.8	6,485.3	360	64	508	5 VWPs	12
DH15-07	130,556.2	145,499.7	6,393.5	-	-	160	3 VWPs	12
DH15-08	130,900.9	144,460.3	6,399.9	-	-	193	3 VWPs	12
DH15-09	130,400.7	147,474.3	6,347.4	-	-	235	3 VWPs	12
DH15-10	129,455.8	146,314.1	6,481.5	181	64	700	5 VWPs	12
DH15-11	130,208.8	147,971.5	6,370.5	-	-	200	3 VWPs	12
DH15-12	131,122.0	146,329.3	6,347.6	-	-	150	3 VWPs	12
DH15-13	130,272.0	146,801.5	6,431.1	-	-	180	3 VWPs	12
DH15-14	129,473.3	145,823.7	6,483.4	181	64	700	5 VWPs	12
DH16-01	130,544.4	145,498.8	6,393.6	-	90	402	4 VWPs	12
DH16-02	129,550.9	145,500.1	6,502.3	181	73	602	3 VWPs	12
DH16-03	129,722.5	145,359.6	6,505.8	182	70	758	5 VWPs	12

Drillhole Designation	Easting (feet)[1]	Northing (feet)[1]	Elevation (feet)[1]	Azimuth (degrees)[2,3]	Dip (degrees)[3]	Total Depth (feet)	Installations	VWP Recording Interval (hrs)
DH16-04	130,284.3	145,471.0	6,469.5	175	71	850	6 VWPs	12
DH16-05	129,196.5	145,518.3	6,508.1	181	64	999	7 VWPs	12

Source: Information from KP 2017c.

[1]Coordinate system and elevations are based on the Anaconda Mine Grid.

[2]Azimuth includes magnetic declination correction of 11.9 E deg.

[3]Azimuth and dip of drillholes based on MR drillhole survey. Drillhole dip varied slightly throughout the drillhole. The reported value represents the average dip along the drillhole length. The drillhole is vertical if no value is provided.

6.0 LEACHING OPERATIONS

6.1 INTRODUCTION

The old Precipitation Plant historically utilized leach pads as the copper source for the precipitation process beginning in 1986 until 1998. Between 1998 and 2000, the precipitation system transitioned to using the Berkeley Pit water as a source of copper-bearing solution. Horseshoe Bend (HsB) water was also utilized from sometime between 1996/1997 through mid-2000. In mid-2000, mining operations, including copper precipitation, were suspended. The copper precipitation process resumed in 2004 using Berkeley Pit water for copper recovery and lasted until 2013. From 2004 to current time, the HsB water has also been a source for the old Precipitation Plant. From 2013 to 2021 the leach pads were an additional source of copper in the old Precipitation Plant. Decommissioning (draindown) of the leach pads commenced in 2020 and was completed by 2022. The old Precipitation Plant was decommissioned in late 2022/early 2023 and the site will be covered by the HsB RDS.

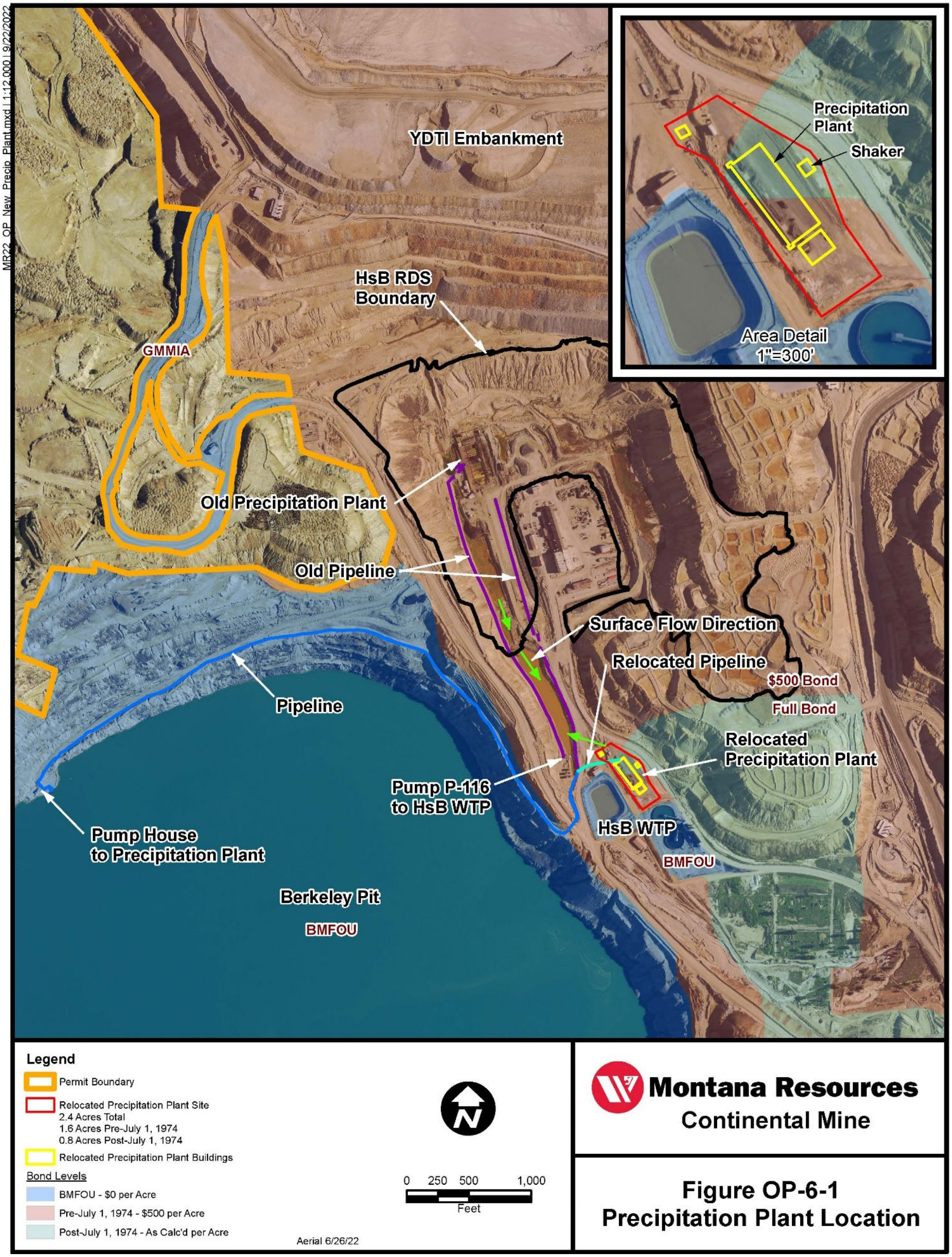
6.2 LEACH PAD DRAINDOWN

During leach pad draindown, pregnant solution which had percolated through the leach pads was collected in a series of ponds along the north and east side of the HsB area at the toe of the leach pad slope. These ponds were decommissioned and covered as part of the revised HsB drainage system. Draindown is complete and any flow emanating from the east side of the HsB area seeps is base flow and part of HsB area water. The water flows through engineered rock drains and reports to the HsB pond.

6.3 FUTURE COPPER PRECIPITATION

MR will resume copper precipitation in the future with construction of a relocated Precipitation Plant. The relocated Precipitation Plant will be situated approximately 0.5 miles south-southeast of the old site (Figure OP-6-1).

The purpose for the relocated Precipitation Plant is to facilitate copper recovery from water streams containing recoverable copper. Current plans include copper recovery from Horseshoe Bend Area seeps and Berkeley Pit water. Copper is recovered from the waters by passing them through concrete troughs filled with shredded scrap iron. When in contact with the iron, the dissolved copper precipitates out on the iron. A loader then scoops the copper and iron out of the trough and feeds it over a vibrating screen where the copper is washed off the scrap iron. The washed scrap iron is placed back in the trough. The wash water containing the copper is allowed to settle in another trough and the water is decanted off.



