

**APPENDIX I: 2015 Cultural Resource Inventory (Includes a July 6, 2017
Addendum Letter from Tetra Tech)**

2015 Cultural Resource Inventory of Proposed Mine Facilities and Access Roads within the Black Butte Copper Project Area, Meagher County, Montana

#114-710301A
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PRESENTED TO

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EXECUTIVE SUMMARY

The Black Butte Copper Project is found approximately 15 miles north of White Sulphur Springs in Meagher County, Montana. Tintina Resources, Inc. (Tintina) proposes to access subsurface, high-grade copper-cobalt-silver deposits with the construction of a decline adit and other associated mining features and access roads. All development will occur on private land, primarily in T12N, R6E, Sections 24, 25, and 36; and T12N, R7E, Sections 29, 30, and 31.

Prior to submitting an application to the Montana Department of Environmental Quality (MT DEQ) for an amendment to their Montana Exploration License in 2011, MT DEQ encouraged Tintina to conduct cultural resource inventories of areas targeted for mine disturbance. Tintina contracted Tetra Tech, Inc. (Tetra Tech) to conduct such inventories in 2011, 2012, and 2015. This report documents the results of the 2015 cultural resource inventory and supports Tintina's Mine Operating Permit Application, currently in preparation, by summarizing all cultural resource work conducted on behalf of Tintina since 2011.

Inventories conducted in 2011, 2012, and 2015 examined a total of 1500 acres in the Black Butte Project area and documented 14 prehistoric and six historic sites. Prehistoric sites consist of lithic scatters and the Sheep Creek Surface Stone Quarry District. All lithic scatters should be tested for National Register of Historic Places (NRHP) eligibility if mine-related disturbance will occur. In 2012, lithic scatter 24ME163 was tested and recommended eligible to the NRHP under Criterion D prior to road construction work. The identification of an intact, subsurface cultural deposit at 24ME163 also suggests the Sheep Creek Surface Stone Quarry District is eligible to the NRHP, as the District is composed of the 13 identified lithic scatters and a thin veneer of isolated flaking debris.

Mine features proposed to date will directly disturb four lithic scatters and the District (24ME164, 24ME165, 24ME1108, 24ME1109, and 24ME1111). Additionally, disturbance may occur at lithic scatters 24ME162, 24ME1105, 24ME1107, and 24ME1110, as these sites occur near proposed mine features. Tintina has indicated some mine features may be moved to avoid cultural sites. If avoidance is not possible, these cultural resources should be tested for NRHP eligibility, and if recommended eligible, impacts should be mitigated through archaeological excavation and the recovery of cultural material.

Historic properties identified in the Black Butte Copper Project area include a log structure, a mining site, two roads, a homestead, and a shepherd's cairn. With the exception of the shepherd's cairn, all historic sites are recommended not eligible for NRHP listing, and no further work is recommended. The shepherd's cairn is recommended eligible under Criterion C and will most likely be avoided by mine-related activity, as the nearest proposed mine feature lies ¼ mile to the east.

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APPENDICES

Appendix A: Site Forms

Appendix B: Addendum Letter Report to the 2015 Cultural Resource Inventory Report

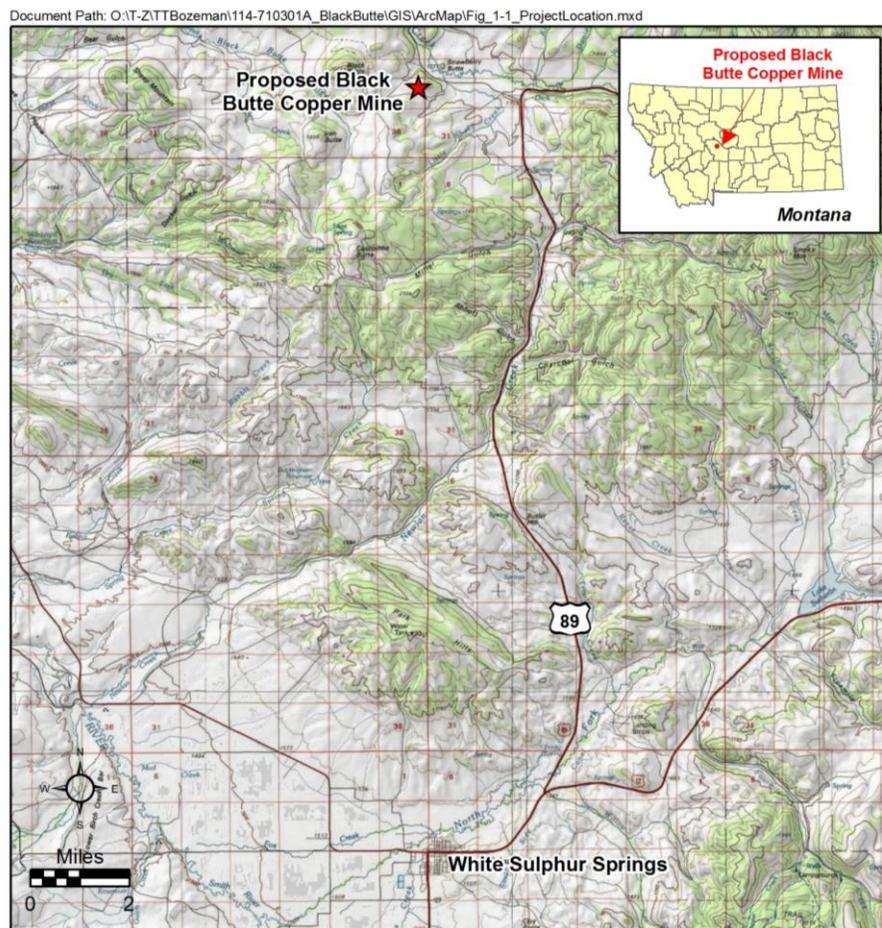
SHPO Response Letters

1.0 INTRODUCTION

Tintina Resources, Inc. (Tintina) is preparing a Mine Operating Permit Application for their proposed Black Butte Copper Mine located 15 miles north of White Sulphur Springs in Meagher County, Montana (**Figure 1.1**). The permit application report includes detailed environmental information collected since 2011 and a thorough description of mine operation procedures.

Tintina’s environmental work includes cultural resource inventory and testing projects conducted at the request of the Montana Department of Environmental Quality, who encouraged Tintina to examine proposed disturbance areas for cultural resources. Acting on this request, Tintina contracted Tetra Tech, Inc. (Tetra Tech) to perform cultural resource work in 2011 and 2012, and reports produced by Tetra Tech (2013a, 2013b) detail inventory of 990 acres and the archaeological testing of site 24ME163 for National Register of Historic Places (NRHP) eligibility.

In July 2015, Tintina contracted Tetra Tech to examine an additional 510 acres for the presence of cultural resources in an area slated for mine facility and access road development. This report describes the results of the 2015 cultural resource inventory and supports the Mine Operating Permit Application for the Black Butte Copper Mine by summarizing all cultural resource work since 2011.



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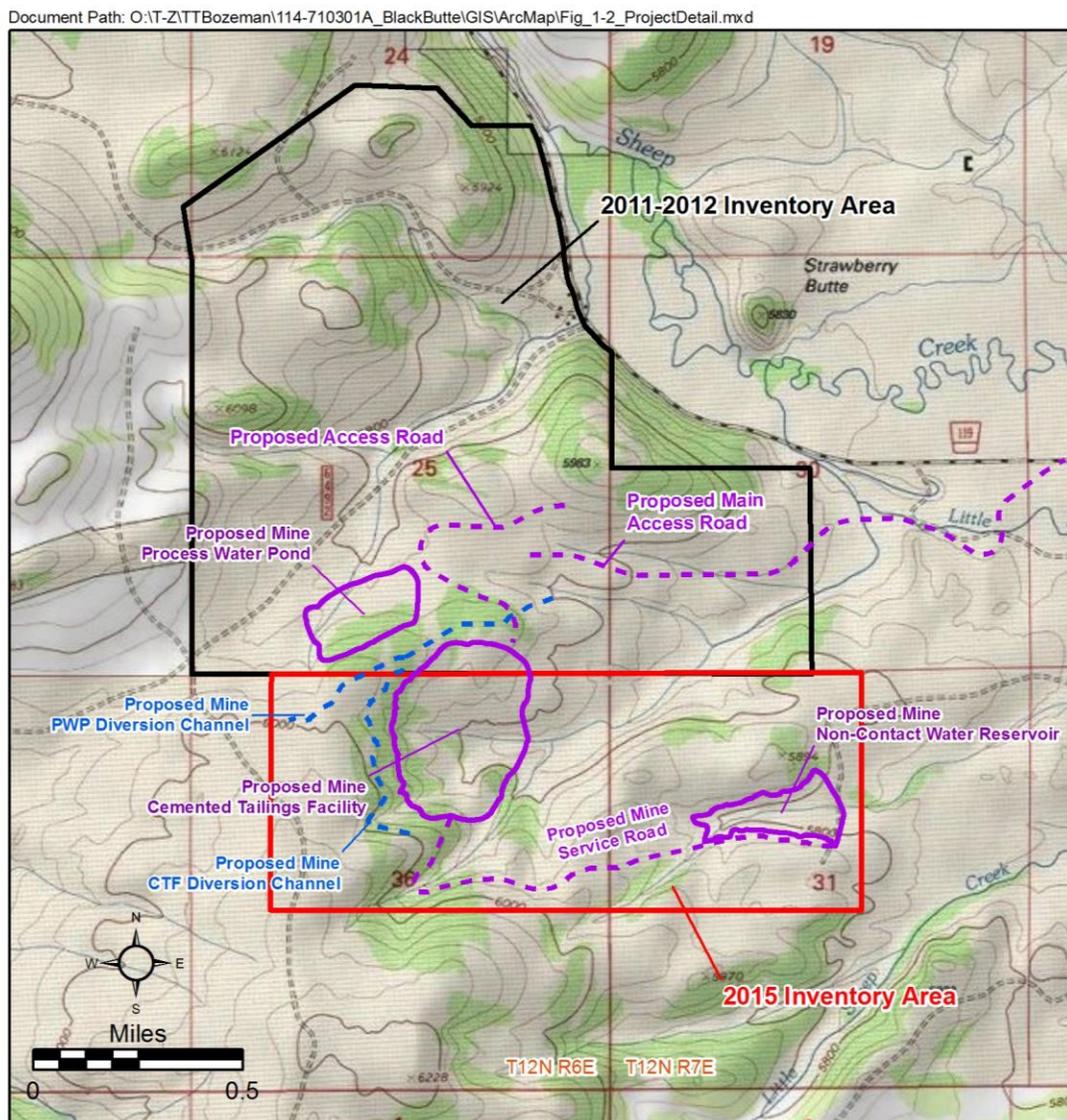


Figure 1.1
Project Location
Tintina Resources, Inc.
Meagher County, Montana

Lynn M. Peterson and Kyle Barnett, Tetra Tech archaeologists, conducted the cultural resource inventory July 29th through August 1, 2015, and documented seven prehistoric sites and one historic site.

1.1 PROJECT LOCATION

The proposed Black Butte Copper Mine is located in Meagher County, Montana. The 2015 cultural resource inventory area includes 290 acres in Section 36, T12N, R6E; and 220 acres in Section 31, T12N, R7E where a cemented tailings facility, a non-contact water reservoir, a service road, and two diversion channels will be developed. Additionally, 1.25 miles of access roads that cross Section 25, T12N, R6E and Sections 29 and 30, T12N, R7E were examined (**Figure 1.2**). The process water pond occurs in Section 25, T12N, R6E, an area surveyed in 2011.



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Figure 1.2
Project Details
 Tintina Resources, Inc.
 Meagher County, Montana

2.0 LITERATURE SEARCH

Prior to fieldwork, Tetra Tech requested a file and literature search for Sections 25 and 36, T12N, R6E; and Sections 29, 30, and 31, T12N, R7E from the Montana State Historic Preservation Office (SHPO). The search indicated four cultural resource projects have ties to the current inventory area.

In April 1994, Garvey C. Wood inventoried a 10-acre area in the N1/2 NE1/4 SE1/4 of Section 30, T12N, R7E, prior to the excavation of gravel for a nearby road improvement project. No cultural resources were identified.

In 2008, Ethos Consultants examined an area north of the current inventory area for a Central Montana Communications buried cable line (Brumley 2010 and 2011). Site 24ME936, Butte Creek Road, and site 24ME925, Sheep Creek Road, were recorded during this project. Butte Creek Road occurs north of the proposed process water pond and an access road, and Sheep Creek Road is the starting point for the proposed main access road. Both roads are currently in use and have been designated Forest Service Road #6492 and #119, respectively. Ethos recommended both the Butte Creek Road and Sheep Creek Road are not eligible for listing in the NRHP.

As previously discussed, Tetra Tech conducted the other two cultural resource projects in 2011 and 2012 (Tetra Tech 2013a and 2013b). The first project examined 970 acres for cultural resources and documented seven prehistoric sites, three historic sites and two prospect pits as isolated finds. All seven prehistoric sites (24ME160, 24ME161, 24ME162, 24ME163, 24ME164, 24ME165, and 24ME166) consist of lithic scatters and carry recommendations for archaeological testing to determine site eligibility to the NRHP if these sites cannot be avoided by mine activities. The historic sites (24ME158, 24ME159, and 24ME940) and the prospect pits were recommended not eligible to the NRHP, and no further work was suggested.

Tetra Tech's second project concerned inventory of an additional 20 acres (no cultural resources were documented) and the archaeological testing of site 24ME163 to determine NRHP eligibility under Criterion D. Mine road development was slated to occur within the site's boundary and testing was conducted to ascertain if site 24ME163 possessed the potential to contribute information important to our understanding of prehistory. The site was tested in November 2012, and the recovery of 132 lithic artifacts from the surface to 50 cm below surface indicated site 24ME163 had an intact buried cultural deposit that had the potential to address research questions concerning prehistoric lifeways.

See **Table 2.1** and **Figure 2.1** for sites previously identified within the proposed mine area. **Figure 2.1** also depicts other proposed mine features, including an adit, contact water pond, mill pad, portal pad, vent raises, and temporary waste rock storage areas. The adit will have a surface portal and extend underground to the Upper and Lower Johnny Lee copper deposits.

