



**US Army Corps
of Engineers**®
Omaha District

PUBLIC NOTICE

Application No: NWO-2013-01385-MTH
Applicant: Tintina Resources, Inc.
Waterway: Little Sheep Creek and Wetlands
Issue Date: November 2, 2016
Expiration Date: December 1, 2016

30 DAY NOTICE

**1600 North Avenue West
Suite 105
Missoula, Montana 59801**

**JOINT PUBLIC NOTICE
FOR PERMIT APPLICATION SUBMITTED TO
U.S. ARMY CORPS OF ENGINEERS
AND
MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY**

SUBJECT: The U.S. Army Corps of Engineers, Omaha District, (Corps) is evaluating a permit application for the Black Butte Copper Project, which would result in permanent and temporary impacts to approximately 0.95 acre of wetlands and approximately 770 linear feet of stream channel adjacent to Little Sheep Creek, waters of the United States. This notice is to inform interested parties of the proposed activity and to solicit comments. This notice may also be viewed at the Corps web site at:

<http://www.nwo.usace.army.mil/Missions/RegulatoryProgram/Montana/PublicNotices.aspx>

AUTHORITY: This application is being evaluated under Section 404 of the Clean Water Act for the discharge of dredged or fill material in waters of the United States.

APPLICANT: Tintina Resources, Inc.
Attn: John Shanahan
P.O. Box 431
White Sulphur Springs, Montana 59645

LOCATION: The approximately 1,861 acre project site is located north of White Sulphur Springs near Brush Creek and Coon Creek, within Sections 24, and 36 of Township 12N, Range 6E and Sections 29, 30, 31 and 32 of Township 12N, Range 7E, Latitude 46° 45' 52.39", Longitude -110° 54' 52.31", Meagher County, Montana (Figure1).

PROJECT DESCRIPTION: The Proposed Project is an underground mine (i.e., there is no open pit) that will produce and ship copper concentrate mined from both the upper and lower Johnny Lee deposit zones. All operations will occur within a mine permit boundary encompassing approximately 1,861 acres of privately owned ranch land under lease to Tintina. Total surface disturbance required for construction and operation of all mine-related facilities and access roads (Figure 2) will require approximately 299 acres.

The proposed operation will mine approximately 15.3 million tons (13.9 million tonnes (Mt)) of combined copper-enriched rock and waste rock, including about 14.5 million tons (13.2 Mt) of copper-enriched rock with an average grade of 3.04 percent copper, and 0.8 million tons (0.7 Mt) of waste rock. Mining will occur at a rate of approximately 1.3 million tons/year (1.2 Mt/year), or 3,640 tons (3,300 tonnes) of copper-enriched rock per day, over a mine life of approximately 19 years (including construction and reclamation). The Proposed Project will directly employ approximately 240 workers with an additional 24 contract miners working at the site. In addition, up to approximately 144 sub-contracted employees will be employed during the initial 30 to 36 months of the support facility construction.

The location of all above ground mine facilities are shown in Figure 2. The location of mine facilities relative to stream and wetland disturbance is shown in Figure 3. Access to the mine facilities will be via an access road constructed from Sheep Creek Road to the mine operations. Construction of this road will result in one culvert crossing of Little Sheep Creek and one culvert crossing of Brush Creek. Half culverts (bottomless) will be used to avoid impacting the stream bed at these sites. About 0.13 acres of wetlands will be affected between the two crossings. During underground mining operations, all mined rock will be brought to surface through a single mine portal along a decline (tunnel) with additional lower ramp access to both the upper and lower Johnny Lee deposit zones. The mine portal will lie approximately 170 feet vertically above the regional groundwater table. Four ventilation raises will be constructed to the surface and will be collared above the regional groundwater table. Two of these ventilation raises will be constructed as secondary emergency escape ways. Therefore, all surface access to the mine will be located well above the regional groundwater table. This 170-foot vertical separation between surface access and the regional groundwater table will eliminate the possibility of water discharge from any of the mine workings after closure.