Montana Resources
Continental Mine

Figure OP-6-1
Precipitation Plant Location

7.0 ROADS AND TRAFFIC

The mine property is bounded by Interstate 15 on the east, Moulton Reservoir Road on the west, and Farrell Street, Continental Drive, and Shields Avenue to the south. Roads associated with the Continental Mine are shown on Figure OP-7-1.

7.1 ACCESS ROADS

The main access route to the guard house for the mine is from Farrell Street. The entrance to MR's administrative offices is from Shields Avenue.

7.2 MINE OPERATIONAL TRAFFIC

Internal traffic at the Continental Mine consists of:

- Haul trucks moving ore to the Primary Crusher and non-ore rock to the YDTI Embankment and RDS;
- Water trucks applying water to suppress dust;
- Motor graders providing road construction and maintenance;
- Tractor trailer units to transport finished product from the Butte Concentrator;
- Delivery trucks; and
- Light vehicles used for mine employees traveling to/from work; travel for pit duties performed by maintenance, surveyors, engineers, geologists and others; site deliveries; and non-MR visitor travel.

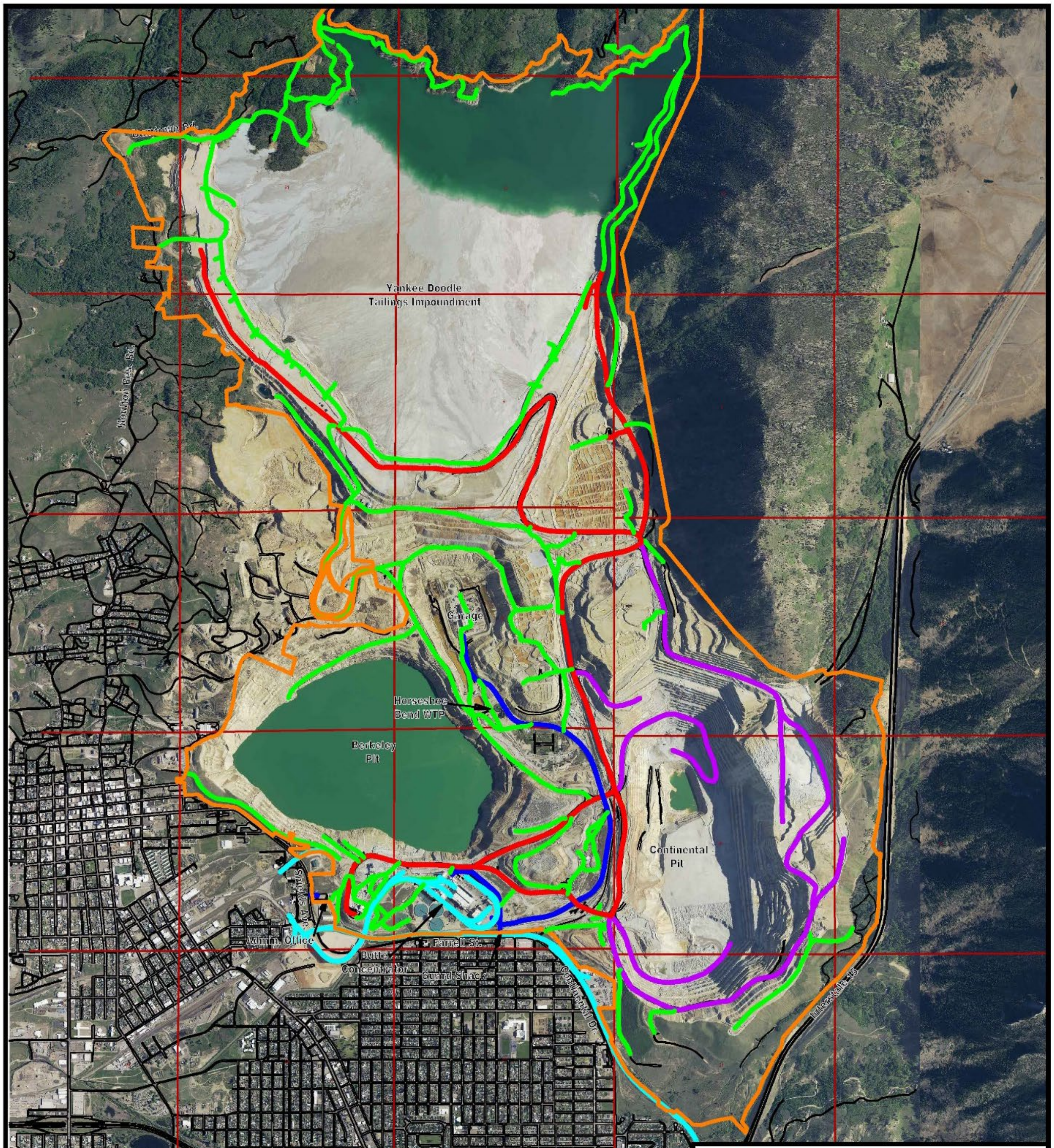
Operational road maintenance is conducted to provide safe conditions and to control and minimize channeling and other erosion. Haul truck traffic occurs 7 days per week, 24 hours per day, 365 days per year. Hauls vary depending on phase and rock disposal locations.

Railroad tracks inside the Butte Concentrator area support trains and railcars for loading and transporting MR's copper concentrate, acid, and scrap iron.

7.3 PIT HAUL ROAD TRAFFIC

In-pit operational traffic adheres to the rules stated in Federal Metal and Nonmetallic Mine Safety and Health Standards 30 CFR 57.9100 and 57.9101. Road surfaces and traffic designations comply with 30 CFR 57.9300, which requires adequate berms or guardrails. Current haul road designs are set to match the requirements and operating capabilities of 240-ton trucks. Haul road widths are generally 120 feet, with maximum haul grades at a nominal 10 percent.

Pit haul roads are watered to reduce airborne dust on a routine basis. The haul road speed limit is 35 mph and a speed limit of 10 mph is in force near the Butte Concentrator and the Continental Garage.



Legend

- Permit Boundary
- Access Road
- In-Pit Road
- Haul Road
- Mine Operations Road
- Railroad

Note: Roads are relocated as needed to continue operations.

0 3600 7200 ft

Aerial: 2022

Montana Resources
Continental Mine

Figure OP-7-1

Roads Associated with the Continental Mine

WESTECH ENVIRONMENTAL

MR22_OP_Roads.dwg	1"=3600'	11/02/22

8.0 WATER MANAGEMENT

8.1 SURFACE WATER MONITORING

MR monitors surface water quality at several sites within and adjacent to the mine (Figure OP-5-7). The Berkeley Pit and Horseshoe Bend monitoring sites are sampled as part of the BMFOU, while the remainder of sites are monitored as part of MR's operational monitoring program (Section 5.5). The monitoring program continuously evolves with changes in the operation and site conditions. MR annual reports present current monitoring locations and sampling results.

8.2 SURFACE WATER MANAGEMENT

Drainages upstream of the YDTI, including Silver Bow Creek, Yankee Doodle Creek and Dixie Creek, drain directly into the impoundment. Exhibit OP-1 shows the current surface water drainage system in the permit area. Drainages along the east side of the permit area (e.g., Woodville Gulch and Horse Canyon) drain westward into RDSs, the Continental Pit, YDTI, or the Clearwater Ditch. The Clearwater Ditch begins on the west side of Interstate-15 and extends along the east and south sides of the project site. It collects runoff from RDSs located along the east side of the permit area and the Hillcrest dump to the south, transporting it to a collection pond near the Butte Concentrator where it is used for make-up water needs.

The west side of the permit area is located near the drainage divide separating the mine area from Bull Run Creek and Oro Fino Gulch, where surface water flows west. Any runoff water that flows east from this divide into the mine area infiltrates the West Embankment toe and reports to the WED, or enters the YDTI at the northern end of the ridge.

MR is in the process of providing a Notice of Intent and Stormwater Pollution Prevention Plan for coverage under the Multi-Sector Permit for Stormwater Discharges Associated with Industrial Activity, administered by Montana DEQ.