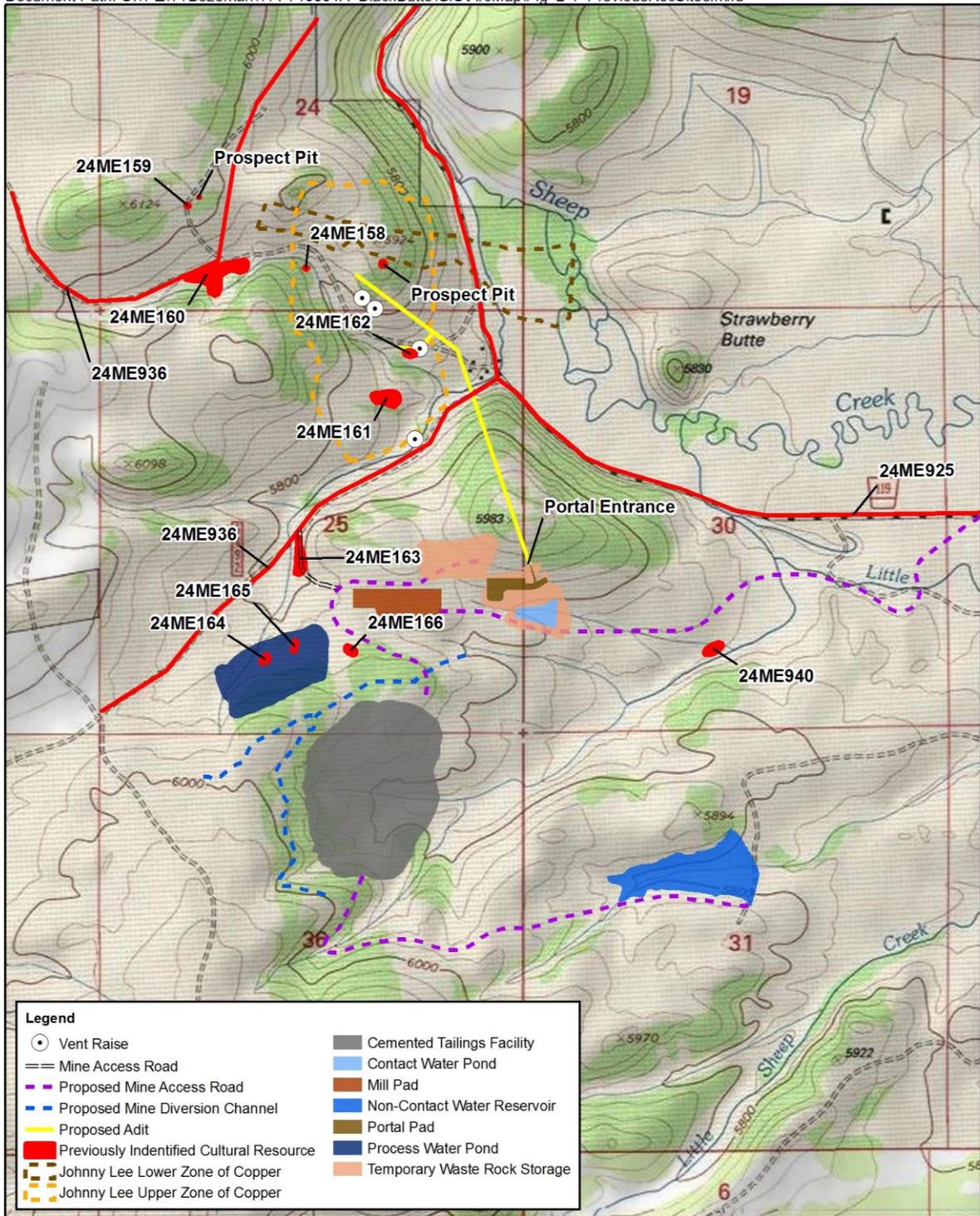
Table 2.1 Sites Previously Identified in the Black Butte Copper Mine Project Area.

Site Number	Site Type	Description	*NRHP Recommendations
24ME158	Historic Log Structure	Collapsed log cabin.	Not eligible under Criteria A-D.
24ME159	Historic Mining	Log structure and mine shaft.	Not eligible under Criteria A-D.
24ME160	Lithic Scatter	About 150 primary and secondary chert flakes and one bifacially flaked tool.	Archaeological testing to determine eligibility under Criterion D.
24ME161	Lithic Scatter	About 30 chert flakes and one bifacially flaked tool.	Archaeological testing to determine eligibility under Criterion D.

Site Number	Site Type	Description	*NRHP Recommendations
24ME162	Lithic Scatter	About 20 primary and secondary chert flakes.	Archaeological testing to determine eligibility under Criterion D.
24ME163	Lithic Scatter	About 40 primary chert flakes on surface. Testing yielded 131 chert, chalcedony, and porcellanite flakes, and one chert uniface.	Site tested and recommended eligible to the NRHP.
24ME164	Lithic Scatter	Nine chert flakes and one quartzite flake.	Archaeological testing to determine eligibility under Criterion D.
24ME165	Lithic Scatter	Ten secondary chert flakes.	Archaeological testing to determine eligibility under Criterion D.
24ME166	Lithic Scatter	Eleven secondary chert flakes.	Archaeological testing to determine eligibility under Criterion D.
24ME925	Historic Road	Sheep Creek Road	Not eligible under Criteria A-D.
24ME936	Historic Road	Butte Creek Road	Not eligible under Criteria A-D.
24ME940	Historic Homestead	Log cabin residence and dismantled outbuilding.	Not eligible under Criteria A-D.

*NRHP – National Register of Historic Places

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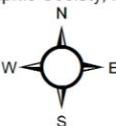


Figure 2.1
Previously Recorded Cultural Resources
 Tintina Resources, Inc.
 Meagher County, Montana

3.0 ENVIRONMENTAL AND CULTURAL SETTING

This section presents the environmental setting and the cultural historic setting of the project area.

3.1 ENVIRONMENTAL SETTING

As defined by Fenneman (1931:192), the project area lies in the Northern Rocky Mountain Physiographic province. The Northern Rockies are bounded by the Great Plains to the east, the Great Basin to the south, and the Columbia Plateau to the west. Most of the mountain ranges in this province are nonlinear; there are no trends but numerous minor crests running in all directions between the streams of a mature drainage system (Fenneman 1931:183). Elevation ranges between 5600 and 6100 feet above sea level in the project area.

The project area is located in the Little Belt Mountains along Sheep Creek. The Smith River lies approximately 11 miles to the west. Geologically, the project area is underlain by Precambrian Belt series. These formations had their beginning about one and a half billion years ago when thick deposits of sandy and muddy sediments began to accumulate in sedimentary basins in western Montana (Alt and Hyndman 2000). These deep deposits eventually lithified into very hard sedimentary formations of sandstone, mudstone and limestone. Accumulation continued for 600 million years, until about 800 million years ago. Precambrian rocks are distinct from later Paleozoic rocks because they contain no trace of animal life, only fossils of extremely primitive plants. The Precambrian world is thought to have been quite inhospitable; it contained little oxygen and no ozone layer in the upper atmosphere, which would have resulted in intense ultraviolet radiation on earth.

The climate of the area has been recorded from 1894 to 1978 at White Sulphur Springs, Montana (Western Regional Climatic Center). The average maximum temperature is 54.3° and the average minimum temperature is 28.8°. The warmest month is July with an average temperature of 80.9° and the coolest month is January with an average minimum temperature of 10.5°. Average total precipitation is 15.13 inches and average total snowfall is 78.2 inches. June is the wettest month and January is the snowiest month.

Principal trees in the project vicinity include Douglas fir, Lodgepole pine, Engleman spruce, Ponderosa pine, aspen, and willow. Grasses include wheatgrasses, fescues, and some bluegrasses (Payne 1973).

Fauna in and near the project area is abundant and diverse. Large mammals include mule deer, white-tailed deer, elk, bighorn sheep, pronghorn, moose, mountain lion and black bear. Moderate size and small sized mammals include bobcat, badger, lynx, short and long-tail weasel, mink, marten, red fox, coyote, raccoon, striped skunk, muskrat, white-tailed jackrabbit and mountain cottontail (Fisher et al. 2000). Amphibians and reptiles within or near the project include the western toad, spotted frog, western rattlesnake and western garter snake. Birds of prey in the area include a variety of hawks, falcons, and golden and bald eagles.

3.2 CULTURAL SETTING

The project area is located within the prehistoric cultural subarea known as the Northwestern Plains, a region that extends from central Alberta to southern Wyoming and from western North Dakota to western Montana. The prehistoric inhabitants of the Northwestern Plains existed for 12,000 years as semi-nomadic hunters and gatherers. The archaeological record suggests minor changes in tool technologies and subsistence strategies over time. A primary focus on bison is evident during the last 4000 years (Frison 1991).

The prehistory of the Northwestern Plains has been classified into four traditions or periods based on similarities of artifact assemblages and overall adaptive strategies. The time periods are known as Paleoindian, Plains Archaic, Late Prehistoric and Equestrian Nomadic.

3.2.1 Paleoindian Tradition (10,000 - 5500 BC)

The Paleoindian Tradition occurred during the Pre-Boreal and Boreal climatic episodes, a time when the climate was cool, moist and conducive to forest expansion (Bryson et al. 1970). Paleoindian populations practiced generalized foraging strategies and inhabited environmentally diverse sites found in major river valleys and foothills. Paleoindian sites are rarely found on the more homogenous upland prairie. The Paleoindian Tradition is further classified into Clovis, Goshen, Folsom, Hell Gap-Agate Basin, Cody and Parallel Oblique Flaked complexes. Large fluted points known as Clovis and Folsom are considered classic Paleoindian projectile points.

3.2.2 Plains Archaic Tradition (5500 BC – AD 250)

The Plains Archaic Tradition began during a relatively dry climatic episode known as the Altithermal. Early Plains Archaic sites are generally found in the same environment as Paleoindian sites, in the protected mountains, foothills and major river valleys. A change in subsistence and settlement strategies is seen in the middle part of this tradition when sites are increasingly found across the open prairie. Subsistence changes include an increased reliance on bison and the utilization of plant resources. Housepits also appear for the first time in the vicinity of the Montana-Wyoming border. The final part of the Plains Archaic is characterized by additional changes in subsistence and settlement strategies. New cooperative hunting techniques were developed to more successfully exploit bison herds. The tipi is also developed, which facilitated habitation of the open Plains. Complexes of the Plains Archaic include Bitterroot/Mummy Cave, Oxbow, McKean and Pelican Lake.

3.2.3 Late Prehistoric (750 BC - AD 1800)

The Late Prehistoric is a time of increasing specialization of plains living and utilization of plains resources; most importantly, bison. The early part of the Late Prehistoric is marked by replacement of the atlatl with the bow and arrow. This more efficient weapon, coupled with communal hunting techniques, allowed the Plains Indians to become premier bison hunters. Late Prehistoric complexes include Besant, Avonlea and Old Woman's. Besant projectile points are side-notched while Avonlea points are finely made triangular points with shallow hafting notches near the base of the blade. Around AD 1000, Avonlea points were replaced by slightly larger side-notched projectile points known as Old Women's.

3.2.4 Equestrian Nomadic Tradition (AD 1750 - 1800)

The Equestrian Nomadic Tradition is a transitional time between the prehistoric and historic periods. This time is distinguished by the acquisition of the horse and subsequent changes that occurred in subsistence strategies, demographics, social organization and settlement patterns (Gregg 1985). The horse arrived in the Southern Plains ca AD 1600 but did not appear on the Northern Plains until AD 1725-1750. With the arrival of the horse, populations became more sedentary. Women, children and the elderly could stay behind as hunters mounted on horseback greatly increased their range (Secoy 1953).

The presence of Euro-American trade goods usually denotes an Equestrian Nomadic site. However, sites from this time period are usually identified as belonging to an earlier period for several reasons. First, subsistence activities remained unchanged and, with an absence of Euro-American goods, sites would simply be classed as prehistoric. Additionally, Euro-American goods are subject to decay and collection by relic hunters.

Diagnostic material from the Equestrian Nomadic Tradition includes trade beads, metal points and tools, and horse bones.

3.2.5 Historic Period (AD 1805 - Present)

The historic period in Montana began with the arrival of Lewis and Clark in 1805-1806 (DeVoto 1952). The Smith and Musselshell rivers, whose headwaters are in the Little Belt Mountains near the project area, were both named by Lewis and Clark. Interest in Montana increased with reports from the expedition that described the large

numbers of fur bearing animals that were available for exploitation. Manuel Lisa of the St. Louis Missouri Fur Company was the first to attempt to gain a foothold in the fur trapping industry of Montana. Lisa established a fort (known variously as Fort Remon, Lisa's Fort or Fort Manuel) in 1807 at the confluence of the Bighorn and Yellowstone rivers (Malone and Roeder 1976).

By the late 1820s, John Jacob Astor and the American Fur Company had grown to monopolize the fur trade of the Northern Plains and the Rockies (Malone and Roeder 1976). Forts were established along the Missouri to facilitate trade with the Indians, act as safe depots for goods and furs and be defensible residential quarters for the traders. The fur trade was the primary focus of most Anglo-Indian activities in the Northern Plains until the 1860s when the fur trade collapsed.

Gold was discovered in southwestern Montana in 1862 at Bannock. Major subsequent discoveries were made at Alder Gulch in 1863 and Last Chance Gulch in 1864. The mining era in Meagher County began with the gold strike at Confederate Gulch in the Big Belt Mountains in 1864 (Malone and Roeder 1976). The boomtown of Diamond City, with over 10,000 residents, became the first county seat in 1865. Copper was found in the southern Little Belt Mountains in 1866 giving rise to the towns of Copperopolis and Delphine (Rostad 1994). Significant deposits of silver were also discovered in 1881 along Belt Creek, giving rise to the Neihart Mining District.

Railroad interest in the project vicinity occurred early in 1853 when the Stevens expedition surveyed a possible railroad route up the Musselshell River and down the Smith River. However, it wasn't until 1888 that the railroad reached the project vicinity. A spur line was built from Neihart to Great Falls to ship ore to the newly completed smelter in Great Falls.

The United States army constructed Camp Baker in 1869 to secure transportation routes to and from the mines (Twitchel 1957). Originally located at the juncture of Sheep Creek and the Smith River, the post was moved ten miles up the Smith River, closer to White Sulphur Springs. The post name was changed in 1878 to Fort Logan, in honor of Captain William Logan, who was killed in the Battle of the Big Hole the previous year. Fort Logan was decommissioned in 1880 and the buildings were moved 100 miles east to establish Fort Maginnis near Lewistown.

The cattle industry developed in the 1860s in the western valleys of Montana in response to the demand for beef in the mining camps. The industry received an additional boost in the 1880s with the arrival of the Northern Pacific Railroad and access to eastern markets. The cattle business peaked during 1884-1885 and by fall 1886, the ranges were overstocked and overgrazed. The "hard winter" of 1886-1887 was extremely cold and it is estimated that 60% of Montana's cattle perished (Malone and Roeder 1976). The cattle industry did rebound but the days of enormous profits were gone as ranching continued on in a more conservative manner (Dale 1960).

Like the cattle business, agricultural activity began in western Montana in the 1860s and catered to the mining camps and towns. Food and supplies were initially freighted into the mining camps from Omaha, an expensive and undependable option. As many of the miners had farmed back east, it didn't take long before some of these men transitioned to farming in the western valleys. By 1870, over 54,000 acres in Montana were under cultivation.