Mining will use a drift and fill method. Approximately 45 percent of the mill tailings will be mixed with cement to form a paste, and used to backfill all production workings during the mining of sequential drifts. The paste backfill provides substantial structural support and eliminates underground voids; consequently, maximum copper-enriched rock may be extracted without the need to leave pillars for structural support. According to the applicant, paste backfill also eliminates the risk of subsidence to the surface and minimizes groundwater contact with mineralized rock both during operations and after closure. Further, paste backfill and the drift and fill mining method have been shown to minimize the amount of underground mineral deposit exposed to circulating air and moving groundwater to a very small percent of exposed, mineralized rock at any given time during the mine life.

Much of the waste rock trucked to surface will be non-acid generating. However, to prevent the escape of any acid generating rock to non-controlled areas, all waste rock will be assumed to contain sulfide minerals and will be treated as potentially acid-generating. A geotextile lined, temporary waste rock storage (WRS) facility will be constructed between the portal and the mill and will receive all of the waste rock generated until construction of the cemented tailings facility (CTF) is completed. The CTF will fill about 0.71 acres of palustrine emergent wetland (PEM) and about 696 feet of intermittent stream channel. All underground waste rock will be placed into the CTF along with the mill tailings. No Project facilities other than the CTF and the 2 stream crossings on the access road will permanently fill wetlands or streams.

The applicant's preferred alternative would result in permanent impacts to 0.85 acre of Category III jurisdictional wetland and 696 linear feet of intermittent jurisdictional stream channel. This

alternative would result in temporary impacts to 0.10 acre of wetland and 74 linear feet of stream channel.

The applicant's stated project purpose is "The Project is unique because of the exceptionally high concentration of copper in the mineral deposit, approximately 1 billion pounds of copper in approximately 12 million tonnes of mineralization. The ore deposit at the Project is the second highest grade copper deposit in development in the world. The purpose of the Project is to produce a significant amount of copper through a small underground operation. There is a national and global need for copper due to its chemical and physical properties. Copper is tough, malleable, highly conductive, and oxidizes slowly." The attached drawings provide additional project details.

ADDITIONAL INFORMATION:

Alternatives. The applicant has provided information concerning the following project alternatives:

The Project has completed extensive alternatives analysis and implemented numerous measures to avoid and minimize impacts to wetlands and streams. These analyses and measures were specifically designed to avoid and minimize impacts to wetlands and to identify and implement the least damaging practicable alternative. The majority of the Project footprint is in upland areas at least 400 feet away from wetlands and streams. The primary impact to wetlands and streams will occur at the CTF with minimal impacts at road crossings.

Tintina investigated several valleys as potential locations for tailings facilities. Most sites lacked adequate storage volume, were underlain with geological faults, and/or contained extensive wetlands. Four sites were brought forward for more detailed engineering analysis: west tailings impoundment, central tailings impoundment, east tailings impoundment, and the CTF. Following geotechnical investigations and engineering, the west tailings impoundment was determined to lack adequate storage volume and hence was not practicable and was dropped from further consideration.

As illustrated in Table 1, the Project will avoid the majority of impacts to wetlands through construction of the CTF rather than the central or eastern impoundment facilities. The CTF wetland footprint is approximately 9 times smaller than the central impoundment wetland footprint and approximately 16 times smaller than the eastern impoundment wetland footprint. The CTF stream footprint is approximately 4 times smaller than the eastern impoundment stream footprint. Further, the CTF stream is intermittent while the eastern impoundment stream is perennial. There would not be any effect to an identified stream channel within the central impoundment as water primarily moves by subsurface or braided flow through discontinuous channels in that wetland as the result of a large spring at the head of the wetland. Consequently, although a "stream" would not be filled at the central impoundment, a large spring and associated wetland would be filled and the hydrologic effects would be more substantial than the hydrologic effects of filling the smaller springs and intermittent stream channels at the CTF.

Construction of the CTF, rather than either of the other two options, will also avoid impacts to higher quality wetlands. The CTF includes PEM wetlands at two small springs. Both the central and eastern impoundment alternatives include palustrine scrub-shrub (PSS) wetlands. Further, the CTF wetlands rated a Category III with a 46 percent score, while the central impoundment

wetlands rated a Category III with a 61 percent score (almost a Category II) and the eastern impoundment wetlands rated a Category II with a 67 percent score.