8.3 GROUNDWATER CONDITIONS

Groundwater flow in the mine area is dominated by flow toward, and into, the Berkeley Pit and Continental Pit with virtually all groundwater drainage from the mine site reporting to the two pits. As previously described, pit water levels are controlled through pumping ensuring long-term containment. Pumped water is treated and utilized in the process water circuit. Groundwater occurs in three general units: alluvium, weathered bedrock, and competent bedrock. The weathered bedrock has similar appearance and hydrologic properties as the overlying alluvium/colluvium observed peripheral to the YDTI. There is a large groundwater cone of depression surrounding the Berkeley Pit. Prior to cessation of mining operations at the Berkeley Pit in 1982, groundwater was pumped at rates of 4,000 to 5,000 gpm to keep the underground workings and Berkeley Pit dewatered. The Berkeley Pit bottom at the end of mining was at an elevation of 4,320 ACC feet (4,263 feet above mean sea level, amsl). The rate of water level rise in the Berkeley Pit, as well as surrounding bedrock, has decreased since inception of the Berkeley Pit and Discharge Pilot Project in September 2019, with the water level in the Berkeley Pit remaining near static throughout this timeframe (5,356 feet amsl on November 7, 2022).

According to early mining records, the entire mining area had a shallow groundwater table from 20 to 100 feet below ground surface in both bedrock and alluvium, with flow direction generally from north to south (Canonie 1994). Currently, depth to groundwater measured in bedrock monitoring wells ranges from a few tens of feet to several hundred feet, depending on location with respect to Berkeley Pit and the dewatered underground workings (Canonie 1994). The protective water level in the Berkeley Pit that may result in pit water discharging to alluvial groundwater is about 5,410 USGS feet (Canonie 1994). Thickness of alluvium is greatest between the Continental and Berkeley pits (i.e., Central Zone), measuring 500 feet or more in this area. The weathered bedrock is up to 200 feet thick.

According to the Remedial Investigation/Feasibility Study prepared for the BMFOU, hydraulic conductivity of bedrock material in the project area, as measured in seven tests, ranges from 0.02 to 0.98 feet per day (ft/d); alluvium material had hydraulic conductivity values from 0.15 to 8.3 ft/d (Canonie 1994). More recent testing conducted west of the YDTI between 2012 and 2016 (KP 2017c) has yielded bedrock hydraulic conductivity values in the 0.1 to 0.001 ft/d range. Horizontal hydraulic gradients in the bedrock aquifer in areas around the Berkeley Pit range from 0.006 to 0.160 ft/ft; average gradient in alluvium is 0.033 ft/ft (Canonie 1994). Quality of groundwater in the project area is variable with some areas of good quality and other areas showing evidence of impacts from bedrock mineralization and mining disturbance, including low pH and elevated concentrations of some metals (e.g., iron and manganese) and arsenic.

Groundwater drainage into the Continental Pit is pumped by MR as needed to facilitate mining operations. Primary sump pumping is currently utilized to remove water from the Continental Pit area. Pumping rates range from about 0.5 to 1.5 million gallons per day (mgd) (depending on seasonal and operational conditions), with water being piped to the Butte Concentrator.

MR monitors groundwater quality in a number of monitoring wells peripheral to the YDTI (Figure OP-5-7). Results of monitoring are provided to DEQ in annual reports. Groundwater quality and elevation data have been collected from 22 monitoring wells located around the YDTI with the majority of wells located along or immediately north of the YDTI West Ridge. Drilling and sampling of these wells began in late 2012/early 2013 and has continued on a quarterly or semi-annual schedule. Monitoring of these wells was initially performed for baseline data collection as part of Permit Amendment 009, and has since been incorporated into MR's operational monitoring program (Section 5.5), with the resulting data included in MR's annual reports. Other monitoring wells in the vicinity of the Continental Mine are monitored as part of BMFOU and results are included in Montana Bureau of Mines and Geology or EPA reports.

8.4 ON-SITE WATER MANAGEMENT

On-site water management is a function of operational requirements (including EOR recommendations) and BMFOU considerations. Water management is evolving due to:

- reducing Silver Lake input into the system to reduce the operational supernatant pond volume;
- incorporating additional on-site facilities to address the Final On-Site Water Management Work Plan, Berkeley Pit and Discharge Pilot Project (Attachment A to the Berkeley Pit and Discharge Pilot Project Work Plan) (MR 2020b);

- implementing recommendations and/or options presented in the Draft BMFOU RAAR Technical Memorandum (Arcadis 2019);
- construction and operation of the WED;
- managing WED water post-closure as part of the BMFOU remedy; and
- implementing a drainage design system for the Horseshoe Bend area.

Water management practices on the mine site support objectives of the Pilot Project and facilitate off-site discharge of treated water.

The Pilot Project and RAAR are designed to ensure that water levels of the East Camp system do not exceed a critical water level, which is also defined as the protective water level, to preclude seepage of Berkeley Pit Water to the surrounding bedrock aquifer. The protective water level is 5,410 feet amsl compared to the current level of approximately 5,356 feet.

Elements of on-site water management are operated as part of the BMFOU remedy (Figure OP-8-1). The primary intent of on-site water management is to create capacity for Berkeley Pit water and utilize the YDTI as a water treatment retention facility before water is supplied to the Polishing Facility. Infrastructure associated with on-site water management will be decommissioned if no longer necessary to meet BMFOU objectives, under Superfund (EPA) jurisdiction.

The following sub-sections discuss on-site water management.

8.4.1 Berkeley Pit Pumping System

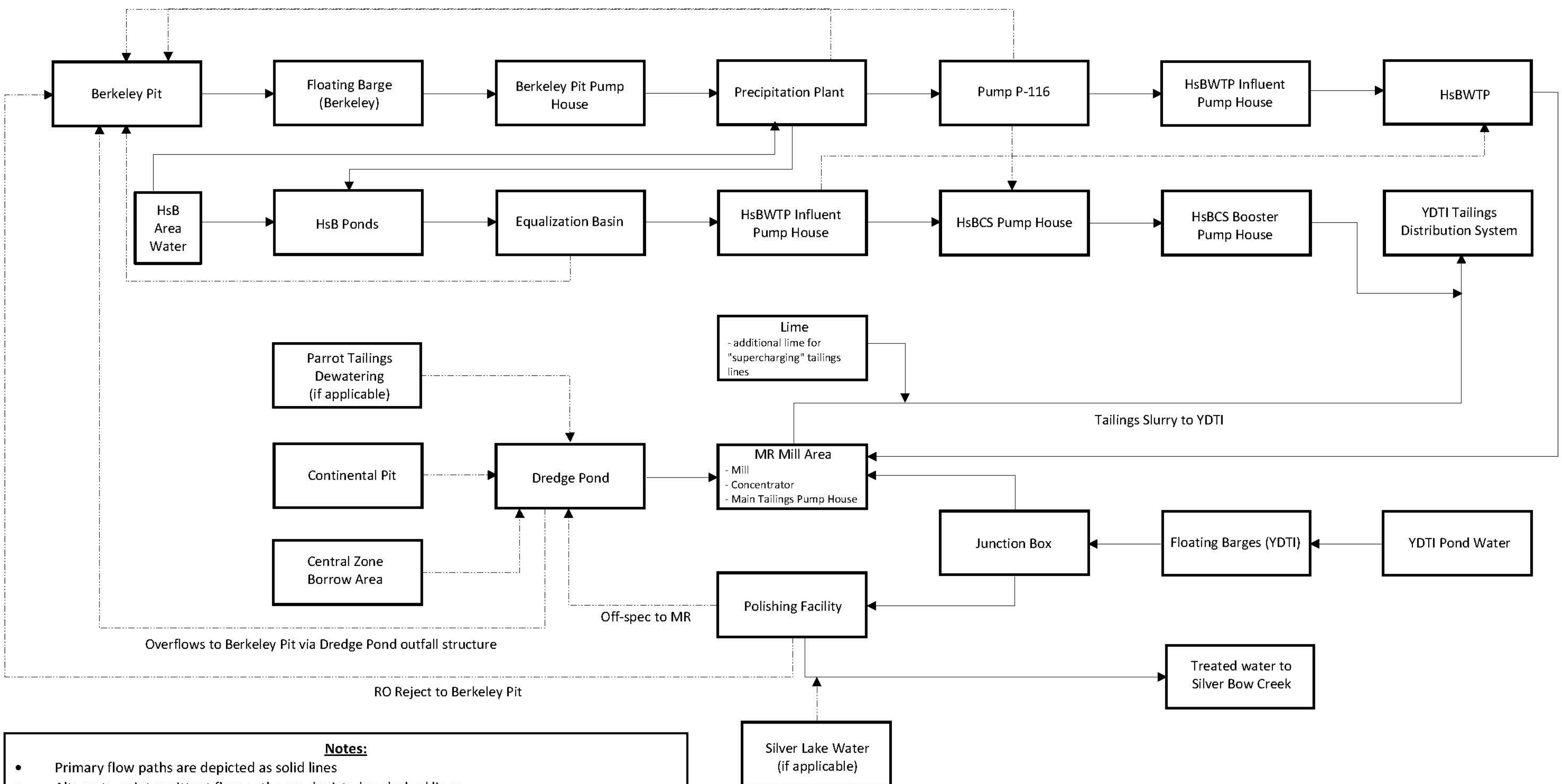
The Berkeley Pit Pumping System has been implemented to evaluate the following: Berkeley Pit inflow control, East Camp System points of compliance (POC) connectivity, and the feasibility of incorporating the treated Berkeley Pit water into the mine water circuit. The intent is to maintain current water levels in the Berkeley Pit (and the other East Camp System POC) below the protective water level, while gathering information to support the refinement of the BMFOU Final Remedy.