Immigration increased at the end of the 1880s with the arrival of the Northern Pacific and the Great Northern railroads. The railroads received huge land grants and were actively promoting the agricultural potential of Montana. Laws had also been passed by Congress that permitted settlement of public domain land. Under the Homestead Act of 1862, the Timber Culture Act (1873) and the Desert Land Act (1877), over 38 million acres of public land in Montana were patented (Hibbard 1965). Life was good for the homesteaders in the early 1900s. Rain was plentiful and grain prices were high with the advent of World War I in Europe. However, by 1919, the homesteading boom was over and the state was at the beginning of a twenty-year period of drought, wind and poverty (Malone and Roeder 1976). Over 60,000 left Montana in the 1920s and approximately 20% of the farms were abandoned. The agricultural business needed to re-create itself before it began to recover from the hard

times of the 1920s and 1930s. Land units were consolidated, crops were diversified, operations were mechanized and new scientific methods in agriculture were employed. Today, agriculture continues to be the heart of the state's economy, providing its largest cash income and the marketing base for dozens of towns and cities (Malone and Roeder 1976).

4.0 INVENTORY METHODS AND RESULTS

The 2015 pedestrian inventory examined 510 acres, with 290 acres in Section 36, T12N, R6E; and 220 acres in Section 31, T12N, R7E. Additionally, 1.25 miles of access roads that cross Section 25, T12N, R6E and Sections 29 and 30, T12N, R7E were examined for cultural resources (**see Figure 1.2**). The inventory was completed over four days, July 29 through August 1, 2015, by Tetra Tech archaeologists Lynn M. Peterson and Kyle Barnett.

The 510 acres were inventoried as a block using east-west transects spaced at 30-meter intervals. The main access road had a 200-foot corridor (to allow for alignment changes) while the second access road in Section 25, T12N, R6E had a 100-foot corridor. Pedestrian transects (at 30-meter intervals) were conducted in a linear fashion within road corridors. Project archaeologists carried a Trimble GeoXT to ensure inventory boundaries were followed. The Trimble also recorded locations of cultural resources; this data was differentially corrected with Pathfinder Office software at the Tetra Tech office. All cultural properties were recorded on Montana Cultural Resources Information (CRIS) forms. No artifacts were collected in the field. The project area and cultural resources were photographed with a digital camera.

The topography of the inventory area was primarily moderately sloped, open woodland with Douglas fir on the ridgetops and aspen and willow along the drainages. Ground visibility ranged from 0% in densely vegetated areas to 100% in open areas.

The 2015 inventory identified eight new cultural resources that include seven prehistoric and one historic site (**Table 4.1; Figure 4.1; Appendix A**). The prehistoric resources include six lithic scatters and a surface stone quarry district, while the historic site consists of a shepherd's cairn.

Table 4.1 Sites Identified During the 2015 Cultural Resource Inventory.

Site Number	Site Type	Description	NRHP Recommendations
24ME1104	Historic Cairn	Shepherd's Cairn	Eligible under Criterion C.
24ME1105	Lithic Scatter	About 20 secondary chert flakes. A couple flakes may have edge work or edge damage.	Archaeological testing to determine eligibility under Criterion D.
24ME1106	Lithic Scatter	At least 24 secondary and tertiary chert flakes.	Archaeological testing to determine eligibility under Criterion D.
24ME1107	Lithic Scatter	Chert outcropping and a sparse scatter of tested nodules and flakes. One flake appears to be worked along one edge.	Archaeological testing to determine eligibility under Criterion D.
24ME1108	Lithic Scatter	One chert core and at least 20 secondary and tertiary flakes.	Archaeological testing to determine eligibility under Criterion D.
24ME1109	Lithic Scatter	About 10 tertiary chert flakes.	Archaeological testing to determine eligibility under Criterion D.

Site Number	Site Type	Description	NRHP Recommendations
24ME1110	Lithic Scatter	At least five tertiary chert flakes.	Archaeological testing to determine eligibility under Criterion D.
24ME1111	Surface Stone Quarry District	District covers 1,048 acres and consists of 13 lithic scatters and a thin veneer of isolated flakes identified between scatter areas.	Archaeological testing to determine eligibility under Criterion D; desktop study of sites in the vicinity of Sheep Creek to identify patterns in prehistoric settlement; or chemical analysis of 24ME1111 chert samples.

Site 24ME1104

This site consists of an historic cairn that is composed of approximately 25 granitic rocks that measure 54 x 35 inches x 4-feet tall. The cairn was constructed on top of a granitic rock outcrop in an open pasture within a park woodland setting. The feature likely represents a sheepherder's cairn. A post and a couple of 2x6 boards occur near the cairn.

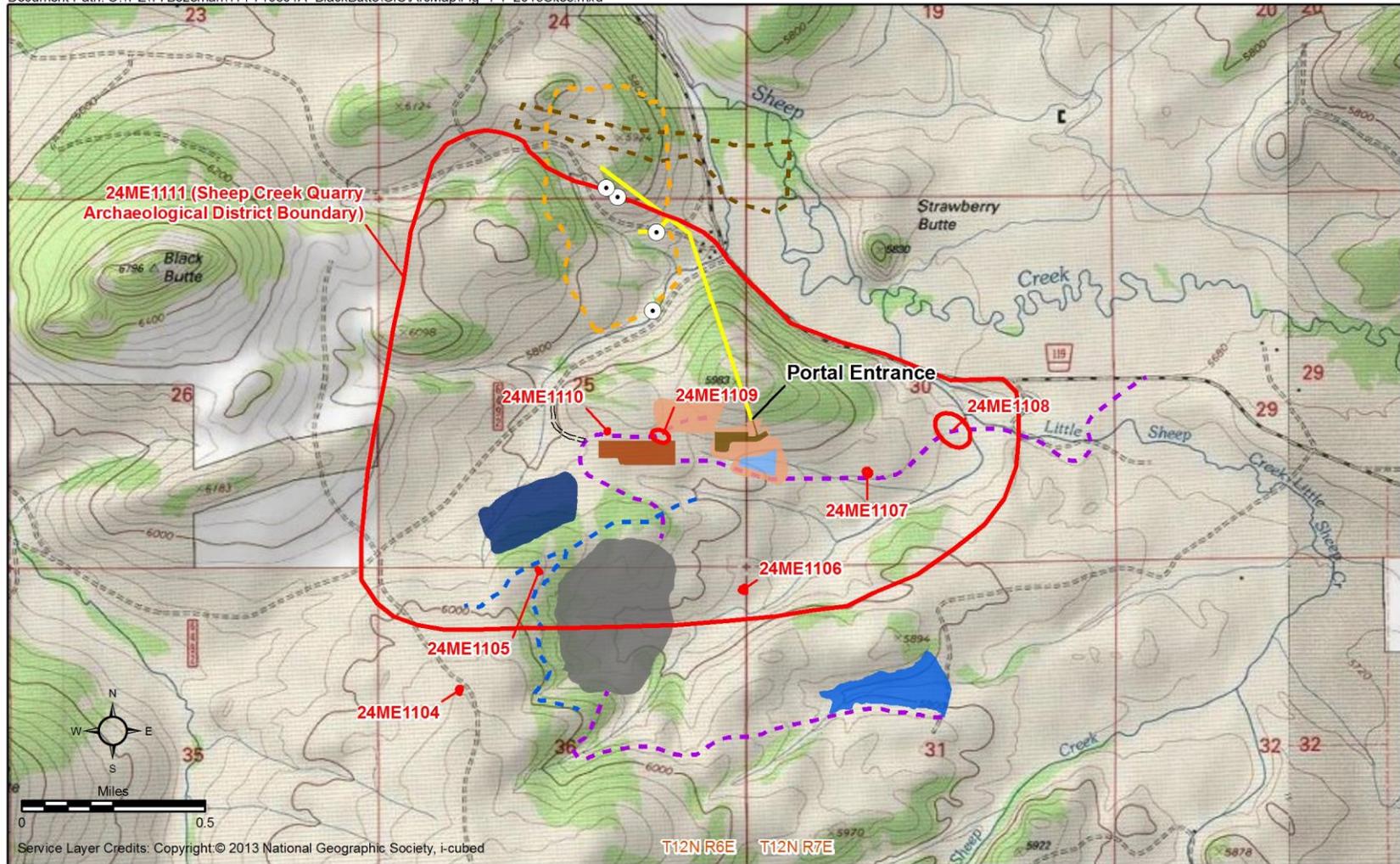
This site is recommended not eligible under Criteria A. Although the site is associated with the early sheep industry in Montana, the site itself did not play a significant role in the sheep industry. Additionally, the site is recommended not eligible under Criteria B and D, as it has no known association with significant people and is unlikely to contribute information important to history. This site is recommended eligible under Criterion C, as this sheepherder's monument embodies the distinctive characteristics of a type and period. Sheepherder's monuments are fairly common across the west. Mark Miller has researched these features in Wyoming, and he notes that stories were handed down that describe the construction of rock cairns on prominent points near sheep camps in the winter range so herders could find their way back to camp during a storm (Miller in Cassity 2011). Archaeologically, Miller also examined sheepherder monuments, herder campsites and likely sheep bedgrounds and concluded that winter camps were found in close proximity to sheepherder monuments. Cassity also cites the oral history of Tomas Antillon, a Wyoming herder in the 1930s. Antillon told a story about being lost in a blizzard and his use of a monument to locate a shack where he built a fire and avoided freezing to death. Antillon also related that he asked older herders about the origins of the monuments and the usual response was that nobody knew and that the monuments had always been there. Cassity concludes that sheepherders made use of the monuments and doubtlessly built or contributed to the formation of many of them.

Site 24ME1104 retains integrity of location, setting, materials, design, workmanship, feeling, and association. No mine facilities are planned for the immediate site area; the nearest features (a diversion channel and the Cemented Tailings Facility) occur about one-quarter mile to the east. Unless mine plans change, mining activities should avoid site 24ME1104.

Site 24ME1105

Site 24ME1105 consists of a sparse lithic scatter located on a treed ridgeline between two drainages that flow into Sheep Creek. About 20 maroon and yellow chert flakes were observed on a slight slope, and it appears lithics may be eroding downslope. The scatter measures 30 x 10 meters, and flakes appear to be mostly secondary. A couple flakes may have some edge work or edge damage.

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- Legend**
- Vent Raise
 - Mine Access Road
 - Cultural Resource
 - Proposed Adit
 - Johnny Lee Lower Zone of Copper
 - Johnny Lee Upper Zone of Copper
 - Cemented Tailings Facility
 - Contact Water Pond
 - Non-Contact Water Reservoir
 - Portal Pad
 - Process Water Pond
 - Temporary Waste Rock Storage
 - Proposed Mine Diversion Channel
 - Proposed Mine Access/Service Road

Figure 4.1
Cultural Resources Identified in 2015
 Tintina Resources, Inc.
 Meagher County, Montana

Site 24ME1105 lies between the proposed Process Water Pond Diversion channel (20 meters in distance) and the Cemented Tailings Facility Diversion Channel (40 meters in distance). Tintina has indicated the diversion channels can be relocated, but in the event channel construction does threaten site 24ME1105, this lithic scatter should be tested to determine if an intact cultural deposit exists. If an intact cultural deposit does exist, site 24ME1105 has the potential to provide information important to prehistory (Criterion D).

Additionally, testing should determine if the site retains integrity of location, materials and association. These aspects require that the site be in its original depositional context, exhibit tools and sufficient lithic materials to answer appropriate research questions concerning lithic technology, and contain temporally diagnostic artifacts or datable materials.

Site 24ME1106

At least 24 chert flakes compose this lithic scatter site located on a terrace above a drainage that flows into Little Sheep Creek. Flake colors include maroon and yellow, and most appear to be secondary and tertiary flakes that cover a 30 x 30 meter area.

The scatter occurs on a slight slope, and a fenceline and cow path bisect the site area. The site area is a popular location for cows and several flakes were observed along the cow path. Livestock trampling may cause apparent flakes or edge damage to artifacts.

Site 24ME1106 lies about 300 meters west of the Cemented Tailings Facility, the closest mine facility. In the event other mine features may cause disturbance to site 24ME1106, this site should be tested to determine if this lithic scatter contains an intact subsurface cultural deposit that can address appropriate research questions (Criterion D). Additionally, the site should demonstrate integrity of location, materials and association. These aspects require that the site be in its original depositional context, exhibit tools and sufficient lithic materials to answer appropriate research questions concerning lithic technology, and contain temporally diagnostic artifacts or datable materials.

Site 24ME1107

This lithic scatter site occurs on a slightly sloping terrace above a drainage that flows into Little Sheep Creek. Measuring 30 x 30 meters, the site consists of a chert outcropping and a sparse scatter of tested nodules and flakes. One flake appears to be worked along one edge.

Site 24ME1107 has already suffered minor disturbances with the construction of an east-west fenceline and the wearing of a path by grazing cows. Additionally, the mine's proposed main access road lies 10 meters south of the site area. At this time, it is not known if access road development will involve cut or fill construction methods. If the site area has fill removed with the cut method, 24ME1107 should be tested to determine if an intact cultural deposit exists. If such a deposit is identified, this site has the potential to provide information important to prehistory (Criterion D). Additionally, testing should determine if the site retains integrity of location (site maintains its original depositional context), materials (site exhibits tools and sufficient lithic materials to answer appropriate research questions concerning lithic technology), and association (site contains temporally diagnostic artifacts or datable materials).

If access road development uses the fill construction method, a layer of fill material and gravel will be laid down on top of the site area. This type of road construction is not considered a disturbance, as the buried cultural deposit (if it exists) will remain intact, albeit buried a little deeper.

Tintina has also indicated the access road alignment can be altered to avoid disturbing 24ME1107.

Site 24ME1108

This site consists of a sparse lithic scatter of chert found on a terrace above the confluence of an unnamed drainage and Little Sheep Creek. One chert core and at least 20 secondary and tertiary maroon and yellow flakes were observed in a 175 x 120 meter area.

Some disturbance may have been caused by cows that graze in the site area. Several flakes appear along the cattle-worn paths and livestock trampling may have produced apparent flakes or edge damage. Additionally, the mine's proposed main access road bisects site 24ME1108. Currently, it is not known if cut or fill construction will be used in access road development. If the site area has fill removed with the cut method, 24ME1108 should be tested to determine if an intact cultural deposit exists. If such a deposit is identified, this site has the potential to provide information important to prehistory (Criterion D). Additionally, the site should demonstrate integrity of location, materials and association. To satisfy these integrity requirements, the site must be in its original depositional context, exhibit tools and sufficient lithic materials to answer appropriate research questions concerning lithic technology, and contain temporally diagnostic artifacts or datable materials.

If the fill construction method is used for access road development, a layer of fill material and gravel will be laid down on top of the site area. This type of road construction will bury a cultural deposit deeper, but intact, and no site disturbance is anticipated.

Site 24ME1109

This lithic scatter site consists of about 10 tertiary chert flakes located on a terrace above a drainage and the base of a knoll. Most of the scatter is fairly linear in shape and measures 80 x 50 meters. Many naturally occurring chert nodules are also present.