In addition to avoiding the majority of impacts to wetlands and streams, the Project will avoid impacts to wetlands and streams by locating road crossings of streams at the areas with narrow wetland fringes (Figure 3). Although the overall wetland Assessment Area within which the road crossings occur is rated a category II, the actual crossing locations are not indicative of the qualities within the remainder of the Assessment Area (e.g., extensive wet meadows, hydrologic discharge and recharge, etc.). Only 0.13 acres of wetland will be affected in total at the road crossings. Road crossings will further minimize impacts to streams by utilizing half-culverts that span the stream but do not place fill within, or permanently alter, the stream bed. The end result of the avoidance and minimization actions has been to reduce Project impacts to wetlands and streams to the least damaging practicable amount necessary to accomplish the project purpose.

Mitigation: Following these avoidance and minimization measures, the applicant will purchase stream and wetland credits from an approved mitigation bank in order to provide compensatory mitigation for the unavoidable permanent fill within 0.85 acres of wetland and 696 feet of intermittent stream.

OTHER GOVERNMENTAL AUTHORIZATIONS: The Montana Department of Environmental Quality, 1520 East 6th Avenue, Post Office Box 200901, Helena, Montana 59620-0901 will review the proposed project with the intent to certify in accordance with the provisions of Section 401 of the Clean Water Act. The certification, if issued, will express the State's opinion that the operations undertaken by the applicant will not result in a violation of applicable water quality standards. The Montana Department of Environmental Quality hereby incorporates this public notice as its own public notice and procedures by reference thereto.

HISTORIC PROPERTIES: The Corps is lead federal agency for determining compliance with Section 106 of the National Historic Preservation Act for this project and is in the process of completing a cultural resource review of the project site in conjunction with their obligations under Section 106 and the National Environmental Policy Act. The Corps has not determined effects to properties eligible for listing on the National Register of Historic Properties.

ENDANGERED SPECIES: The proposed activity will have no effect on Federally-listed endangered or threatened species or their critical habitat. The Canada lynx (*Lynx canadensis*) is the only listed species expected to occur in Meagher County. The Project area is not within designated critical habitat for this species. The Project area does not constitute preferred Canada lynx habitat. The Canada lynx is not considered to be dependent on aquatic ecosystems. There have been no reported sightings of Canada lynx in or near the Project area. There are no aquatic-dependent, federally listed species known or believed to occur in Meagher County. The above determinations are based on information provided by the applicant and the Corps' preliminary review.

EVALUATION FACTORS: The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the described activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit, which reasonably may be expected to accrue from the described activity, must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the described activity will be considered, including the cumulative effects thereof; among those are conservation, economics, aesthetics, general

environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, consideration of property ownership and, in general, the needs and welfare of the people. The activity's impact on the public interest will include application of the Section 404(b)(1) guidelines promulgated by the Administrator, Environmental Protection Agency (40 CFR Part 230).

COMMENTS: The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity. All public notice comments will be considered public information and will be subject to review by the applicant.

The Corps is particularly interested in receiving comments related to the proposal's probable impacts on the affected aquatic environment and the secondary and cumulative effects. Any person may request, in writing and within the comment period specified in this notice, that a public hearing be held for the purpose of gathering additional information. Requests for public hearings must be identified as such and shall state specifically the reasons for holding a public hearing and what additional information would be obtained. The request must be submitted to the U.S. Army Corps of Engineers, at 1600 North Avenue West, Suite 105, Missoula, Montana 59801. If it is decided that additional information is required and that a public hearing should be held, interested parties will be notified of the date, time and location.

Any interested party (particularly officials of any town, city, county, state, or Federal agency; Indian tribe; or local association whose interests may be affected by the work) is invited to submit to this office written facts, arguments, or objections on or before the expiration date listed on the front of this notice. Any agency or individual having an objection to the work should specifically identify it as an objection with clear and specific reasons. Comments, both favorable and unfavorable, will be accepted, made a part of the record and will receive full consideration in subsequent actions on this application. All replies to the public notice should be addressed to **Christina Schroeder** at **1600 North Avenue West, Suite 105, Missoula, Montana 59801**, by email at **Christina.L.Schroeder@usace.army.mil**, or by fax at 406-541-4849. Please refer to identification number **NWO-2013-01385-MTH** in any correspondence concerning this project. Ms. Schroeder, telephone number 406-541-4845 X323, may be contacted for additional information.