Water from the Berkeley Pit is pumped from a floating barge to the Berkeley Pump House in one of two 18-inch pipes. Water leaves the Pump House via an 18-inch pipeline and reports to the relocated Precipitation Plant, then to additional water treatment (i.e., the HsBWTP or HsBCS) or back to the Berkeley Pit.

8.4.2 Horseshoe Bend Drainage System

In order to allow construction of the HsB RDS, a drainage system manages HsB area water beneath the RDS (KP 2021). The principal design objectives for the drainage system are to manage surface water runoff in the HsB area and groundwater discharge within the foundation of the RDS during operations and long-

Figure OP-8-1- On-site Water Management Block Diagram



Notes:

- Primary flow paths are depicted as solid lines
- Alternate or intermittent flow paths are depicted as dashed lines
- Water treatment components can be generally described as follows:
  - HsBWTP as a primary water treatment component
  - HsBCS/YDTI as secondary water treatment components
  - Polishing Facility as a tertiary treatment component
- HsBWTP and HsBCS/YDTI can be considered redundant components if combined flows are below respective capacities
- The flow path will change slightly when the new Precipitation Plant comes online

Abbreviations

HsB	Horseshoe Bend
HsBCS	Horseshoe Bend Capture System
HsBWTP	Horseshoe Bend Water Treatment Plant
RO	Reverse Osmosis
MR	Montana Resources
YDTI	Yankee Doodle Tailings Impoundment

term following closure. The design includes a foundation drainage layer and a network of independent engineered rockfill dams and surface water diversion ditches.

Figure OP-8-2 shows 3 construction phases of the HsB drainage system (from KP 2021). Phase 1 includes preparation of the foundation including building removal, draindown and breaching of water management ponds (holding pond, surge pond, Houligan pond and upper portion of the HsB pond). Phase 2 includes placement of a foundation drainage layer at the base of the RDS. Durable, coarse rock allows drainage while minimizing degradation. MR has decided to place Pipestone Quarry rock in critical areas of the blanket drain to provide redundant additional drainage capacity in the foundation of the RDS. Thickness varies depending on in-situ conditions with a maximum of 30-feet.

Phase 3 includes a series of engineering rock drains and two primary surface water ditches. Rock drains are excavated into the foundation layer or existing surface with alignments based on topography, existing and projected HsB water flow patterns. Two ditches convey flows around the perimeter of the RDS either to the HsB pond or into pipelines to convey flows to the HsB pond. Typical cross-sections and design criteria for the drains and ditches are presented in the Stage 1 Drainage Report (KP 2021).

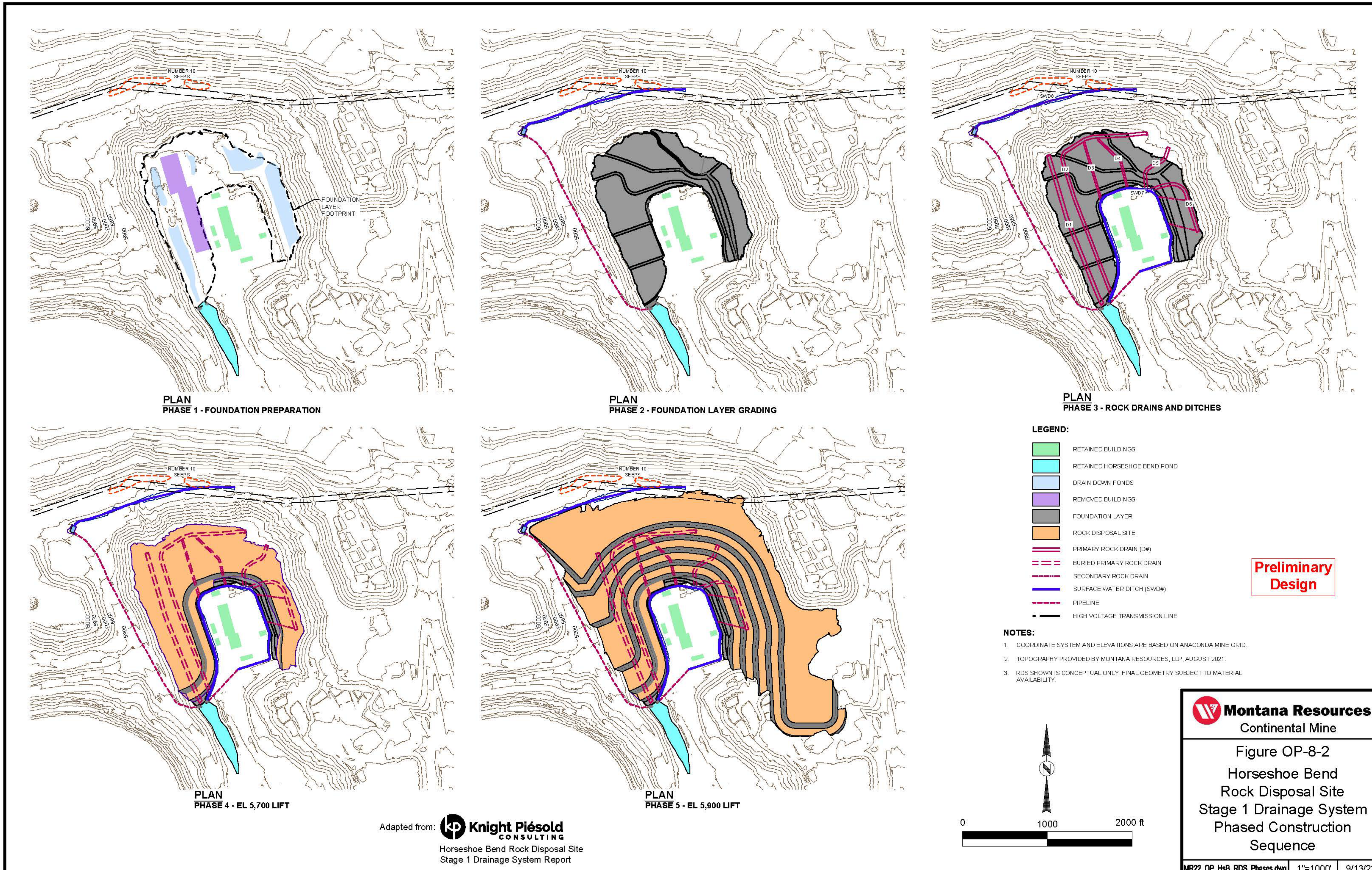
Stage 1 of the HsB RDS (Phases 4 and 5 shown on Figure OP-8-2) will be constructed in two lifts: 5700 and 5900 feet. A subsequent stage is yet to be permitted; it would increase the height of the HsB RDS.