One of the mine's proposed access roads bisects site 24ME1109. Currently, it is not known if access road development will employ the cut or fill construction method. With the cut method, fill would be removed from the site area. In this event, 24ME1109 should be tested to determine if an intact cultural deposit exists. If such a deposit is identified, this site has the potential to provide information important to prehistory (Criterion D). Additionally, testing should determine if the site retains integrity of location (site maintains its original depositional context), materials (site exhibits tools and sufficient lithic materials to answer appropriate research questions concerning lithic technology), and association (site contains temporally diagnostic artifacts or datable materials).

If access road development uses the fill construction method, a layer of fill material and gravel will cover the site area. This type of road construction is not considered a disturbance, as the buried cultural deposit (if it exists) will remain intact, although buried a little deeper.

Site 24ME1109 will also likely be disturbed by the mill pad construction and the temporary storage of waste rock. This site should be tested before mine facility construction begins.

Site 24ME1110

Site 24ME1110 consists of a sparse lithic scatter of at least five tertiary chert flakes located on a terrace above a drainage and the base of a knoll. The scatter measures 20 x 15 meters.

A proposed mine access road occurs eight meters from the site and construction will likely disturb this cultural resource. Avoidance is recommended, but if road construction will disturb this site, 24ME1110 should be tested to determine NRHP eligibility under Criterion D. Additionally, testing should determine if the site retains integrity of location, materials and association. These aspects require that the site be in its original depositional context;

exhibit tools and sufficient lithic materials to answer appropriate research questions concerning lithic technology; and contain temporally diagnostic artifacts or datable materials.

If access road development uses the fill construction method, a layer of fill material and gravel will be deposited next to or on top of the site area. This type of road construction is not considered a disturbance, as the buried cultural deposit (if it exists) will remain intact, albeit buried a little deeper.

The mine mill pad also occurs south of 24ME1110 and construction activities will likely disturb this lithic scatter. Site 24ME1110 should be tested before construction begins on mine facilities.

Site 24ME1111

The boundary for 24ME1111, the Sheep Creek Surface Stone Quarry District, is defined by the group of 13 lithic scatters (24ME160-24ME166, and 24ME1105-24ME1110) identified during the 2011, 2012, and 2015 cultural resource inventories. Individually, these scatters contain from five to 150 chert flakes. In addition to the lithic scatters, the cultural resource inventories also noted numerous isolated flakes between these sites. However, the large number of isolated flakes precluded their individual recording beyond the definition of a loose boundary. Together, the isolates and 13 lithic scatters lie within the greater 24ME1111 boundary, which covers 1,048 acres. The inclusion of the lithic scatters, within a larger defined boundary (24ME1111), follows a similar methodology employed by the Montana SHPO for historic districts where individual properties receive their own Smithsonian trinomial, but lie within a larger historic district assigned its own number.

The number of lithic scatter sites and isolated flakes indicate the site area of 24ME1111 was used as a surface stone quarry by prehistoric peoples. No quarry pits or stone ring features have been identified to date, and there appears to be a near absence of patterned tools and a total absence of diagnostic artifacts. Additionally, the available chert is generally a poor quality toolstone material. The site's composition suggests moderate use by prehistoric people who tested chert nodules, conducted some lithic reduction, but did not produce highly patterned tools.

Chert naturally occurs across the site area and J. Zieg, geologist at Tintina Resources, Inc., describes the geology of the Black Butte Copper Mine project area below (Personal communication, August 2015):

The Black Butte project area is hosted by a geology that produces voluminous amounts of 'cherty' material, generally called 'jasperoid' by geologists, or in this area 'silicified gossan' (remnants of intensely weathered iron-sulfide mineralization). The genesis of this material involves the surficial weathering of the aerially extensive bedded pyrite zones in the host-rock of the Newland shale. The portion of the Newland outcrop belt that contains the greatest abundance of jasperoid extends from about two miles east of US Highway 89 to west of the Smith River – a distance of approximately 20 miles. This exposure belt averages approximately five miles in width. Bedded pyrite zones are scattered across 3,000 feet of Newland stratigraphy. When these zones oxidize near surface, liberation of the sulfur ions from the weathering of pyrite create sulfuric acid, which carries silica as well as many other ions. This acid is then buffered by the high concentrations of dolomite (a carbonate-rich rock) in the Newland shale, and as the acid is consumed, silica then precipitates as very fine-grained massive material along with a good deal of the iron-oxide liberated during oxidation of pyrite. Huge volumes of this iron-rich silicified material have developed across this 100 square mile area and as a result form a ubiquitous component of the surficial geology – weathered fragments of this material are common in the alluvial material and especially in the soils on and near the exposed weathered portions of the extensive pyrite zones. A good example of this surrounds the Black Butte Iron mine, on Iron Butte, where

the owners mine this material – there the silica contents are highly variable but bands of very silicified material are common.

Most prehistoric sites are recommended eligible under Criterion D for their ability to contribute information important to prehistory. Criterion D eligibility is usually assessed through archaeological testing, and the 13 lithic scatters within the site boundary of 24ME1111 carry recommendations for individual site testing. In 2012, lithic scatter 24ME163 was tested prior to a road construction project. Testing identified the existence of an intact, subsurface cultural deposit, and 24ME163 was recommended eligible to the NRHP (Tetra Tech 2013b). However, this site was not mitigated as road modification work within the site boundary consisted of laying down a layer of fill material, thus avoiding any project impacts.

24ME1111 is a 1048-acre surface stone quarry of chert that includes 13 lithic scatters and a thin veneer of isolated flakes. Testing results at 24ME163 indicate the existence of an intact, subsurface cultural deposit, suggesting 24ME1111 is eligible to the NRHP under Criterion D. Recommendations for NRHP eligible sites, subject to project-specific impacts, usually include avoidance or mitigation of project impacts. For prehistoric sites, mitigation is usually accomplished through archaeological excavation of a portion of the site. Development of the Black Butte Copper Mine will impact 24ME1111, and avoidance does not seem to be an option.

Mitigation recommendations for 24ME1111 include archaeological excavation of a block of 1 x 1 meter units at one of the 13 lithic scatters determined eligible to be NRHP. However, other mitigation options may be appropriate for 24ME1111 (a surface stone quarry) located next to Sheep Creek, a tributary of the Smith River.

The Smith River area is well known for its chert quarries (including the Camp Baker Quarry, the Dogget Quarry, and the VanAuchen Quarry) and has been the location of several important cultural resource investigations over the years, including work by Aaberg and others (2007) and Roll and others (2005). The Aaberg investigation produced a prehistoric settlement model for the nearby Dry Range, and the Roll study attempted to distinguish chemical "fingerprints" of Montana chert samples (including Camp Baker Quarry) for the purpose of chemically sourcing chert artifacts. Although the chemical analyses results were mixed, researchers still believe this is a viable research direction. In consideration of these past investigations, alternative mitigation strategies for 24ME1111 could involve a desktop investigation of sites in the vicinity of Sheep Creek to identify patterns in prehistoric settlement and compare results to Aaberg's Dry Range Settlement Model. Another mitigation strategy could involve the chemical analysis of 24ME1111 chert samples to determine if a peculiar chemical signature exists for the Sheep Creek cherts.

Site 24ME1111 currently retains integrity of location, setting, feeling, association, and materials. Although cows graze the site area, and the development of fences and a few roads has caused some alternations, overall the site retains its physical qualities (abundant water, lithic material, and plant and animal resources) that most likely attracted prehistoric groups to the area.

5.0 SUMMARY AND RECOMMENDATIONS

Cultural resource work conducted in 2011, 2012, and 2015 examined approximately 1500 acres located within the proposed Black Butte Copper Mine. Inventory work identified 14 prehistoric and six historic sites, and tested 24ME163 for NRHP eligibility (**Table 5.1, Figure 5.1**).

Table 5.1 Cultural Resources in the Black Butte Copper Mine Area

Site Number	Site Type	Possible Mine Feature/Facility Disturbance	NRHP Recommendations
24ME158	Historic Log Structure	None	Not eligible under Criteria A-D.
24ME159	Historic Mining	None	Not eligible under Criteria A-D.
24ME160	Lithic Scatter	None	Archaeological testing to determine eligibility under Criterion D.
24ME161	Lithic Scatter	None	Archaeological testing to determine eligibility under Criterion D.
24ME162	Lithic Scatter	A vent raise (16-ft. in diameter) is planned for the vicinity of 24ME162. Site avoidance is possible.	Archaeological testing to determine eligibility under Criterion D.
24ME163	Lithic Scatter	No mine features are proposed to date. If this changes, 24ME163 needs to be avoided or mitigated.	Site tested and recommended eligible to the NRHP.
24ME164	Lithic Scatter	Located within the Process Water Pond boundary.	Archaeological testing to determine eligibility under Criterion D.
24ME165	Lithic Scatter	Located within the Process Water Pond boundary.	Archaeological testing to determine eligibility under Criterion D.
24ME166	Lithic Scatter	None; site occurs 50 meters from Access Road and 75 meters from Process Water Pond boundary.	Archaeological testing to determine eligibility under Criterion D.
24ME925	Historic Road-Sheep Creek	None	Not eligible under Criteria A-D.
24ME936	Historic Road-Butte Creek	None	Not eligible under Criteria A-D.
24ME940	Historic Homestead	None	Not eligible under Criteria A-D.
24ME1104	Historic Shepherder's Cairn	None; Diversion Channel and Cemented Tailings Facility about ¼ mile to the east.	Eligible under Criterion C.

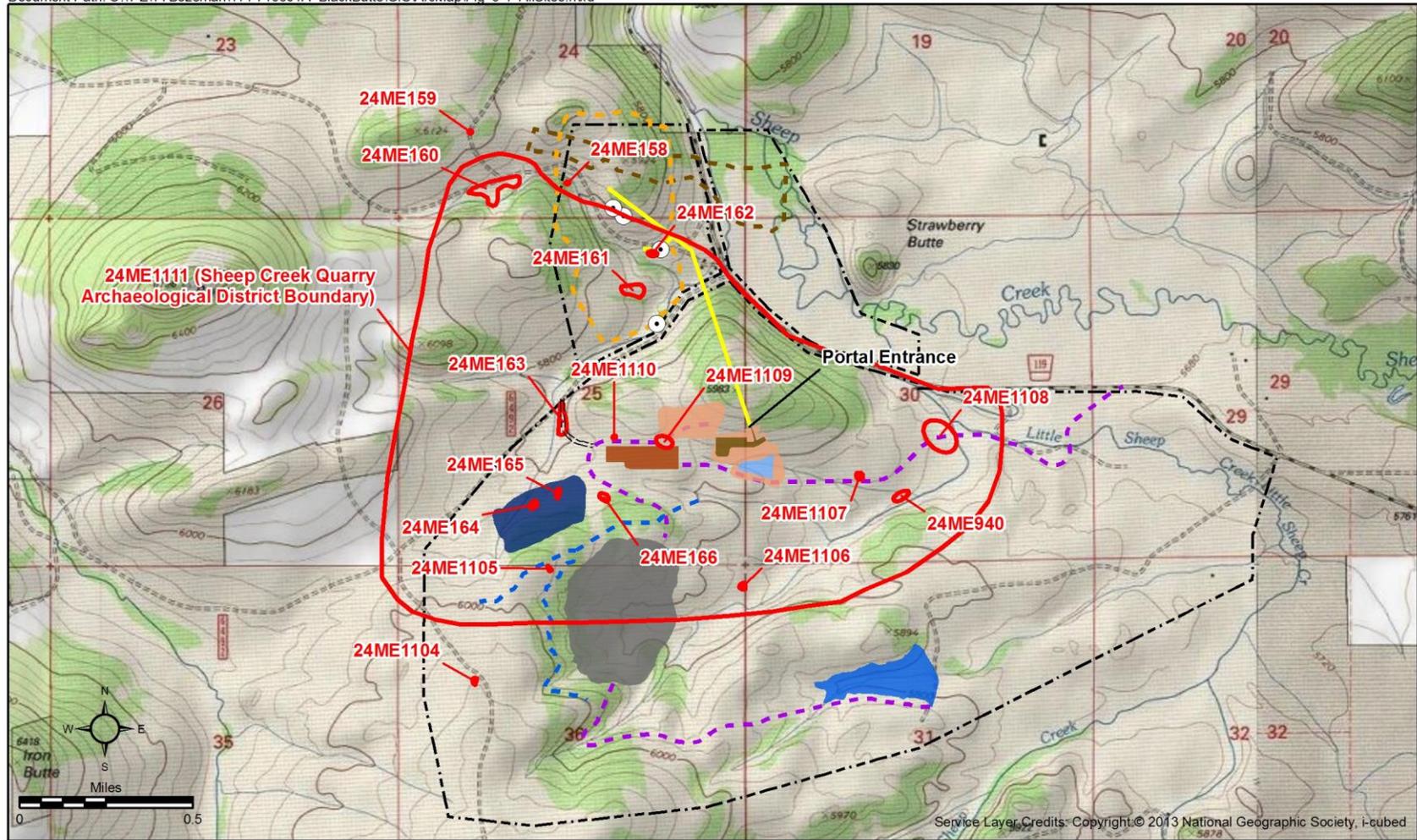
Site Number	Site Type	Possible Mine Feature/Facility Disturbance	NRHP Recommendations
24ME1105	Lithic Scatter	Disturbance is possible as 24ME1105 lies 20 meters from the Process Water Pond Diversion channel. Tintina may relocate channel to avoid this site.	Archaeological testing to determine eligibility under Criterion D.
24ME1106	Lithic Scatter	None; 300 meters from Cemented Tailing Facility.	Archaeological testing to determine eligibility under Criterion D.
24ME1107	Lithic Scatter	Disturbance is possible as Main Access Road lies 10 meters south of 24ME1107. Tintina may alter road alignment to avoid this site.	Archaeological testing to determine eligibility under Criterion D.
24ME1108	Lithic Scatter	Main Access Road bisects 24ME1108.	Archaeological testing to determine eligibility under Criterion D.
24ME1109	Lithic Scatter	An Access Road bisects this site. Additionally, the Mill Pad and Temporary Storage of Waste Rock will likely disturb 24ME1109.	Archaeological testing to determine eligibility under Criterion D.
24ME1110	Lithic Scatter	Disturbance is likely as Access Road occurs eight meters south of 24ME1110.	Archaeological testing to determine eligibility under Criterion D.
24ME1111	Sheep Creek Surface Stone Quarry District	District will be disturbed with construction of the Adit, Mill Pad, Temporary Waste Rock Storage, Portal Pad, Vent Raises, Cemented Tailings Facility, Contact Water Pond, Process Water Pond, and Access Roads.	Presence of intact, subsurface cultural deposit at 24ME163 suggests NRHP eligibility under Criterion D.

Historic sites 24ME158, 24ME159, 24ME925, 24ME936, and 24ME940 are recommended not eligible to the NRHP under Criteria A-D, and no further work is recommended for these resources. The shepherd's cairn, 24ME1104, is recommended eligible for NRHP listing under Criterion C. This feature lies about ¼-mile from the nearest proposed mine feature, suggesting avoidance of this cairn is possible.