Comments postmarked after the expiration date of this public notice, or received by fax or e-mail after the expiration date, will not be considered. Comments left on our voicemail system will not be considered.

Attachments: Table 1, Table 2, Figure 1, Figure 2, Figure 3

Table 1 Wetland and Stream Fill by Tailings Impoundment Alternative Black Butte Copper Project			
PERMANENT WETLAND FILL			
Facility	Wetland ID	Class	Fill (Acres)
Preferred Cement Tailings Facility	W-LST1-09	PEM1B	0.29
	W-LST1-12	PEM1B	0.16
	W-LST1-13	PEM1B	0.27
	Total Wetland Fill (CTF)		0.71
Central Tailings Impoundment Alternative	W-SCT5-12	PSS1C	3.97
	W-SCT5-13	PSS6C	2.19
	W-SCT5-14	PEM1C	0.40
	Total Wetland Fill (Central Alternative)		6.56
East Tailings Impoundment Alternative	W-LST1-01	PEM1B	0.05
	W-LST1-06	PEM1B	4.11
	W-LST1-07	PSS1B	0.03
	W-LST1-08	PSS1B	2.58
	W-LST1-09	PEM1B	3.26
	W-LST1-10	PSS6B	0.46
	W-LST1-11	PSS6B	0.56
	Total Wetland Fill (East Alternative)		11.05
PERMANENT STREAM FILL			
Facility	Stream Segment ID	Class	Fill (Feet)
Preferred Cement Tailings Facility	S-LST1-06	Intermittent (R4SB5)	357
	S-LST1-07	Intermittent (R4SB5)	339
	Total Stream Fill		696
Central Tailings Impoundment Alternative	--	NA	0
	Total Stream Fill		0
East Tailings Impoundment Alternative	S-LST1-01	Perennial (R3UB3)	2332
	S-LST1-02	Intermittent (R4SB5)	98
	S-LST1-03	Intermittent (R4SB5)	397
	S-LST1-06	Intermittent (R4SB5)	217
	S-LST1-07	Intermittent (R4SB5)	55

Table 1 Wetland and Stream Fill by Tailings Impoundment Alternative Black Butte Copper Project		
	Total Stream Fill	3,099

Table 2 Alternative Tailings Management Facility Characteristics and Comparison Black Butte Copper Project			
Evaluation Criteria	Cemented Tailings Facility (Preferred Alternative)	Central Impoundment Alternative	Eastern Impoundment Alternative
Proximity to Mill Site	0.3 km (0.2 miles) south of mill site	0.3 km (0.2 miles) west of mill site	1.4 km southeast of mill site
Reasons for Consideration	Minimal wetlands impacts.	Proximity to mill.	Long valley location allows for single earthen embankment.
	Single earthen embankment.	Visible from limited travel county road	
	No visibility from publicly accessible points.	Valley location allows for single earthen embankment.	
	Proximity to mill.		
Storage Capacity from Depth Area Capacity (DAC) Relationship	All tailings plus 100 percent of waste rock brought to surface of 15-year mine life.	Total tailings, plus 100,000 tons of PAG waste rock storage.	Total tailings, plus 100,000 tons of PAG waste rock storage.
Final Total Impoundment Storage Capacity (m³)	4.3 million m ³ (Plans call for 3.56 Mm ³ tailings, 0.35 Mm ³ waste rock, and 0.3 Mm ³ PMF flood event storm water, leaving an access capacity of 0.09 Mm ³)	6.63 million m ³ (3)	6.63 million m ³ (3)
Disturbance Footprint	72.6 ac (includes foundation drain pond)	97.7 ac	128.9 ac
Wetlands Area	0.71 ac	6.56 ac	11.05 ac
Wetland Fill by Cowardin Type¹	100% PEM	6% PEM/94% PSS	67% PEM/33% PSS
Wetland Fill by Wetland Quality²	100% Category III (46% score)	100% Category III (61% score)	100% Category II (67% score)
Volume of Fill Placed in Wetlands (yds³)	6,915	63,501	106,964
Stream Fill (Length in Feet)	696	0	3,099