The IRP reviewed the KP report and concluded in a memorandum dated December 17, 2021 that:

- The layout and design capacity of the surface water diversion ditches to direct flow around the RDS is considered reasonable.
- The estimates of flow volumes that will enter the HsB area following construction of the RDS are based on sound assumptions, and the values reported appear reasonable.
- The overall design concept, incorporating six independent rock drains within the Stage 1 footprint, and the proposed construction sequence presented by KP, are considered by the IRP to be well suited to site conditions.
- A reasonable basis has been adopted for determination of the drain flow capacity requirement. The design is considered appropriately conservative. Redundancy has been incorporated in the design, given the long-term performance requirement following mine closure.

8.4.3 Horseshoe Bend Capture System

HsB area flows are captured and treated in the relocated Precipitation Plant and the HsBWTP or through the HsBCS. For the HsBCS process, HsB area water is pumped up to the YDTI where the HsB water is mixed with tailings that have had additional lime added (Supercharged Tailings) at the Main Tailings Pump House. HsB water and the Supercharged Tailings are mixed, and the pH of the mixed water is increased to maintain the present pH in the YDTI supernatant pond (pH of approximately 10.5). The pH of the YDTI supernatant pond is measured at the influent to the Discharge System Polishing Facility. In the event pH is not maintained within an appropriate range, the lime addition rate is adjusted accordingly. This combined HsB water and Supercharged Tailings is then discharged to flow out over the YDTI tailings beach where the increased pH and the long retention time allows metals to settle out of solution. The remaining


NUMBER 10 SEEPS
FOUNDATION LAYER FOOTPRINT
PLAN
PHASE 1 - FOUNDATION PREPARATION
PLAN
PHASE 2 - FOUNDATION LAYER GRADING
PLAN
PHASE 3 - ROCK DRAINS AND DITCHES
PLAN
PHASE 4 - EL 5,700 LIFT
PLAN
PHASE 5 - EL 5,900 LIFT
LEGEND:
RETAINED BUILDINGS
RETAINED HORSESHOE BEND POND
DRAIN DOWN PONDS
REMOVED BUILDINGS
FOUNDATION LAYER
ROCK DISPOSAL SITE
PRIMARY ROCK DRAIN (D#)
BURIED PRIMARY ROCK DRAIN
SECONDARY ROCK DRAIN
SURFACE WATER DITCH (SWD#)
PIPELINE
HIGH VOLTAGE TRANSMISSION LINE
Preliminary Design
NOTES:
1. COORDINATE SYSTEM AND ELEVATIONS ARE BASED ON ANACONDA MINE GRID.
2. TOPOGRAPHY PROVIDED BY MONTANA RESOURCES, LLP, AUGUST 2021.
3. RDS SHOWN IS CONCEPTUAL ONLY. FINAL GEOMETRY SUBJECT TO MATERIAL AVAILABILITY.
0
1000
2000 ft
Adapted from: Knight Piésold CONSULTING
Horseshoe Bend Rock Disposal Site
Stage 1 Drainage System Report
Montana Resources
Continental Mine
Figure OP-8-2
Horseshoe Bend Rock Disposal Site Stage 1 Drainage System Phased Construction Sequence
MR22_OP_HsB_RDS_Phases.dwg
1"=1000'
9/13/22

treated water reports to the supernatant pond and is used as reclaim water in MR's operations, as well as influent to the Discharge System Polishing Facility.

Starting in the Concentrator yard, idle lime management infrastructure has been refurbished and upgraded to accommodate the additional lime demand. The milk of lime from this slaker is pumped to the Main Tailings Pump House into two of three existing tailings sumps. Automated valves direct the lime flow to whichever two sumps are running at the time, with the lime mixing with the existing tailings streams in the sumps. The existing tailings infrastructure pumps this Supercharged Tailings to a location near the Number 3 Booster Pump House where the initial mixing of HsB water and Supercharged Tailings occurs.

HsB water flows, as it does now, into the HsBWTP Equalization Basin and, after modification of the discharge piping, one of the two installed vertical influent pumps takes the water from the wet well and pumps it to a new pump house (HsBCS Pump House) located to the north of the HsBWTP Equalization Basin.

From the HsBCS Pump House, the water exits through newly installed 26" pipe and travels up the 7% haul road until a point where a new booster pump house (HsBCS Booster Pump House) has been constructed. Discharge from the Booster Pump House exits in 28" pipe until a point where the pressure is reduced enough to transition to 26" pipe. This 26" pipe continues on to the crest of the dam where it is injected into the existing tailings lines. Mixing of the HsB water and the Supercharged Tailings occurs mostly in the pipe but receives further mixing at the YDTI discharge point by the turbulent action of the tailings discharge pools created at the discharge point(s).

8.4.4 Delivery System to Polishing Facility

The Delivery System is a combination of existing and new infrastructure that delivers YDTI water to the Polishing Facility. Included in the Delivery System are the following components:

- Existing Return Water Barges at the YDTI;
- Return Water Junction Box;
- Existing Return Water Line;
- Newly installed Delivery System Take-off from the Return Water Line; and
- Newly installed Influent Pipeline from the Take-off to the Polishing Facility.

The Pilot Project tests the YDTI as a treatment basin at various retention times (generated by the anticipated decrease in pond storage) and various water qualities. HsB area flows are re-routed and conveyed to the YDTI through the HsB Capture System. The Pilot Project updates information previously learned from 1996 to 2000 concerning the capability of the supernatant pond at YDTI to act as a component of the BMFOU remedy to directly treat HsB area flows.

MR utilizes YDTI supernatant water in the milling circuit, with conveyance already in place from the YDTI to the Mill (Return Water System). The existing system has adequate capacity for the Pilot Project and no upgrades to the Return Water System are anticipated. For the purposes of delivery of YDTI supernatant water to the Polishing Facility (Delivery System), a take-off point from the Return Water line has been installed near the McQueen Booster Pump House.

The Delivery System initiates at existing barge pumps at the YDTI supernatant pond. MR maintains two reclaim water pump barge units in the supernatant pond (one operational and one standby). The barge pumps deliver water into a junction box, approximately 1,500 feet away (50 feet elevation increase). From the junction box, water gravity discharges to the Mill, with an independent line for the Delivery System following the take-off point (tee) in the Return Water line. The newly constructed portion of the Delivery System consists of approximately 13,300 feet of 24-inch pipe.

The Delivery System take-off point installed near the McQueen Booster Pump House provides YDTI supernatant water to the Influent Pipeline and ultimately the Polishing Facility. The Delivery System's Influent Pipeline follows the general alignment of the Return Water line to the Mill area, then traverses south of the Dredge Pond and terminates at the Polishing Plant location.

8.4.5 On-Site Water Management Schedule

The Pilot Project is a temporary, multi-year project. Project elements are in place and currently being evaluated to meet BMFOU and MR objectives. It can be expected that the system will be modified as necessary to meet remedy and mine operations requirements.

8.5 OPERATIONAL EROSION AND SEDIMENT CONTROL

Surface runoff is collected by several systems which route surface discharge to different areas and facilities within the mine. Operational erosion and sediment control includes revegetation of soil stockpiles and other disturbed areas to prevent erosion and minimize loss of cover soil. Silt fence, rolled erosion control products, sediment logs, benching, or other erosion control measures may be utilized on a limited basis to prevent the loss of coversoil. Sites where these measures would be used include downslope of disturbances such as soil stockpiles or recently revegetated areas.