The 17 prehistoric resources include 16 lithic scatters and the Sheep Creek Surface Stone Quarry District. Archaeological testing is recommended for these properties to determine NRHP eligibility under Criterion D if these resources will be disturbed by mine construction activities. Two exceptions include site 24ME163 and 24ME111, the Sheep Creek Surface Stone Quarry District. Testing at 24ME163 identified an intact, subsurface deposit which suggests eligibility in the NRHP under Criterion D for both sites.

In conclusion, the current set of proposed mine features will directly disturb 24ME164, 24ME165, 24ME1108, 24ME1109, and 24ME1111. Additionally, disturbance may occur at 24ME162, 24ME1105, 24ME1107, and 24ME1110, as these sites occur 8 to 20 meters from proposed mine features. These cultural resources should be tested for NRHP eligibility. Mining construction should avoid any site determined eligible, or if this is not possible, site impacts should be mitigated through archaeological excavation and the recovery of cultural material that will broaden our understanding of prehistoric lifeways along Sheep Creek.

Document Path: O:\T-Z\TT\Bozeman\114-710301A_BlackButte\GIS\ArcMap\Fig 6-1_AllSites.mxd



Legend

- Vent Raise
- Mine Access Road
- Proposed Mine Diversion Channel
- Proposed Mine Access/Service Road
- Proposed Adit
- Cultural Resource
- Johnny Lee Lower Zone of Copper
- Johnny Lee Upper Zone of Copper
- Mine Permit Boundary
- Cemented Tailings Facility
- Contact Water Pond
- Mill Pad
- Non-Contact Water Reservoir
- Process Water Pond
- Temporary Waste Rock Storage



Figure 5.1
Cultural Resources in the
Black Butte Mine Area
Tintina Resources, Inc.
Meagher County, Montana

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APPENDIX A

SITE FORMS

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

5. ENVIRONMENTAL SETTING

Smithsonian Number:

24ME1104

5.1 Geographic Setting: Park Woodland

5.2 Contour: Known Approximate Unknown

5.3 Elevation: 6060 ft

5.4 View/Aspect (estimated direction and distance): North

5.5 Sediments: Woodhall-Woodhurst, very stony-Bavdark complex. Surface soil is a loam that becomes gravelly and cobbly with depth. Rhyolitic bedrock occurs at 24-60 inches (NRCS 2015).

Deposition: Surface Only Buried Only Surface and Buried Redeposited Other

5.6 Available Water Sources (use dropdown): Intermittent Strem

5.7 Major River Drainage (name, distance, elevation): Butte Creek 0.7 mile 5040 ft.

5.8 Minor Drainage (name, distance, elevation): unnamed small creek 1800 ft. 6060 ft

5.9 Local Vegetation: sagebrush, grasses, juniper, and mountain mahogany.

Regional Vegetation: Douglas fir, lodgepole pine, sagebrush, juniper, birch-leaf spirea, showy aster, Oregon-grape, twinberry, and bearberry.

6. ASSESSMENT, RECORDING & MANAGEMENT

6.1 Significance: This site is recommended not eligible under Criteria A. Although the site is associated with the early sheep industry in Montana, the site itself did not play a significant role in the sheep industry. Additionally, the site is recommended not eligible under Criteria B and D as it has no known association with significant people and is unlikely to contribute information important to history. This site is recommended eligible under Criterion C as this sheepherder's monument embodies the distinctive characteristics of a type and period. Sheepherder's monuments are fairly common across the west. Mark Miller has researched these features in Wyoming and he notes that stories were handed down that describe the construction of rock cairns on prominent points near sheep camps in the winter range so herders could find their way back to camp during a storm (Miller in Cassity 2011). Archaeologically, Miller also examined sheepherder monuments, herder campsites and likely sheep bedgrounds and concluded that winter camps were found in close proximity to sheepherder mounments. Cassity also cites the oral history of Tomas Antillon, a Wyoming herder in the 1930s. Antillon told a story about being lost in a blizzard and his use of a monument to locate a shack where he built a fire and avoided freezing to death. Antillon also related that he asked older herders about the origins of the monuments and the usual repsonse was that nobody knew and that the monuments had always been there. Cassity concludes that sheepherders made use of the monuments and doubtless built or contributed to many of them.

6.2 Condition/Integrity: This site retains integrity of location, setting, materials, design, workmanship, feeling and association.

6.3 Possible impacts to site: The general site area is part of the proposed Black Butte Copper Mine but no facilities are planned for the immediate site area. Construction of a mine diversion channel and a cemented tailings facility is proposed for a location about one-quarter mile east of the site. Additionally, livestock graze the site area and may possibly impact the historic cairn.

6.4 Evaluation: Does this property meet National Register criteria for eligibility? Yes No

Unevaluated

Evaluation Procedures/Justification: See 6.1

6.5 Recording status: surface examination photo map subsurface tested

6.6 Recommendations (use dropdown): Preservation Measures Warranted

Comments:

6.7 Site Located by: Lynn Peterson, Kyle Barnett

Date Located: 7/29/2015

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

6.8 Site Recorded by: Lynn Peterson, Kyle Barnett

Date Recorded: 7/29/2015

6.9 Site form update and revisions by:

Date updated:

6.10 Federal/State Permit No: n/a

6.11 Publication(s)/Report(s) where site is described: 2015 Cultural Resource Inventory of Proposed Mine Facilities and Access Roads within the Black Butte Copper Project Area, Meagher County, Montana.

6.12 Artifact Repository: n/a

6.13 Field notes/maps/photos repository: Tetra Tech, 303 Irene, Helena, MT

6.14 Photographs: DSCN0992 thru 996

***6.15 Map: Attach a sketch map (if applicable) and photocopy of 7.5' Quad showing site location.**

7. DESCRIPTION OF HISTORIC SITES

Smithsonian Number:

24ME1104

7.1 Property boundaries and justification:

: estimated

100 x 55 ft. : measured

7.2 Physical description of buildings/ structures/ features; dates of construction and major alterations; contribution of building/ structure to property significance: The cairn is composed of approximately 25 granitic rocks that measure 54 x 35 inches x 4-ft. tall. Construction date is estimated to be the late 19th century or the early 20th century.

7.3 Artifacts observed, collected: None

7.4 Subsurface Testing Methods and Results: NA

7.5 Historical Information and Context (footnote sources):

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

7.6 Sources, files, people consulted: Cassity, Michael 1981 Wyoming Will Be Your New Home...Ranching, Farming, and Homesteading In Wyoming, 1860-1960. Prepared for the Wyoming State Historic Preservation Office Planning and Historic Context Development Program Wyoming State Parks & Cultural Resources.

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Site Form Photograph Field No./Name BB15-1

Site No. 24ME1104

Photo I.D. Code: DSCN0994

Storage Location: Tetra Tech, Helena, MT

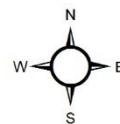
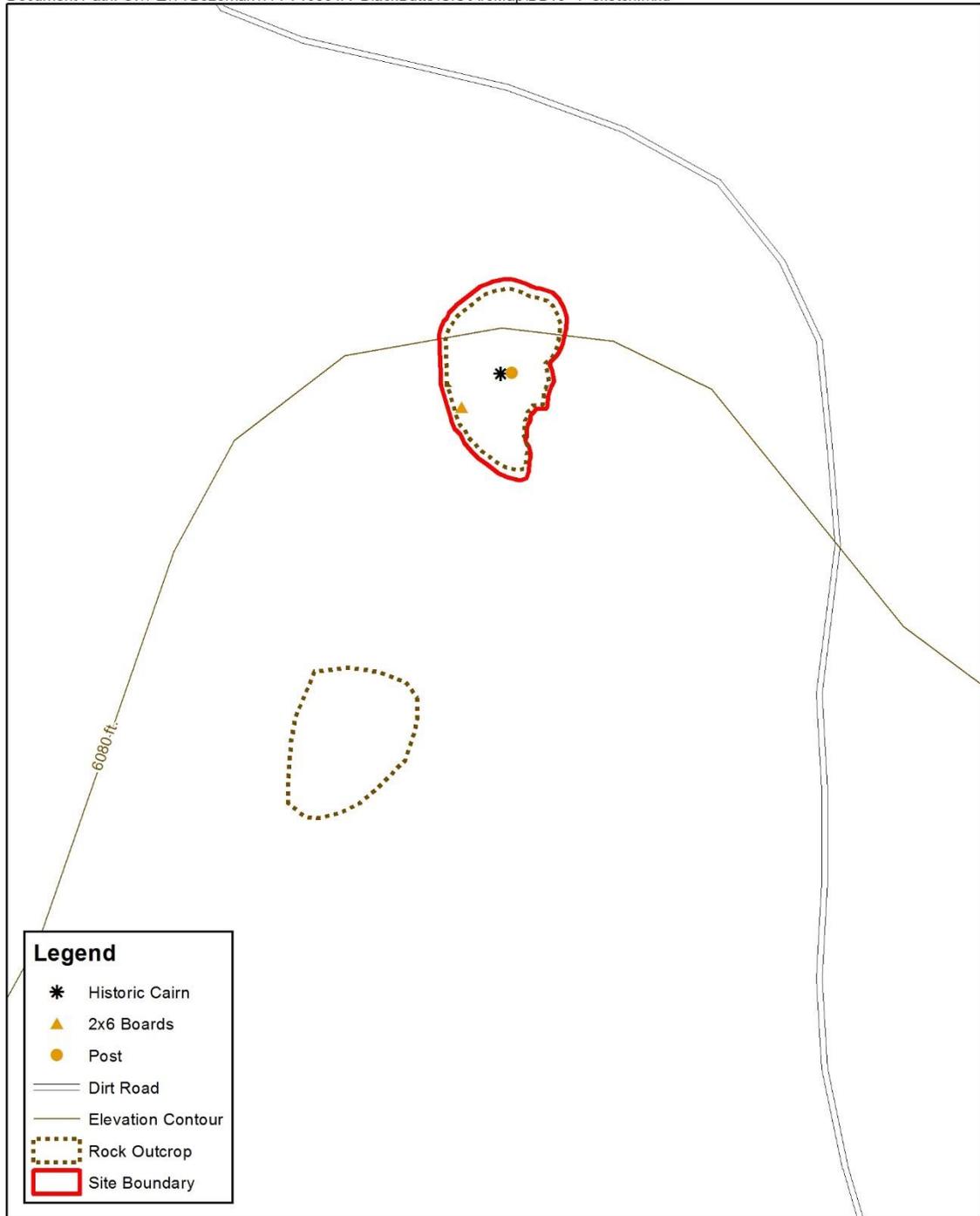
Include direction facing, feature number, and photo caption of each submitted photograph.

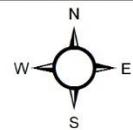
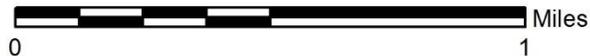
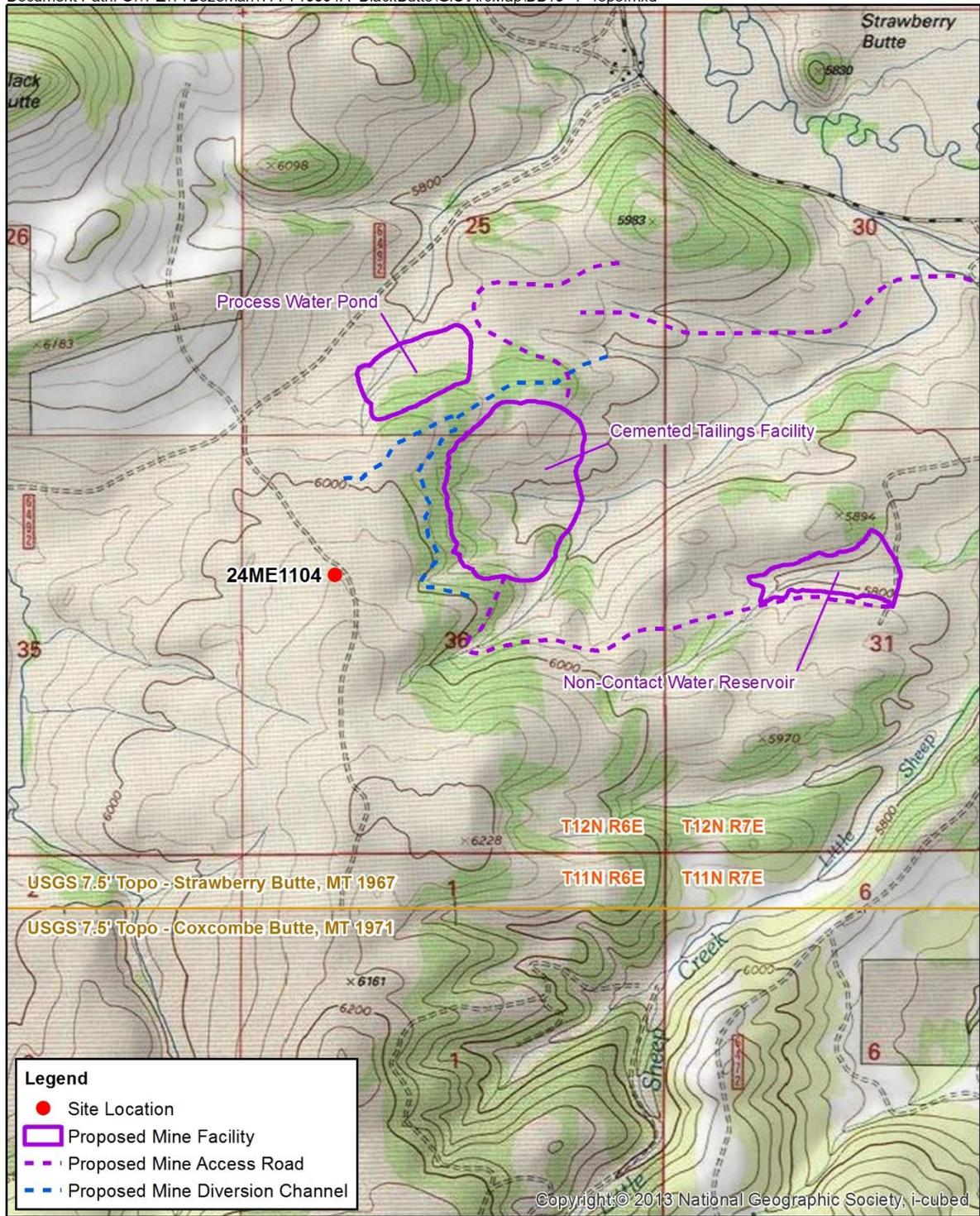
Cairn Overview, Facing South



Site Sketch Field No./Name BB15-1
Site No. 24ME1104

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MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

4.1 Apparent Time Period of Site (use dropdowns):

Prehistoric Prehistoric More Than One Period

Historic

Paleontological

5. ENVIRONMENTAL SETTING

Smithsonian Number:

24ME1105

5.1 Geographic Setting: Park Woodland

5.2 Contour: Known Approximate Unknown

5.3 Elevation: 5960 ft

5.4 View/Aspect (estimated direction and distance): Southwest

5.5 Sediments: Surdal, stony-Poin, stony-Bachus complex. Surface soil is a cobbly loam that becomes very cobbly with depth. Rhyolitic bedrock occurs at 28-60 inches (NRCS 2015).