**Table 2
Alternative Tailings Management Facility Characteristics and Comparison
Black Butte Copper Project**

Volume of Fill Placed in Stream (yds³) by Type (perennial/intermittent/ephemeral)	928 (Intermittent)	NA	4,132 (Perennial)
Catchment Area	87.7 ac	233.6 ac	590.5 ac
Catchments	1	1	1
Surface Hydrology Implications	Presence of intermittent stream that drains into Brush Creek and thence to Little Sheep Creek. Embankment requires fill of wetlands and intermittent streams.	Embankment requires fill of wetlands	Presence of Brush Creek (perennial stream) that flows into Little Sheep Creek. Embankment and footprint requires placement of fill into wetlands and streams
Total Capital Costs in US Currency³	\$44.8 million	\$33.8 million	\$35.3 million
Disadvantages	Presence of intermittent stream and wetlands	Will require realignment of existing county road, thus requiring an additional easement. Substantial wetlands within footprint.	Embankment visible from highly traveled county road. Substantial wetlands and a perennial stream (Brush Creek) within footprint.

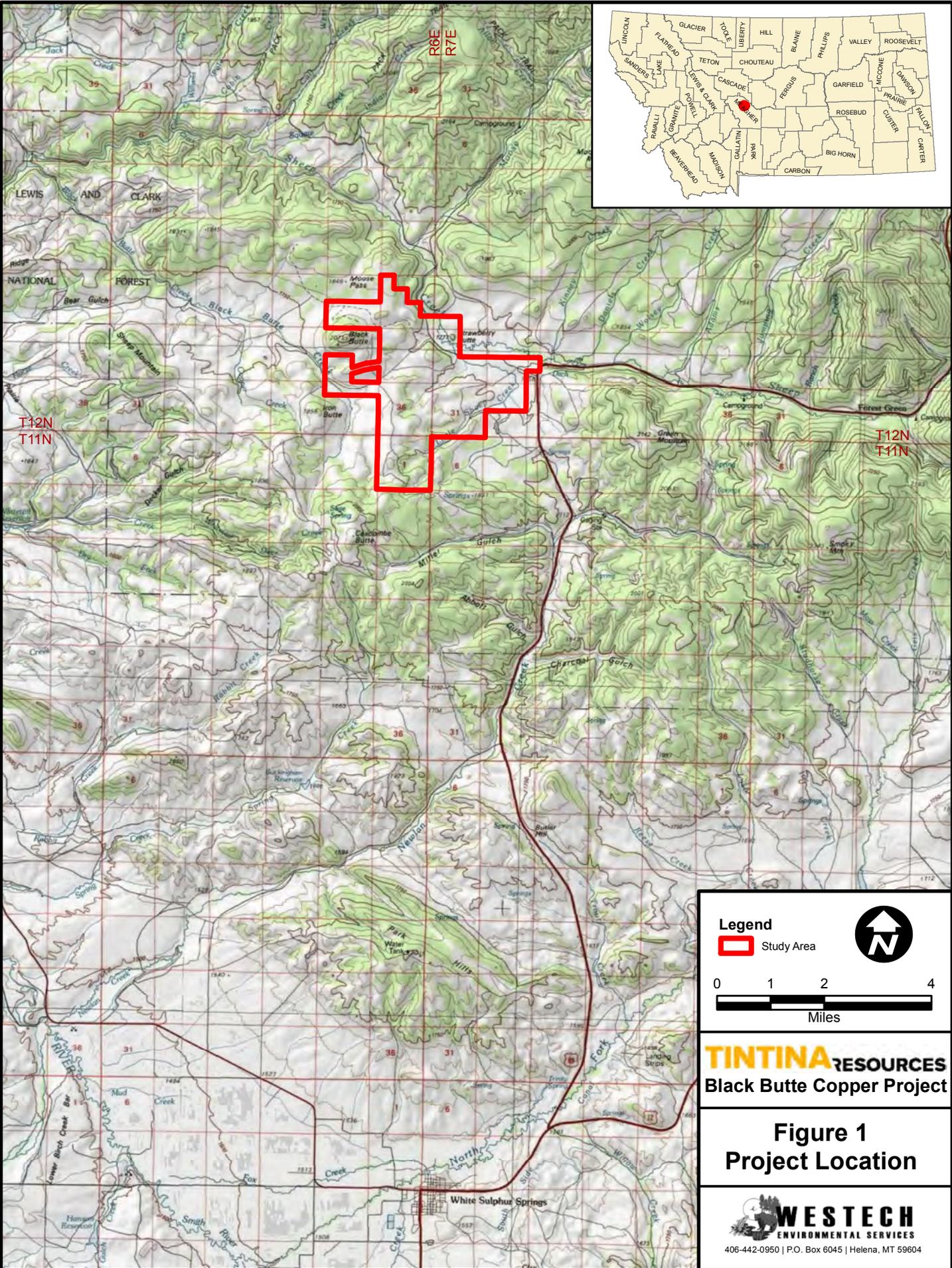
Notes:

(1) Per Cowardin et al. 1979.

(2) Per Berglund and McEldowney 2008.

(3) Total capital cost includes capital, sustaining capital, and operating expenses and have been estimated by Knight Piesold (2012, 2016a, 2016b). The Central and East Impoundment alternative capital costs were calculated in April 2013 in Canadian dollars and have been adjusted to 2016 US dollar currency equivalent using a cumulative inflation rate of \$1.05 (using the calculator at <http://www.usinflationcalculator.com>) and a US-Canadian dollar conversion of 1:1.

Attachments: 3 figures



Legend

 Study Area

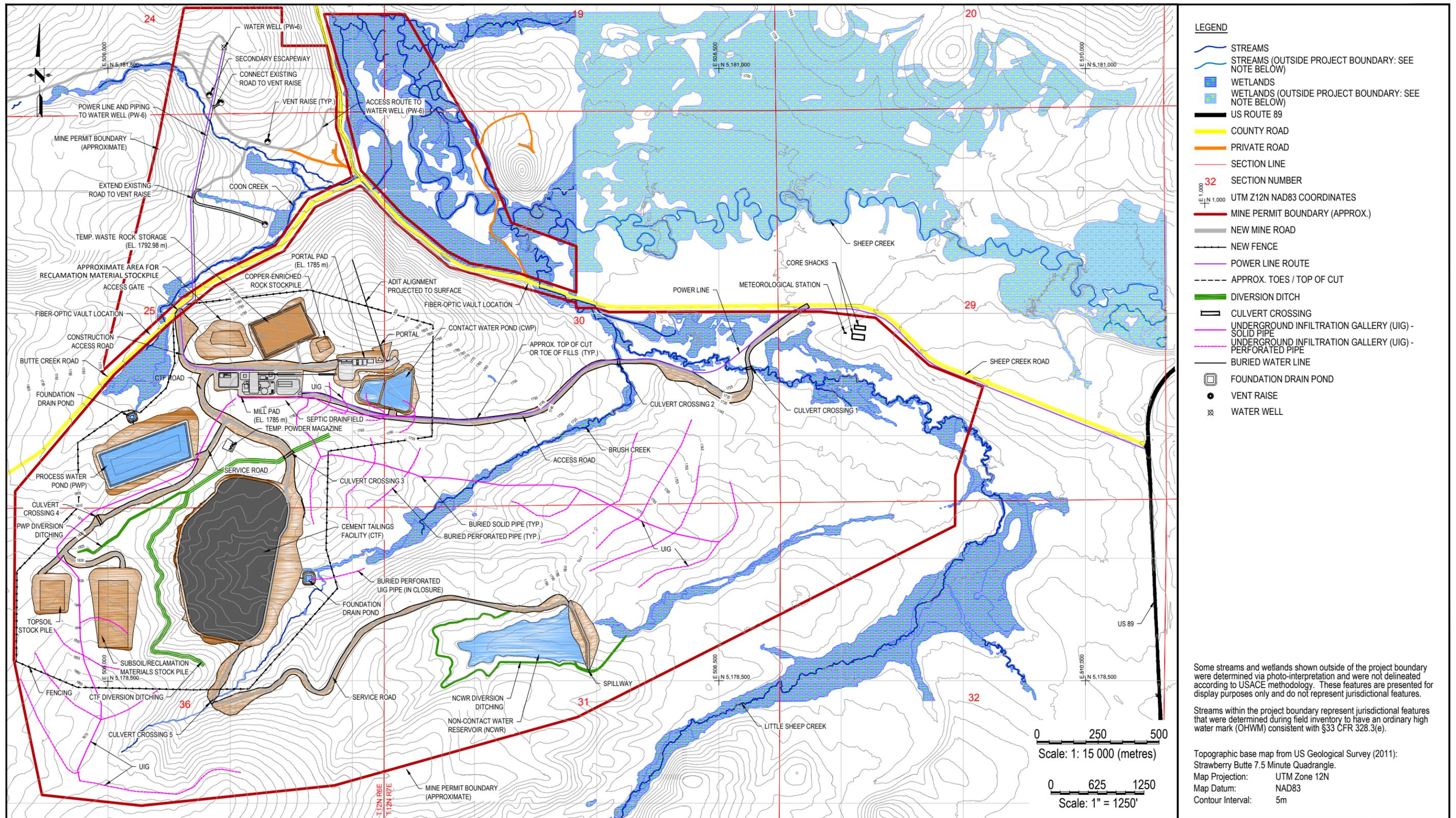


0 1 2 4
Miles

TINTINA RESOURCES
Black Butte Copper Project

Figure 1
Project Location

 **WESTECH**
ENVIRONMENTAL SERVICES
406-442-0950 | P.O. Box 6045 | Helena, MT 59604

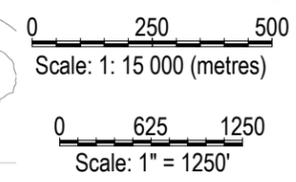


- LEGEND**
- STREAMS
 - STREAMS (OUTSIDE PROJECT BOUNDARY: SEE NOTE BELOW)
 - ▨ WETLANDS
 - ▨ WETLANDS (OUTSIDE PROJECT BOUNDARY: SEE NOTE BELOW)
 - US ROUTE 89
 - COUNTY ROAD
 - PRIVATE ROAD
 - SECTION LINE
 - 32 SECTION NUMBER
 - UTM Z12N NAD83 COORDINATES
 - MINE PERMIT BOUNDARY (APPROX.)
 - NEW MINE ROAD
 - NEW FENCE
 - POWER LINE ROUTE
 - APPROX. TOES / TOP OF CUT
 - DIVERSION DITCH
 - CULVERT CROSSING
 - UNDERGROUND INFILTRATION GALLERY (UIG) - SOLID PIPE
 - UNDERGROUND INFILTRATION GALLERY (UIG) - PERFORATED PIPE
 - BURIED WATER LINE
 - FOUNDATION DRAIN POND
 - VENT RAISE
 - ⊗ WATER WELL

Some streams and wetlands shown outside of the project boundary were determined via photo-interpretation and were not delineated according to USACE methodology. These features are presented for display purposes only and do not represent jurisdictional features.