MR is in the process of providing a Notice of Intent and Stormwater Pollution Prevention Plan for coverage under the Multi-Sector Permit for Stormwater Discharges Associated with Industrial Activity.

9.0 RECLAMATION COVER MATERIALS HANDLING

Salvage of cover material for reclamation, including alluvium, leached cap, and topsoil, has been ongoing since 1972. Existing stockpiles and salvaged reclamation cover materials will be utilized to meet the anticipated volume goals of capping for reclamation at the end of mining operations. A detailed characterization of reclamation cover materials is presented in Section 3.2.

Ongoing laboratory analyses and inspection procedures for alluvium, leached cap, and topsoil will be continued throughout salvage operations to ensure that the quality is consistent with reclamation cover material specifications.

Details regarding the redistribution of reclamation cover materials, seedbed preparation, and revegetation are presented in MR's Continental Mine Reclamation Plan.

9.1 ALLUVIUM

During salvage operations, MR systematically samples and analyzes alluvial materials; those materials determined to be suitable for reclamation are stockpiled or used during concurrent reclamation. Alluvium not suitable for reclamation is discarded in RDSs. If suitable alluvium for reclamation is in short supply, less favorable alluvium is stockpiled separately and amended with lime during redistribution.

As discussed in Section 3.2, the Central Zone contains substantial quantities of alluvium suitable for reclamation. When possible, salvaged alluvium will be direct-hauled from this area and used as subsoil/soil for reclamation. Quantities of alluvium stored in alluvium stockpiles are documented in MR's Annual Reports. The CZABA and Lunch Room Stockpile locations are shown on Exhibit OP-1. Some material from the Lunch Room stockpile is providing borrow material for the Parrot Waste removal project.

Alluvium on the previously reclaimed Northeast RDS that will be affected by the "D" East layback will be salvaged, with volumes and stockpile locations documented in MR's annual reports.

9.2 LEACHED CAP

Leached cap is suitable for subsoil reclamation material and use as rockfill for dust control. It has been previously salvaged from the Continental Pit area and stockpiled. All of this inventoried material, as well as leached cap mined since 2019, has been used for concurrent reclamation or has been incorporated into non-ore RDSs and the YDTI Embankment; most leached cap will be used for YDTI Embankment construction. There are currently no leached cap stockpiles.

9.3 TOPSOIL

Topsoil and subsoil salvage has been limited within the mine boundary because most of the active mine area was developed prior to soil salvage guidelines and regulations. Therefore, recent and future soil salvage will generally be limited to areas surrounding the YDTI with smaller volumes salvaged from previously undisturbed areas such as the "D" East layback.

9.3.1 Existing Disturbances

Soil salvaged since 1972 from existing disturbances (pits, leach pads, waste rock dumps, YDTI, and other mine support facilities) has been used for concurrent reclamation or has been stockpiled at locations shown on Exhibit OP-1. A comprehensive history of soil salvage and stockpiling was included in MR's 2014 Annual Report. Topsoil inventories by stockpile are presented in MR's Annual Reports.

9.3.2 Proposed Disturbances

Topsoil materials will continue to be salvaged from all future disturbances located on presently undisturbed areas. Salvaged topsoil will be direct-hauled for use in current reclamation projects whenever possible; otherwise, it will be stored in stockpiles.

All areas proposed to be disturbed will be cleared prior to topsoil stripping operations. All topsoil materials will be salvaged including organic duff, debris, and remains from burned slash piles. Efforts will be made to minimize compaction during topsoil handling operations.

9.4 STOCKPILE STORAGE AND PROTECTION

Stockpiles of reclamation cover materials will be located close to sites of eventual redistribution. Stockpiles will be constructed with slopes of less than 2H:1V to provide slope stability.

Stockpiles that will be reserved for use at an extended timeframe will be protected from wind and water erosion to minimize erosion and maximize the amount of material available for reclamation. The stockpile surface will be loosened, if necessary, to provide the proper seedbed. The interim seed mixture will be drill-seeded or broadcast-seeded on the top and ramps of the stockpile. Side slopes will be broadcast-seeded, hydro-seeded or drill seeded. Interim reclamation will be conducted during the first appropriate season following soil stockpiling. Sediment control measures will be installed and maintained downslope of coversoil stockpiles where off-site sedimentation could occur.

10.0 POWER CONSUMPTION AND SOURCES

10.1 ELECTRICITY

MR's mining and milling operations are energy intensive and currently MR is the second largest, single location consumer of electricity in Montana. MR's average power consumption is relatively flat at 43 megawatts (MW) for each hour of operation with transmission losses. The typical electricity load ranges between 32 MW minimum (as low as 4 MW during mill downtime) and 46 MW maximum at peak mill operation. MR's maximum load requirements are typically during off-peak time periods.

MR contracts to purchase electricity on the deregulated, open power market and prefers long-term power contract arrangements. In addition to purchasing the power commodity, MR receives electricity from the NorthWestern Energy transmission and distribution systems for which each is invoiced separately. NorthWestern's transmission system provides electricity at 100 KV to six different substations where eight metering points report power load and demand from banks of transformers that reduce the supplied voltage to 25 KV, 4.160 KV or 2.3 KV for use in MR's mill, mine and ancillary facilities.

Electrical lines and substation locations are shown on Exhibit OP-2.

10.2 NATURAL GAS

Natural gas consumed at MR is largely to meet a heat load demand; however, MR does have a relatively minor process load requirement for the molybdenite concentrate drying facility. The typical annual consumption of natural gas at MR is approximately 162,000 dekatherms per year (including transmission fuel reimbursement) with a range of 31,000 dekatherms during the coldest months to approximately 2,000 dekatherms during the summer.

MR contracts to purchase natural gas on the deregulated, open, natural gas market on an annual basis from Montana marketers. MR is also invoiced for commodity transmission, distribution and reservation services provided by NorthWestern Energy. NorthWestern's transmission system provides natural gas to the NW main meter and then gas is supplied to various MR facilities by MR's on-site natural gas transmission system.

Natural gas distribution lines are shown on Exhibit OP-2.

10.3 DIESEL FUEL

The mining operation utilizes large, off-highway, end dump haulage trucks and other ancillary road and dump support equipment powered by diesel fuel (see Table OP-2-3 for a complete list of major mine equipment). MR's low sulfur (<0.05%) diesel consumption averaged approximately 10,500 gallons per day between 2020-2021. MR's daily diesel consumption is regulated by DEQ Air Quality Permit # 1749-14, deemed final as of July 23, 2022.

There are three diesel storage areas (Exhibit OP-2) each with varying volume capacities of fuel:

> Continental (Lower) Fuel Bay: Primary truck refueling depot with two 55,000-gallon capacity diesel tanks. This tank farm has adequate containment berms installed and maintained.
>
> Upper Fuel Bay: One 10,000-gallon capacity tank with adequate containment berm that is the secondary fueling depot.
>
> Concentrator Yard Fuel Tank: One 4,000-gallon capacity, dual-wall fuel tank with leak detection system installed. This is a two-compartment tank with one-half utilized for diesel and one-half utilized for gasoline. This site is used to service the concentrate load-out yard locomotive.

MR's daily diesel fuel requirements are supplied by a local major supplier of bulk fuel and delivered by a local over-the-road trucking company with single and multiple loads of fuel delivered daily as required.

10.4 GASOLINE

MR's light vehicle fleet required an average of approximately 73,000 gallons of gasoline annually in 2020 and 2021. There are two refueling stations for light vehicles:

> Continental Garage Fuel Bay: This fuel bay serves as the primary refueling station for MR's light vehicle fleet. There is one (active) 50,000-gallon tank with an adequate containment berm for the limited volume of gasoline stored in the tank.
>
> Concentrator Yard Fuel Tank: One 4,000-gallon capacity, dual-wall fuel tank with leak detection system installed. This is a two-compartment tank with one-half utilized for diesel and one-half utilized for gasoline. This is a secondary fuel station for light vehicles.