Deposition: Surface Only Buried Only Surface and Buried Redeposited Other

5.6 Available Water Sources (use dropdown): Intermittent Strem

5.7 Major River Drainage (name, distance, elevation): Sheep Creek 1680 meters 5640 ft.

5.8 Minor Drainage (name, distance, elevation): unnamed small creek 230 meters 5880 ft

5.9 Local Vegetation: Douglas fir, sagebrush, grasses, kinnikinnick, and ground juniper.

Regional Vegetation: Douglas fir, lodgepole pine, sagebrush, juniper, birch-leaf spirea, showy aster, Oregon-grape, twinberry, and bearberry.

6. ASSESSMENT, RECORDING & MANAGEMENT

6.1 Significance: Most prehistoric sites are recommended eligible under Criterion D for their ability to contribute information important to prehistory. This site should be tested to determine if an intact subsurface deposit exists that can address appropriate research questions. Additionally, further documentation, research and consultation with tribes is recommended to determine eligibility under Criteria A, B or C.

6.2 Condition/Integrity: This site should be tested to determine if this lithic scatter retains integrity of location, materials and association. These aspects require that the site be in its original depositional context; exhibit tools and sufficient lithic materials to answer appropriate research questions concerning lithic technology; and contain temporally diagnostic artifacts or datable materials.

6.3 Possible impacts to site: The site area lies between the proposed Process Water Pond Diversion Channel (20 meters in distance) and the Cemented Tailings Facility Diversion Channel (40 metes in distance) of the proposed Black Butte Copper Mine. The proposed Process Water Pond and Cemented Tailings Facility also lie 130 meters and 100 meters from the site, respectively. Additionally, livestock graze the site area and their trampling may cause edge damage to artifacts.

6.4 Evaluation: Does this property meet National Register criteria for eligibility? Yes No Unevaluated

Evaluation Procedures/Justification: See 6.1

6.5 Recording status: surface examination photo map subsurface tested

6.6 Recommendations (use dropdown): Test excavate

Comments:

6.7 Site Located by: Lynn Peterson, Kyle Barnett

Date Located: 7/31/2015

6.8 Site Recorded by: Lynn Peterson, Kyle Barnett

Date Recorded: 7/31/2015

6.9 Site form update and revisions by:

Date updated:

6.10 Federal/State Permit No: n/a

6.11 Publication(s)/Report(s) where site is described: 2015 Cultural Resource Inventory of Proposed Mine Facilities and Access Roads within the Black Butte Copper Project Area, Meagher County, Montana.

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

6.12 Artifact Repository: n/a

6.13 Field notes/maps/photos repository: Tetra Tech, 303 Irene, Helena, MT

6.14 Photographs: DSCN0997 thru 998

***6.15 Map:** Attach a sketch map (if applicable) and photocopy of 7.5' Quad showing site location.

7. DESCRIPTION OF HISTORIC SITES

Smithsonian Number:

7.1 Property boundaries and justification:

: estimated

. : measured

7.2 Physical description of buildings/ structures/ features; dates of construction and major alterations; contribution of building/ structure to property significance:

7.3 Artifacts observed, collected:

7.4 Subsurface Testing Methods and Results:

7.5 Historical Information and Context (footnote sources):

7.6 Sources, files, people consulted: Natural Resources Conservation Service, SSURGO database, accessed August 2015. <http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>

After Smithsonian number received, submit completed form to the SHPO.

Site Form Photograph Field No./Name BB15-2

Site No. 24ME1105

Photo I.D. Code: DSCN0998

Storage Location: Tetra Tech, Helena, MT

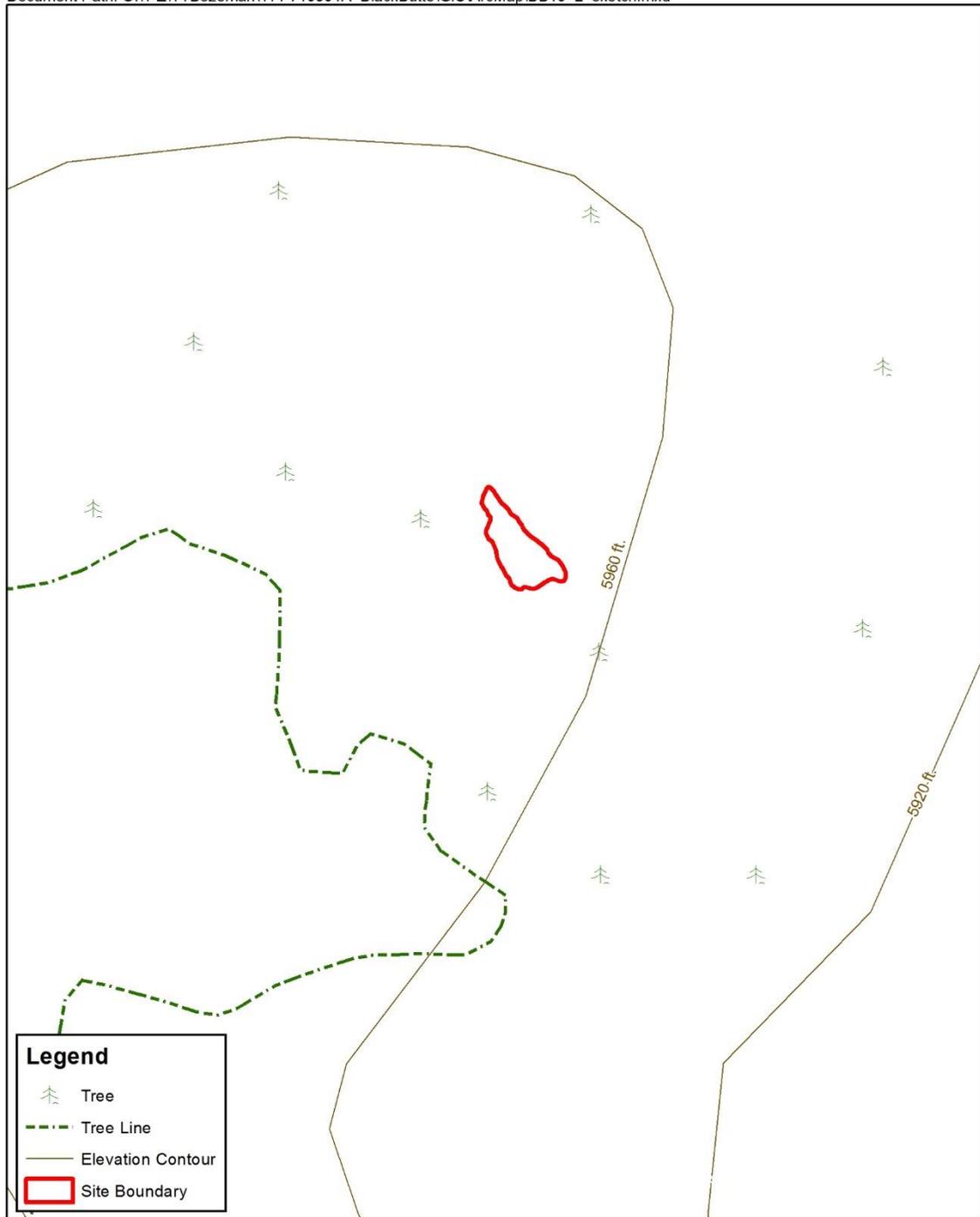
Include direction facing, feature number, and photo caption of each submitted photograph.

Site Overview, Facing East



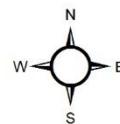
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Site No. 24ME1105

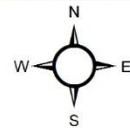
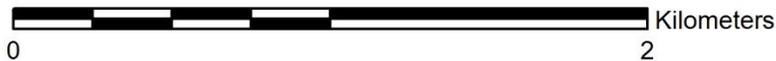
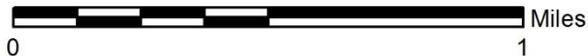
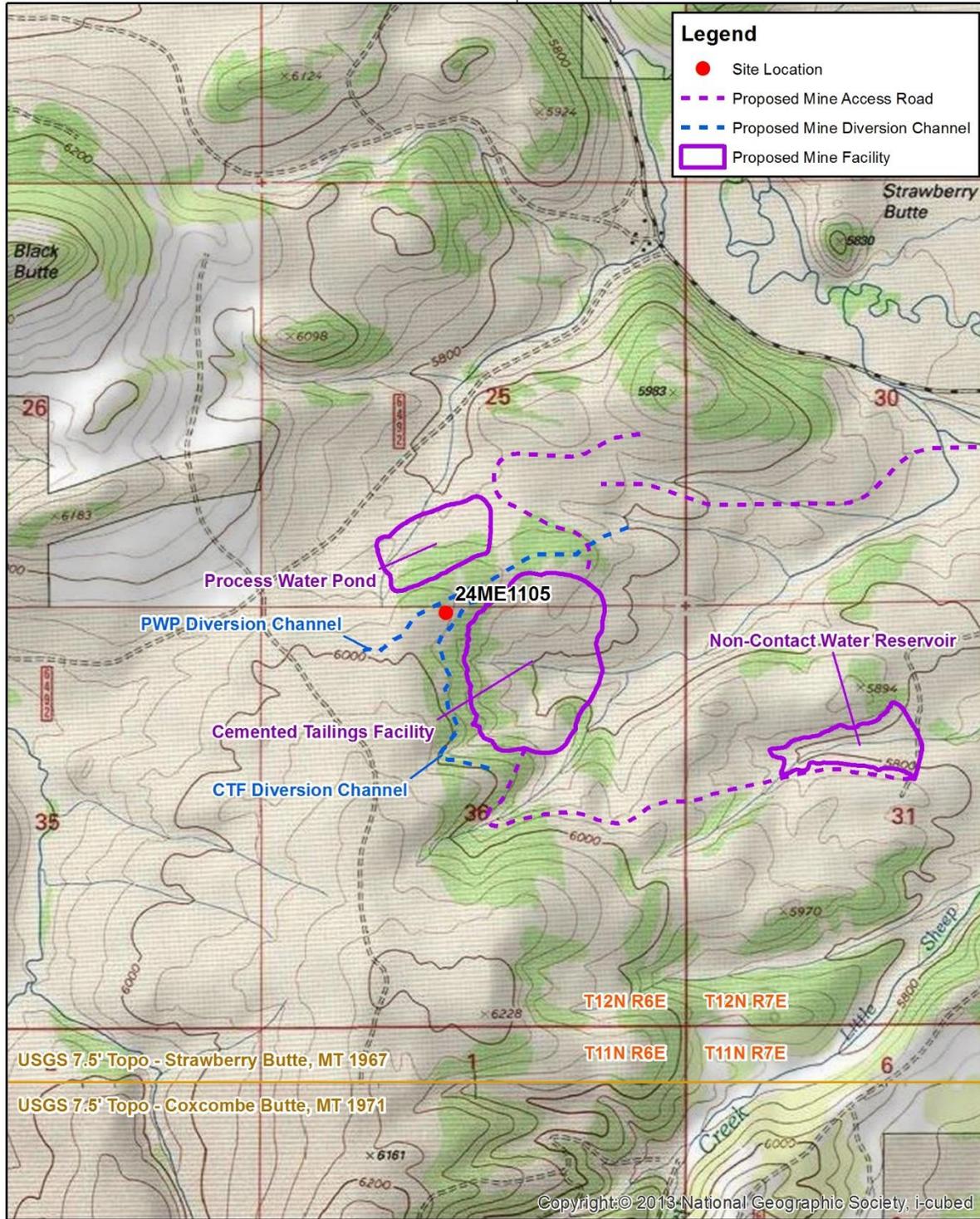
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0 120 Feet

0 40 Meters





Scale = 1:24,000

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

5. ENVIRONMENTAL SETTING

Smithsonian Number:

24ME1106

5.1 Geographic Setting: Park Woodland

5.2 Contour: Known Approximate Unknown

5.3 Elevation: 5740 ft

5.4 View/Aspect (estimated direction and distance): West, South, and Southeast

5.5 Sediments: Stubbs-Copenhaver complex. Surface soil is a loam that becomes a clay loam and then loam with depth. Argillite bedrock occurs at 35-60 inches (NRCS 2015).

Deposition: Surface Only Buried Only Surface and Buried Redeposited Other

5.6 Available Water Sources (use dropdown): Intermittent Strem

5.7 Major River Drainage (name, distance, elevation): Little Sheep Cr 1235 meters 5640 ft.

5.8 Minor Drainage (name, distance, elevation): unnamed small creek 50 meters 5720 ft

5.9 Local Vegetation: Sagebrush, grasses, and yarrow.

Regional Vegetation: Douglas fir, lodgepole pine, sagebrush, juniper, birch-leaf spirea, showy aster, Oregon-grape, twinberry, and bearberry.

6. ASSESSMENT, RECORDING & MANAGEMENT

6.1 Significance: Most prehistoric sites are recommended eligible under Criterion D for their ability to contribute information important to prehistory. This site should be tested to determine if an intact subsurface deposit exists that can address appropriate research questions. Additionally, further documentation, research and consultation with tribes is recommended to determine eligibility under Criteria A, B or C.

6.2 Condition/Integrity: This site should be tested to determine if this lithic scatter retains integrity of location, materials and association. These aspects require that the site be in its original depositional context; exhibit tools and sufficient lithic materials to answer appropriate research questions concerning lithic technology; and contain temporally diagnostic artifacts or datable materials.

6.3 Possible impacts to site: The site area occurs within the Black Butte Copper Mine but the nearest proposed facility, the Cemented Tailings Facility, lies about 300 meters to the west. Additionally, livestock graze the site area and their trampling may cause apparent flakes or edge damage to artifacts.

6.4 Evaluation: Does this property meet National Register criteria for eligibility? Yes No Unevaluated

Evaluation Procedures/Justification: See 6.1

6.5 Recording status: surface examination photo map subsurface tested

6.6 Recommendations (use dropdown): Test excavate

Comments:

6.7 Site Located by: Lynn Peterson, Kyle Barnett

Date Located: 7/31/2015

6.8 Site Recorded by: Lynn Peterson, Kyle Barnett

Date Recorded: 7/31/2015

6.9 Site form update and revisions by:

Date updated:

6.10 Federal/State Permit No: n/a

6.11 Publication(s)/Report(s) where site is described: 2015 Cultural Resource Inventory of Proposed Mine Facilities and Access Roads within the Black Butte Copper Project Area, Meagher County, Montana.