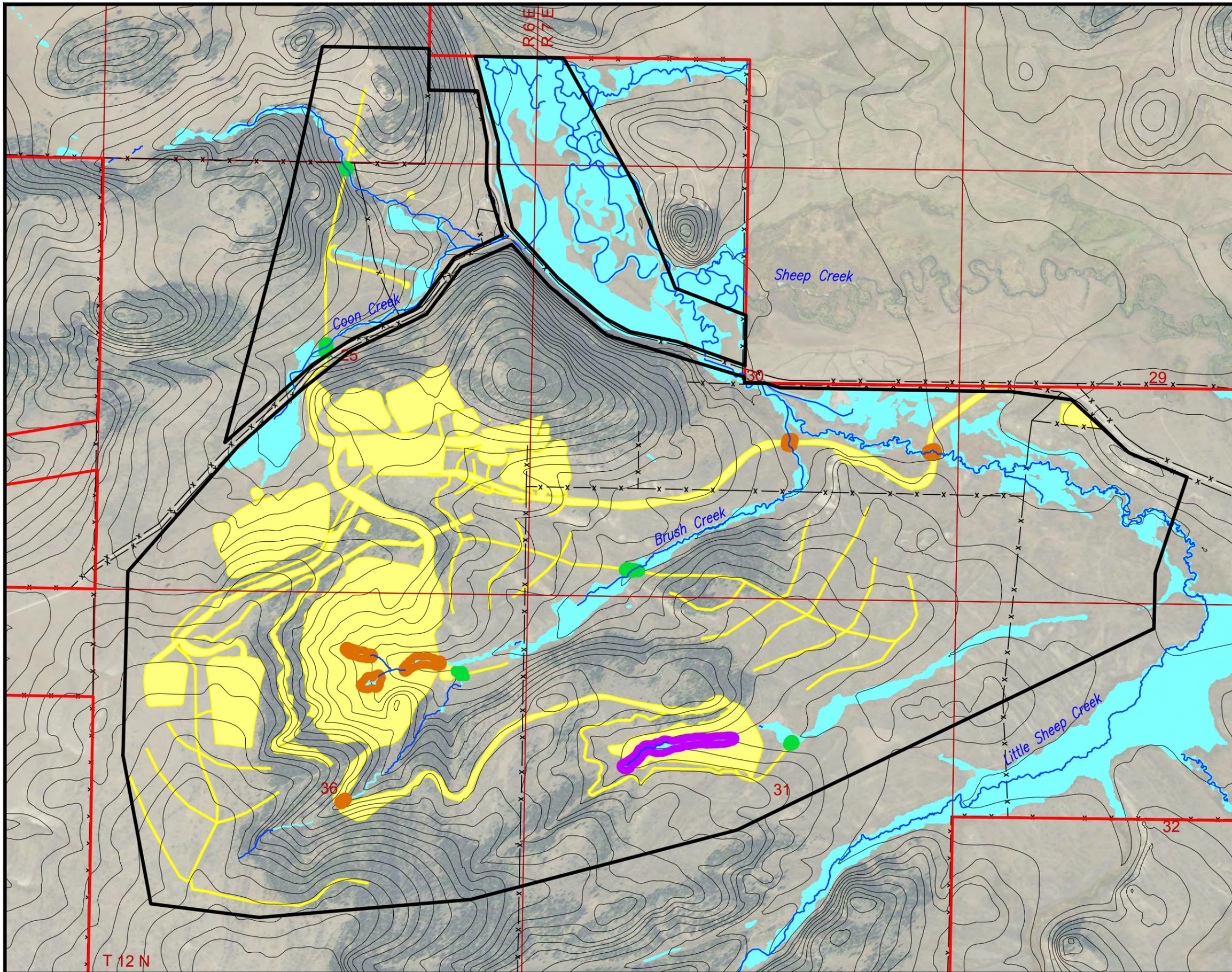
Streams within the project boundary represent jurisdictional features that were determined during field inventory to have an ordinary high water mark (OHWM) consistent with §33 CFR 328.3(e).

Topographic base map from US Geological Survey (2011):
 Strawberry Butte 7.5 Minute Quadrangle.
 Map Projection: UTM Zone 12N
 Map Datum: NAD83
 Contour Interval: 5m



Prepared by Tetra Tech Inc. (Revised May 2016)

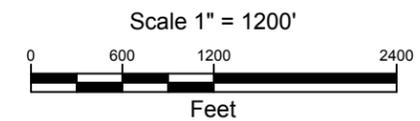
FIGURE 2
Facilities Site Plan
Black Butte Copper Project
Mine Operating Permit Application
 Meagher County, Montana



LEGEND

-  Study Area Boundary
-  Permit Boundary
-  Facilities Footprint
-  Permanent Fill in Wetland or Stream
-  Temporary Fill in Wetland or Stream
-  Flooded (No Fill) Wetland or Stream
-  Stream
-  Wetland
-  Fence

Topo: 20' Generated from 1/8 second NED



TINTINA RESOURCES
 Black Butte Copper Project

**Delineated
 Wetlands and Streams
 with Facilities Footprint**



Figure 3

406-442-0950 | P.O. Box 6045 | Helena, MT 59604