MR's gasoline fuel requirement is supplied by a local major supplier of bulk fuel and delivered by a local over-the-road trucking company.

Gasoline fuel storage areas are shown on Exhibit OP-2.

11.0 SOLID WASTE DISPOSAL

Solid waste disposal sites within mine Operating Permit areas are exempt from Montana's Solid Waste Management Act (75-10-214(1)(b), MCA). MR and its predecessors have operated solid waste disposal sites within MR's mine permit area since its inception.

MR also contracts with a local garbage collection contractor to collect office wastes from the main office, concentrator, garage, and water treatment plant for disposal at a municipal landfill.

Any designated solid waste management site in the mine permit area would operate in accordance with the substantive elements of relevant sections of ARM 17.50.509 OPERATION AND MAINTENANCE PLAN REQUIREMENTS for a solid waste management system, as follows:

- The solid waste disposal site is not for public use;
- Access and traffic are controlled in accordance with standards established by MR described in Section 7.0;
- The system utilizes typical mine-related equipment listed in Section 2.5;
- Solid waste is handled at the solid waste disposal site within the mine permit area as needed during the course of mining operations;
- Litter control is conducted as part of routine mine operations;
- The facility is used to dispose of Groups II, III, and IV (ARM 17.5.503) mine-related solid waste;
- Closure of the facility and ultimate use of the land (ARM 17.50, Subchapter 14) would be in accordance with the site-wide Reclamation Plan, and is hereby incorporated by reference;
- Groundwater monitoring, including solid waste disposal sites, is described in Section 5.6 and is also managed under the BMFOU; and
- As needed, MR would prepare a separate plan(s) to address the handling of "special waste" as defined in 75-10-802(8), MCA.

12.0 DUST CONTROL

MR adheres to conditions of its Air Quality Permit #1749-13 issued pursuant to Sections 75-2-204 and 211 of the MCA, as amended, and ARM 17.8.740 et seq., as amended. Essential elements of dust control at MR include:

- water trucks regularly wet down mine roads, minimizing dust created by mine traffic;
- suction dust collection systems and water sprays are used to suppress dust at crushing facilities;
- particulate emissions from the YDTI are controlled by implementing measures detailed in MR's Dust Control Plan for the Yankee Doodle Tailings Impoundment (Appendix OP-B):
    - conducting visual observations of the YDTI beach condition at least 3 times per day at 3 locations;
    - maintaining an on-site weather station;
    - retaining the services of a professional meteorologist to provide daily customized weather forecasts for YDTI;
    - developing procedures for actions to be taken based on visual observations coupled with current weather conditions and forecasts;
    - utilizing multiple discharge points (spigots) to wet the beach by recycling water within the mine during critical periods;
    - maintaining 2 Terramac rubber-tracked vehicle(s) capable of applying a dust-suppressing product on the surface of the tailings beach, following written procedures and training of operators for their safe and effective deployment; and
    - evaluating the effectiveness of control measures.

13.0 SPILL PLAN

A Spill Plan for hydrocarbons and hazardous materials is presented in Appendix OP-C.

14.0 FIRE PROTECTION AND SAFETY

A Fire Plan is presented in Appendix OP-D. The Fire Plan has been excerpted from MR's 2023 Emergency Operational Plan (MR 2023).

15.0 PROTECTION OF ARCHEOLOGICAL AND HISTORICAL VALUES

15.1 HISTORIC PRESERVATION

As described in Section 0, the EPA established the BMFOU, which encompasses most of MR's active mine area (Figure OP-1-2). Based on the historic significance of the area's major mines, the mining landscape, and the Berkeley Pit, historic preservation was identified as one element of a comprehensive program of institutional controls to be addressed in the Butte area as part of the Superfund program.

The City-County of Butte-Silver Bow is responsible for the administration of historic preservation programs within its jurisdiction. In 2014, Butte-Silver Bow developed a Comprehensive Historic Preservation Plan (CHPP) to meets its obligation as a "Certified Local Government" that is administered by the Montana State Historic Preservation Office (SHPO), thus providing a system for local, state, and federal governments to preserve historic resources. The CHPP provides a framework for the identification, prioritization, treatment, and management of historic properties in the Butte area (Future West and InteResources Planning, Inc. 2014).

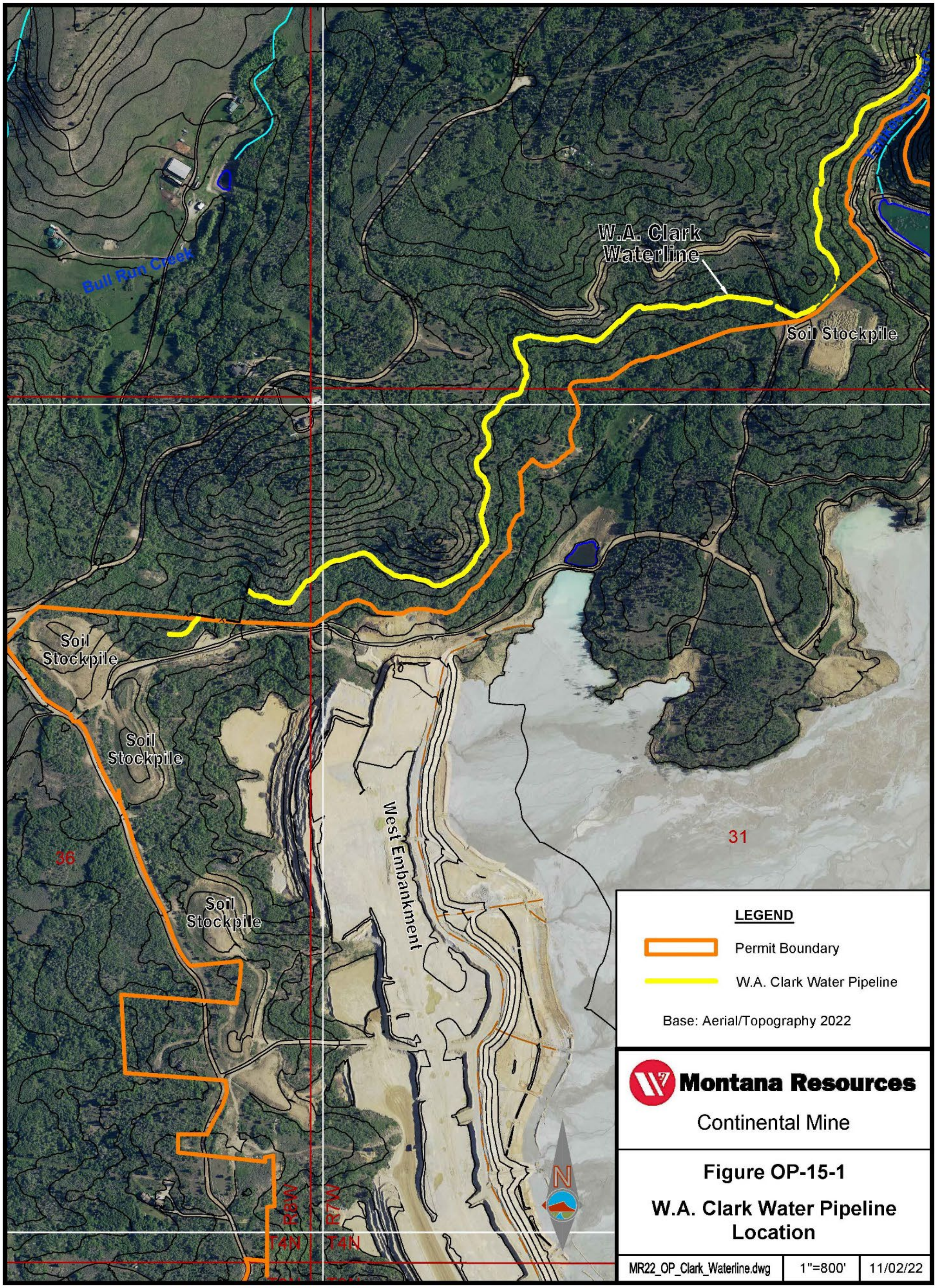
The Granite Mountain Memorial Interpretive Area (GMMIA) was established to preserve the historic mining landscape west of, and adjacent to, the Continental Mine. Permit Boundary Adjustment Permit Revision 20-001 (approved by DEQ August 26, 2020), incorporated 17 acres of the GMMIA into Permit Area 00030 to include the Horseshoe Bend Capture System booster pump house and associated infrastructure. DEQ determined that since this area is within the GMMIA, it would be appropriate that reclamation match the post-mining land use of historic preservation; thus, additional bond would not be required. Also, decommissioning of the booster pump house and related infrastructure would be under EPA's jurisdiction within the BMFOU.