6.12 Artifact Repository: n/a

6.13 Field notes/maps/photos repository: Tetra Tech, 303 Irene, Helena, MT

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

6.14 Photographs: DSCN0999 thru 1000

***6.15 Map: Attach a sketch map (if applicable) and photocopy of 7.5' Quad showing site location.**

7. DESCRIPTION OF HISTORIC SITES

Smithsonian Number:

7.1 Property boundaries and justification:

: estimated

. : measured

7.2 Physical description of buildings/ structures/ features; dates of construction and major alterations; contribution of building/ structure to property significance:

7.3 Artifacts observed, collected:

7.4 Subsurface Testing Methods and Results:

7.5 Historical Information and Context (footnote sources):

7.6 Sources, files, people consulted:

Natural Resources Conservation Service, SSURGO database, accessed August 2015.

<http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>

Site Form Photograph Field No./Name BB15-3

Site No. 24ME1106

Photo I.D. Code: DSCN0999

Storage Location: Tetra Tech, Helena, MT

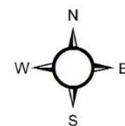
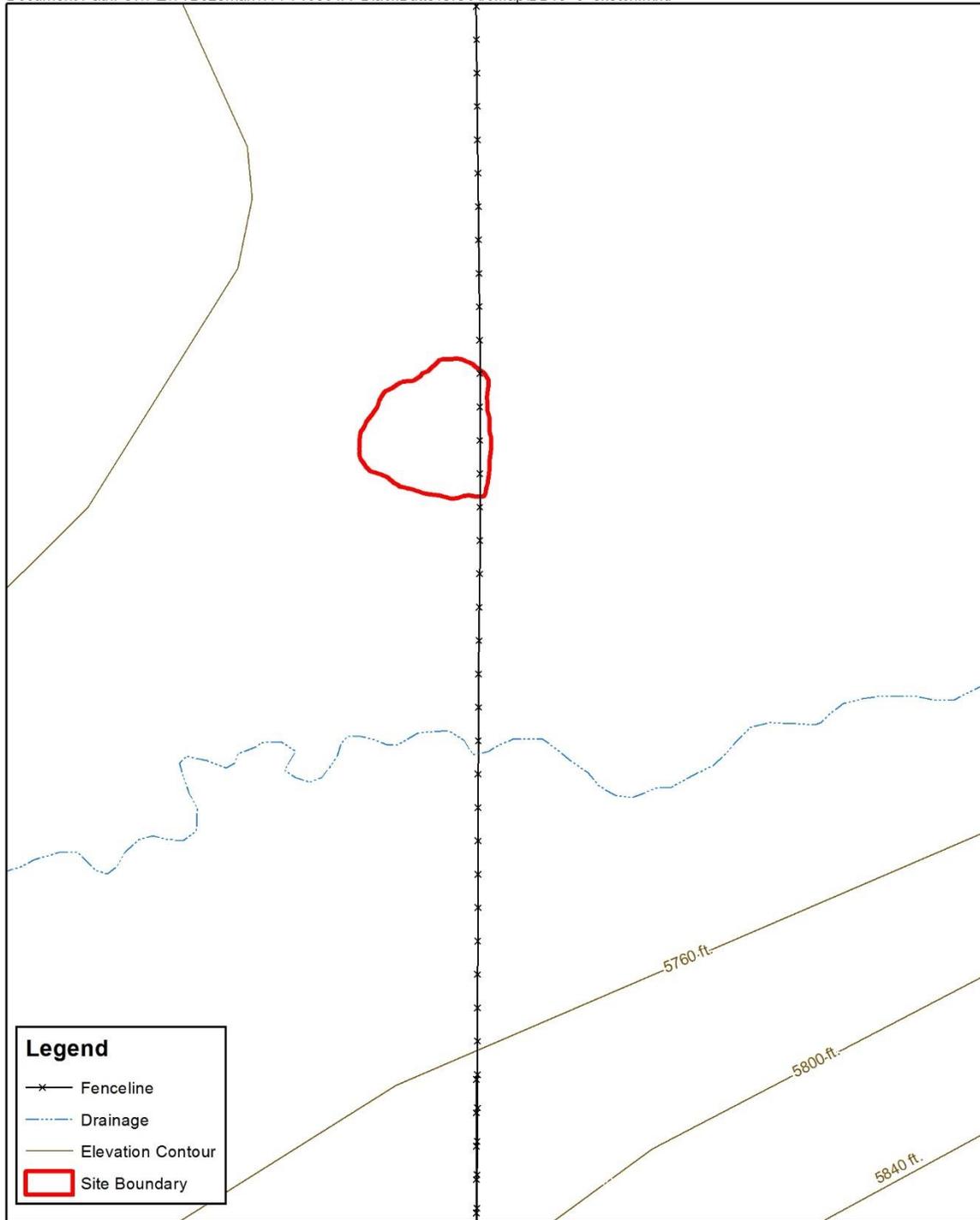
Include direction facing, feature number, and photo caption of each submitted photograph.

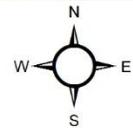
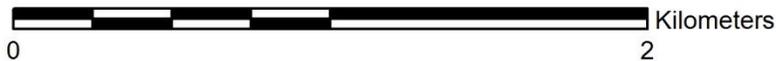
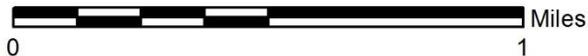
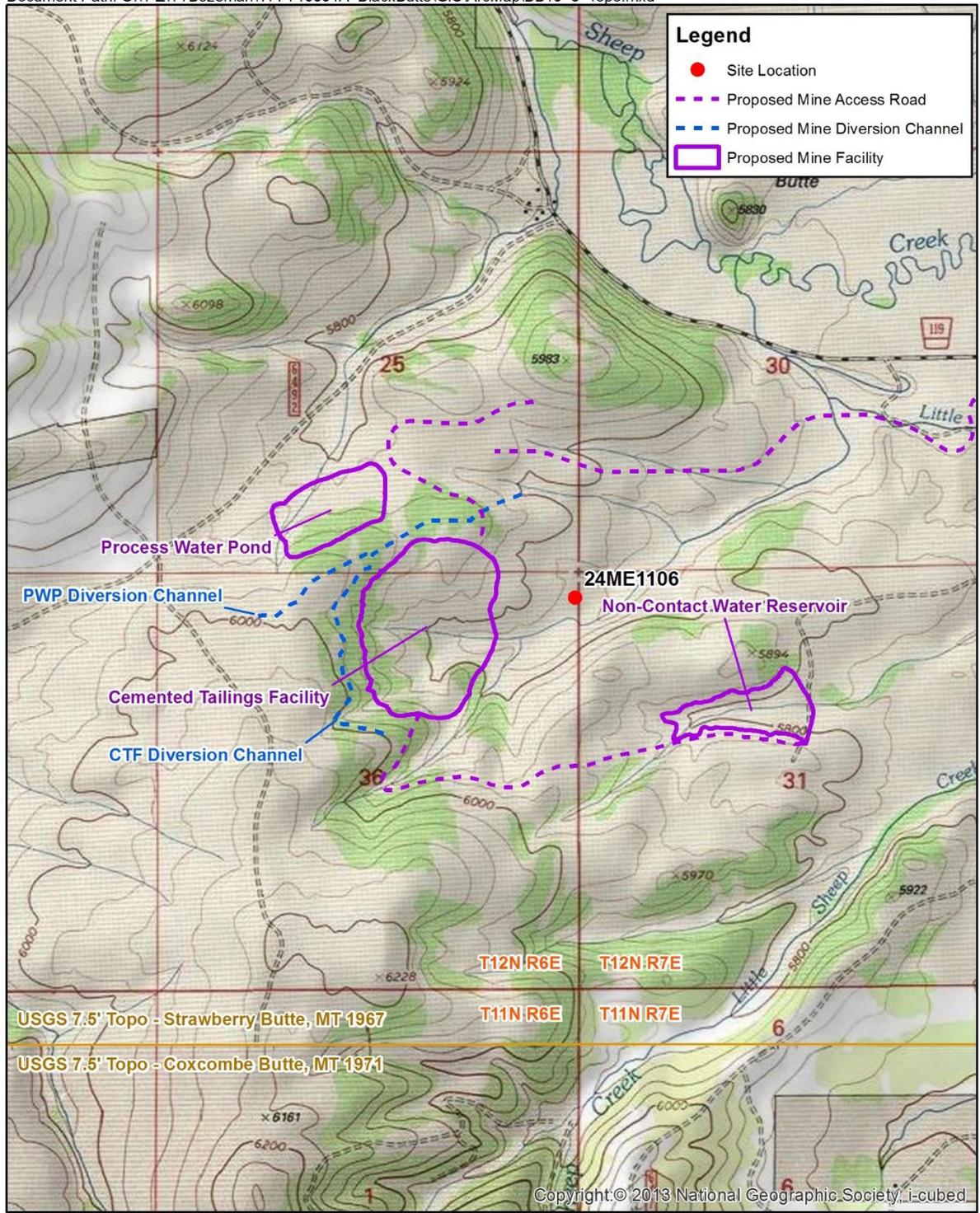
Site Overview, Facing Northeast



Site Sketch Field No./Name BB15-3
Site No. 24ME1106

Document Path: O:\T-Z\TTBozeman\114-710301A BlackButte\GIS\ArcMap\BB15_3 sketch.mxd





Scale = 1:24,000

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

4.1 Apparent Time Period of Site (use dropdowns):

Prehistoric Prehistoric More Than One Period

Historic

Paleontological

5. ENVIRONMENTAL SETTING

Smithsonian Number:

24ME1107

5.1 Geographic Setting: Park Woodland

5.2 Contour: Known Approximate Unknown

5.3 Elevation: 5730 ft

5.4 View/Aspect (estimated direction and distance): East

5.5 Sediments: Owenspring-Cheadle, extremely stony-Rock island, stony families, complex. Surface soil is a loam that becomes gravelly and has a higher clay content with depth. Paralithic bedrock occurs at 20-39 inches (NRCS 2015).

Deposition: Surface Only Buried Only Surface and Buried Redeposited Other

5.6 Available Water Sources (use dropdown): Intermittent Strem

5.7 Major River Drainage (name, distance, elevation): Little Sheep Cr 485 meters 5640 ft.

5.8 Minor Drainage (name, distance, elevation): unnamed small creek 200 meters 5700 ft

5.9 Local Vegetation: Sagebrush, grasses, yarrow, and ground juniper.

Regional Vegetation: Douglas fir, lodgepole pine, sagebrush, juniper, birch-leaf spirea, showy aster, Oregon-grape, twinberry, and bearberry.

6. ASSESSMENT, RECORDING & MANAGEMENT

6.1 Significance: Most prehistoric sites are recommended eligible under Criterion D for their ability to contribute information important to prehistory. This site should be tested to determine if an intact subsurface deposit exists that can address appropriate research questions. Additionally, further documentation, research and consultation with tribes is recommended to determine eligibility under Criteria A, B or C.

6.2 Condition/Integrity: This site should be tested to determine if this lithic scatter retains integrity of location, materials and association. These aspects require that the site be in its original depositional context; exhibit tools and sufficient lithic materials to answer appropriate research questions concerning lithic technology; and contain temporally diagnostic artifacts or datable materials.

6.3 Possible impacts to site: The site area has already been disturbed by the installation of an east-west fenceline and the wearing of a path by grazing cows. Additionally, the sites area occurs within the Black Butte Copper Mine and a proposed access road lies about 10 meters south of the site area. At this time, it is not known if access road development will involve cut or fill construction methods.

6.4 Evaluation: Does this property meet National Register criteria for eligibility? Yes No Unevaluated

Evaluation Procedures/Justification: See 6.1

6.5 Recording status: surface examination photo map subsurface tested

6.6 Recommendations (use dropdown): Test excavate

Comments:

6.7 Site Located by: Lynn Peterson, Kyle Barnett

Date Located: 7/31/2015

6.8 Site Recorded by: Lynn Peterson, Kyle Barnett

Date Recorded: 7/31/2015

6.9 Site form update and revisions by:

Date updated:

6.10 Federal/State Permit No: n/a

6.11 Publication(s)/Report(s) where site is described: 2015 Cultural Resource Inventory of Proposed Mine Facilities and Access Roads within the Black Butte Copper Project Area, Meagher County, Montana.

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

6.12 Artifact Repository: n/a

6.13 Field notes/maps/photos repository: Tetra Tech, 303 Irene, Helena, MT

6.14 Photographs: DSCN1004 thru 1006

*6.15 Map: Attach a sketch map (if applicable) and photocopy of 7.5' Quad showing site location.

7. DESCRIPTION OF HISTORIC SITES

Smithsonian Number:

7.1 Property boundaries and justification:

: estimated

. : measured

7.2 Physical description of buildings/ structures/ features; dates of construction and major alterations; contribution of building/ structure to property significance:

7.3 Artifacts observed, collected:

7.4 Subsurface Testing Methods and Results:

7.5 Historical Information and Context (footnote sources):

7.6 Sources, files, people consulted: Natural Resources Conservation Service, SSURGO database, accessed August 2015. <http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>

After Smithsonian number received, submit completed form to the SHPO.