15.2 POTENTIAL SITES IDENTIFIED DURING PROJECT OPERATIONS

During the operating life of the project, any cultural resources discovered in the project area will be professionally recorded and evaluated, and that any such sites that are found to be eligible for the National Register will be protected and/or mitigated in accordance with state and federal guidelines.

MR personnel involved in ground-disturbing activities in the Permit area will be instructed to immediately notify on-site managers if possible historic or prehistoric resources are noted. If any potential sites are observed, all ground-disturbing activity in the area will be halted immediately, and the area will be flagged and/or fenced. No objects will be collected from the area, and no further activity will take place at the identified site until it has been evaluated by a qualified cultural resource professional. The Montana SHPO will be notified, and appropriate documentation/mitigation steps will be coordinated with them.

A segment of the historic W.A. Clark Water Pipeline occurs within the Permit area (Figure OP-15-1). West Embankment construction and tailings deposition through 2031 avoids impact to the waterline. Replacement of the existing Moulton water pipeline may affect the historic waterline, depending upon agreements developed between MR and Butte-Silver Bow for its relocation.


W.A. Clark Waterline
Soil Stockpile
Bull Run Creek
Soil Stockpile
Soil Stockpile
Soil Stockpile
West Embankment
31
36
R8W
R7W
T4N
T4N
N
LEGEND
Permit Boundary
W.A. Clark Water Pipeline
Base: Aerial/Topography 2022
Montana Resources
Continental Mine
Figure OP-15-1
W.A. Clark Water Pipeline Location
MR22_OP_Clark_Waterline.dwg
1"=800'
11/02/22

16.0 PROTECTION OF OFF-SITE FLORA AND FAUNA

Particulate emissions that could potentially become a public nuisance or detriment to the flora or fauna of the area are controlled by implementing measures detailed in Section 12.0, Dust Control.

Mine-related activities that potentially negatively affect flora and/or fauna (e.g., surface disturbance, habitat loss) are restricted to the mine permit area. Noxious weeds will continue to be monitored and controlled to minimize negative effects to desirable vegetation. Noxious weed treatment information is provided in MR's Annual Reports.

Garbage or other waste materials that may attract wildlife is stored in appropriate containers. Fugitive dust is minimized, as described in Section 12.0, Dust Control. Speed limits for vehicles on access or haul roads have been established at safe levels to avoid or minimize impacts to wildlife. Firearms are prohibited in mine vehicles. Warning signs are posted, and/or employees and visitors are otherwise notified, of any persistent wildlife-related hazards in the permit area.

17.0 TEMPORARY CESSATION OF OPERATIONS

A temporary cessation would occur if operations are inactive for several months. Evidence of intent not to abandon the operation and to resume operations would be submitted to DEQ in accordance with ARM 17.24.150. The following measures would be undertaken during a short-term temporary cessation:

- maintain drainage facilities;
- stabilize areas susceptible to erosion by emplacing rock cover on, or by temporarily revegetating, the surface;
- maintain water management and monitoring facilities;
- continue dust control measures;
- provide site security;
- continue adherence to design, maintenance, and monitoring commitments and protocols of MR's Design Document; and
- continue BMFOU remedial actions.

No action would be taken that would preclude a resumption of operations during the cessation period.

17.1 SURFACE RUNOFF

Currently, surface runoff is collected by several systems which route surface discharge to different areas within the mine.

The Clearwater Ditch picks up runoff from drainage along the east boundary of the mine permit. This system collects and routes runoff to the Dredge Pond and then to the Butte Concentrator for use as make-up water in the mill. As long as the Butte Concentrator is operating, there is a constant requirement for makeup water; however, this would not be the case during a temporary cessation of operations. In this case, the Clearwater Ditch discharge would be isolated from any site runoff and would be routed into Silver Bow Creek.

Surface runoff around the YDTI, including Silver Bow, Yankee Doodle and Dixie Creeks, and storm water runoff, would continue to flow into the impoundment, similar to operational conditions unless BMFOU considerations required water to be diverted.

A system is currently in place to collect water from Woodville Gulch. This system consists of a series of ditches and pipelines which carry surface flow to the McQueen Booster Pump House, where it is pumped to the YDTI. In the event of a temporary cessation, water from Woodville Gulch would report to the McQueen Booster Pump House and, for the short-term, into the Berkeley Pit; in the long-term, this water would report to the Continental Pit.

17.2 BUTTE CONCENTRATOR

During a temporary cessation of operations, the Butte Concentrator would be moth-balled by draining all pumps, lines, float cells, thickeners, etc. In the event of a short-term suspension of operations, all of the Butte Concentrator process water would be stored in the YDTI. A security check would be done on a routine basis to minimize the risk of fire and vandalism.

17.3 CONTINENTAL PIT

Water in the Continental Pit is currently pumped out of the pit and incorporated into the mining circuit at MR's mill. Assuming the pit water is of suitable quality, during a temporary cessation of operations, additional piping and pumps would be necessary to convey Continental Pit water to the Polishing Facility for treatment and release off site. The rate of water pumped from the Continental Pit is estimated at an average of 0.5 to 1.5 mgd (depending on seasonal and operational conditions). Alternatively, the Continental Pit could be allowed to flood during a temporary cessation of operations.

If a temporary cessation were to occur, the Continental Pit may also be used as a temporary storage and polishing facility for treated HsBWTP effluent, leach pad draindown water, Woodville Ditch flow, and/or HsB Area flow during the draindown period. HsB Area and leach pad draindown water would need to be neutralized before storage in the Continental Pit. As surplus treatment capacity becomes available, stored water would be removed from the Pit and treated in the existing treatment systems (or incorporated into the mine circuit if mining resumes).

17.4 YANKEE DOODLE TAILINGS IMPOUNDMENT

Depending on the estimated duration of a temporary cessation, different degrees of YDTI mitigation would be implemented. Impoundment management for dust (blowing tailings) would likely be the most immediate concern. Placement of a six-inch layer of leached cap or other suitable rocky material (rockfill cap) over accessible areas of the tailings beach may be constructed to prevent dusting. Other dust control measures are discussed in Section 12.0 and Appendix OP-B.

MR would maintain water levels in the supernatant pond consistent with risk management criteria (see Table OP-5-2). Options for supernatant pond management would be developed by the EOR in consultation with MR. Potential options include:

- Constructing a temporary spillway. A conceptual design of a spillway is shown on Figure OP-5-6; additionally, a conceptual spillway design based on conditions at the end of 2024 was provided to DEQ during the 2020-2025 bond review evaluation.
- Diverting upstream drainages from entering the impoundment per possible BMFOU requirements.
- Pumping to the Continental Pit.
- Integrating water into the BMFOU remedy with concurrence from EPA and DEQ Remediation Division.

17.5 WATER MANAGEMENT

Mine infrastructure necessary to support the BMFOU remedy will be maintained and operated in accordance with the RAAR, incorporating any subsequent changes resulting from operation of the Pilot Project as agreed to between the Settling Defendants (MR and AR) and EPA/DEQ Superfund.

A temporary cessation would initiate a draindown of the YDTI. Increased temporary flows that may exceed treatment capacity could be stored in the YDTI (if capacity is available) or in the Continental Pit.

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