Site Form Photograph Field No./Name BB15-4

Site No. 24ME1107

Photo I.D. Code: DSCN1005

Storage Location: Tetra Tech, Helena, MT

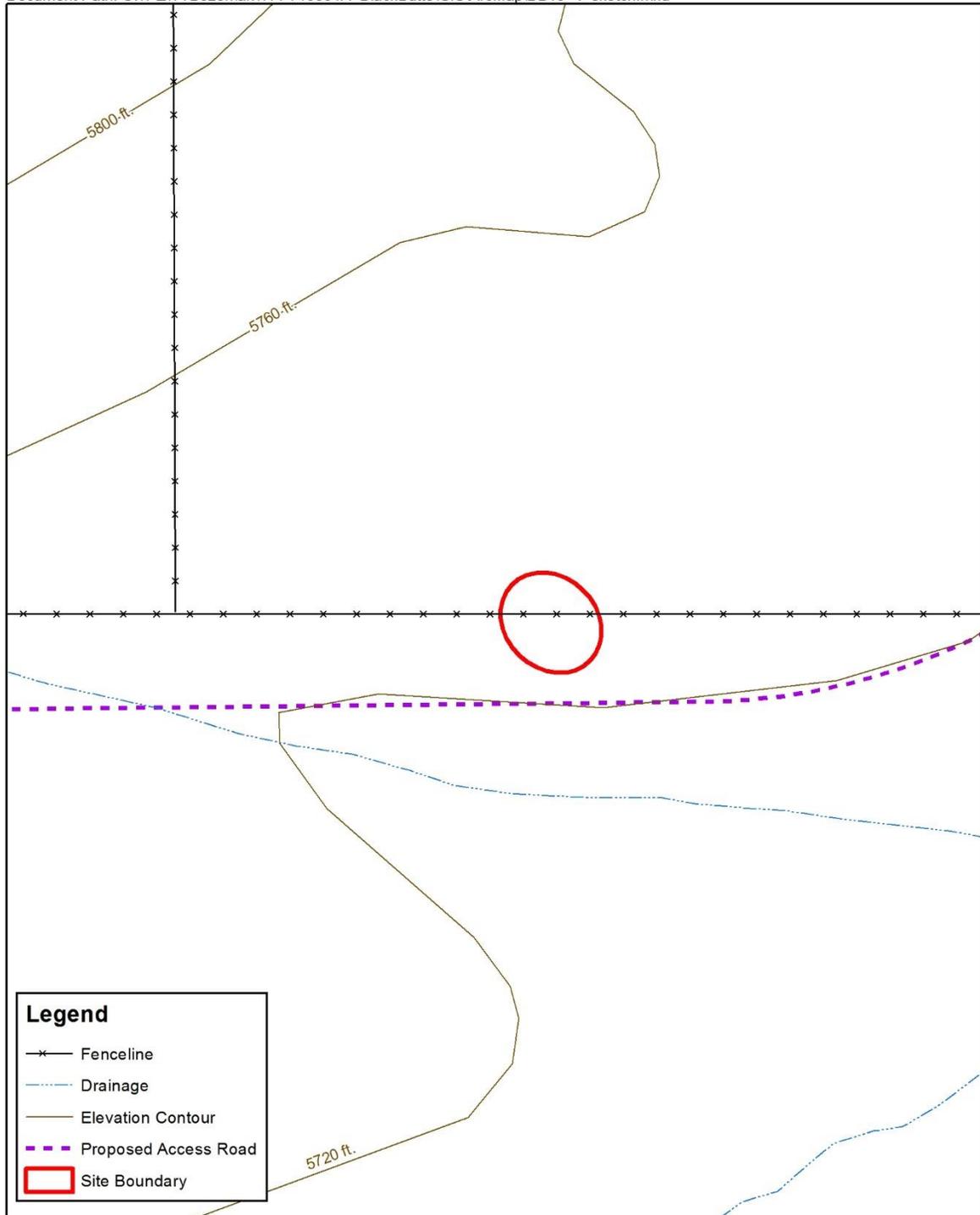
Include direction facing, feature number, and photo caption of each submitted photograph.

Site Overview, Facing East



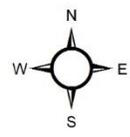
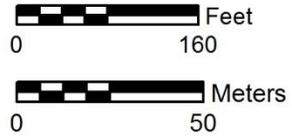
Site Sketch Field No./Name BB15-4
Site No. 24ME1107

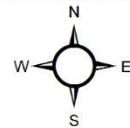
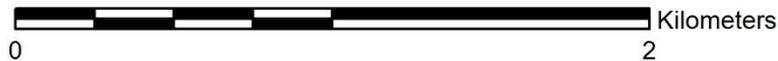
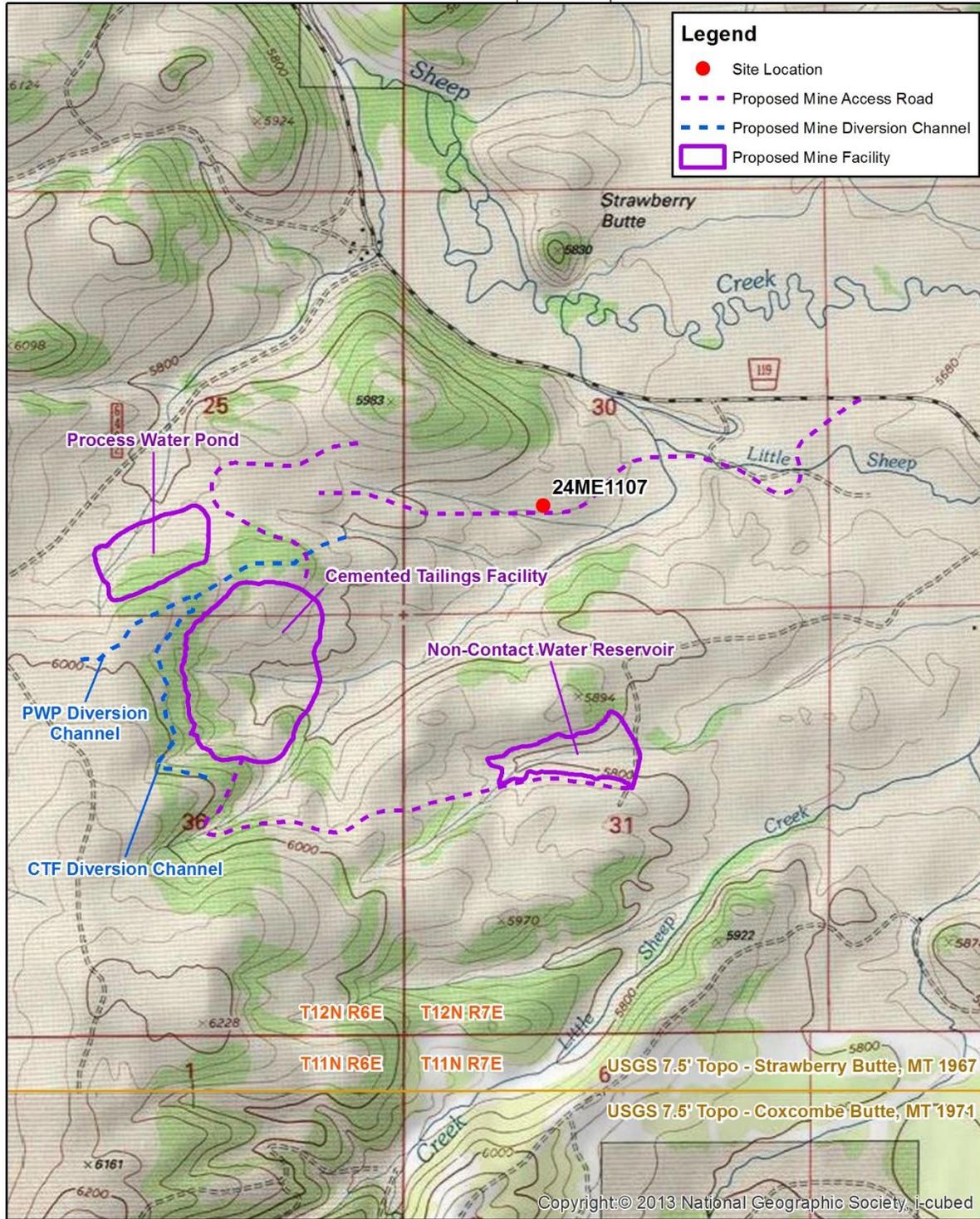
Document Path: O:\T-Z\TTBozeman\114-710301A_BlackButte\GIS\ArcMap\BB15_4_sketch.mxd



Legend

- x— Fenceline
- - - Drainage
- Elevation Contour
- - - Proposed Access Road
- Site Boundary





Scale = 1:24,000

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

5. ENVIRONMENTAL SETTING

Smithsonian Number:

24ME1108

5.1 Geographic Setting: Park Woodland

5.2 Contour: Known Approximate Unknown

5.3 Elevation: 5680 ft

5.4 View/Aspect (estimated direction and distance): East

5.5 Sediments: Owenspring-Cheadle, extremely stony-Rock island, stony families, complex. Surface soil is a loam that becomes gravelly and has a higher clay content with depth. Paralithic bedrock occurs at 20-39 inches (NRCS 2015). Near drainages, sediments are characterized by a silt loam that also has a higher clay content with depth.

Deposition: Surface Only Buried Only Surface and Buried Redeposited Other

5.6 Available Water Sources (use dropdown): Intermittent Strem

5.7 Major River Drainage (name, distance, elevation): Little Sheep Cr 40 meters 5660 ft.

5.8 Minor Drainage (name, distance, elevation): unnamed small creek 0 meters 5660 ft

5.9 Local Vegetation: Sagebrush, grasses, yarrow, and ground juniper.

Regional Vegetation: Douglas fir, lodgepole pine, sagebrush, juniper, birch-leaf spirea, showy aster, Oregon-grape, twinberry, and bearberry.

6. ASSESSMENT, RECORDING & MANAGEMENT

6.1 Significance: Most prehistoric sites are recommended eligible under Criterion D for their ability to contribute information important to prehistory. This site should be tested to determine if an intact subsurface deposit exists that can address appropriate research questions. Additionally, further documentation, research and consultation with tribes is recommended to determine eligibility under Criteria A, B or C.

6.2 Condition/Integrity: This site should be tested to determine if this lithic scatter retains integrity of location, materials and association. These aspects require that the site be in its original depositional context; exhibit tools and sufficient lithic materials to answer appropriate research questions concerning lithic technology; and contain temporally diagnostic artifacts or datable materials.

6.3 Possible impacts to site: The site area has been disturbed by the wearing of several paths by grazing cows. Flakes can be found along these cow paths and cattle trampling may have produced apparent flakes and edge damage. Additionally, the sites area occurs within the Black Butte Copper Mine and a proposed access road bisects the site area. At this time, it is not known if access road development will involve cut or fill construction methods.

6.4 Evaluation: Does this property meet National Register criteria for eligibility? Yes No

Unevaluated

Evaluation Procedures/Justification: See 6.1

6.5 Recording status: surface examination photo map subsurface tested

6.6 Recommendations (use dropdown): Test excavate

Comments:

6.7 Site Located by: Lynn Peterson, Kyle Barnett

Date Located: 8/1/2015

6.8 Site Recorded by: Lynn Peterson, Kyle Barnett

Date Recorded: 8/1/2015

6.9 Site form update and revisions by:

Date updated:

6.10 Federal/State Permit No: n/a

6.11 Publication(s)/Report(s) where site is described: 2015 Cultural Resource Inventory of Proposed Mine Facilities and Access Roads within the Black Butte Copper Project Area, Meagher County, Montana.

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

6.12 Artifact Repository: n/a

6.13 Field notes/maps/photos repository: Tetra Tech, 303 Irene, Helena, MT

6.14 Photographs: DSCN1007-1008 and 1016-1018.

***6.15 Map:** Attach a sketch map (if applicable) and photocopy of 7.5' Quad showing site location.

7. DESCRIPTION OF HISTORIC SITES

Smithsonian Number:

7.1 Property boundaries and justification:

: estimated

. : measured

7.2 Physical description of buildings/ structures/ features; dates of construction and major alterations; contribution of building/ structure to property significance:

7.3 Artifacts observed, collected:

7.4 Subsurface Testing Methods and Results:

7.5 Historical Information and Context (footnote sources):

7.6 Sources, files, people consulted: Natural Resources Conservation Service, SSURGO database, accessed August 2015. <http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>

After Smithsonian number received, submit completed form to the SHPO.

Site Form Photograph Field No./Name BB15-5

Site No. 24ME1108

Photo I.D. Code: DSCN1005

Storage Location: Tetra Tech, Helena, MT

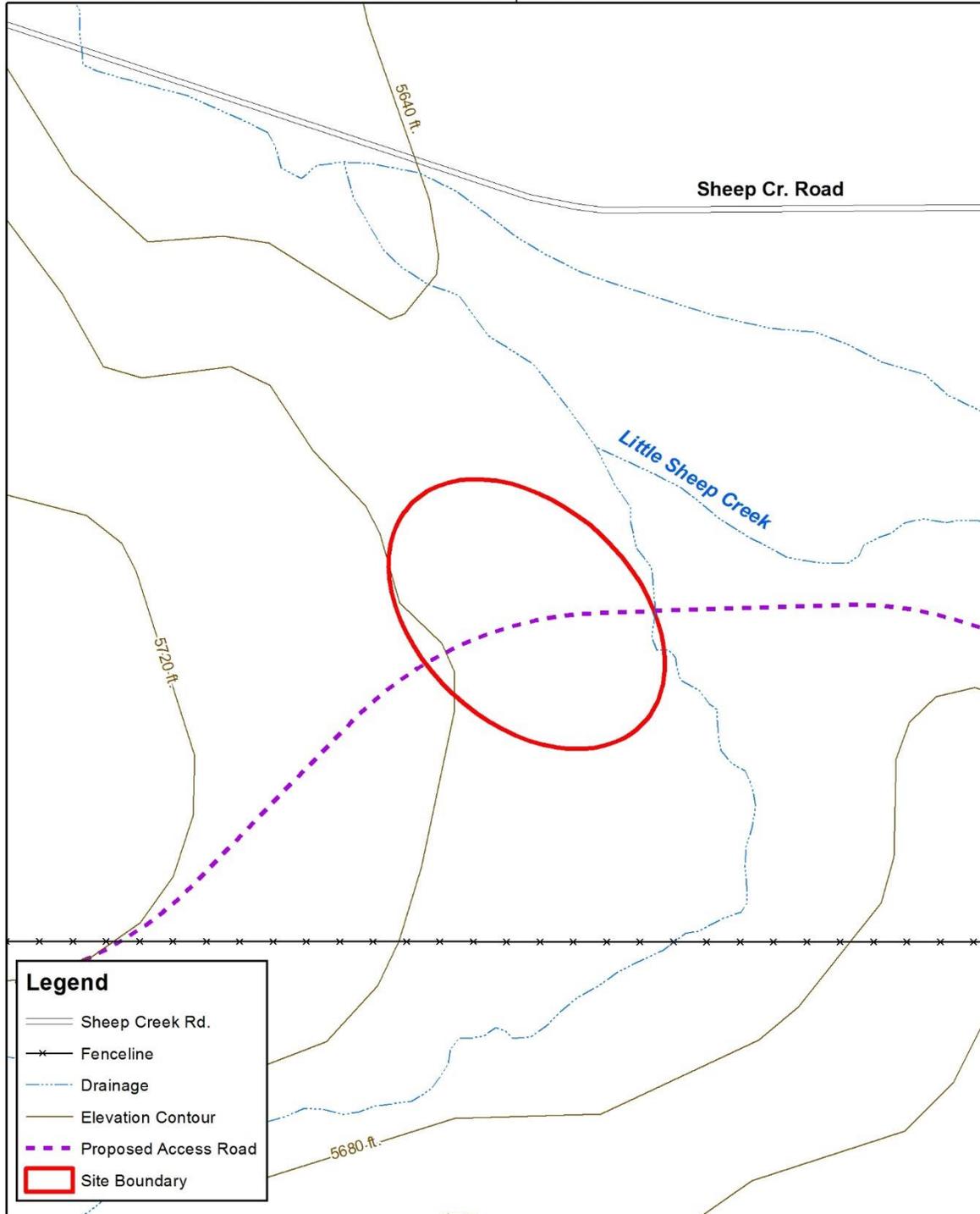
Include direction facing, feature number, and photo caption of each submitted photograph.

Site Overview, Facing East



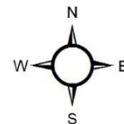
Site Sketch Field No./Name BB15-5
Site No. 24ME1108

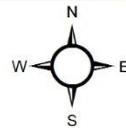
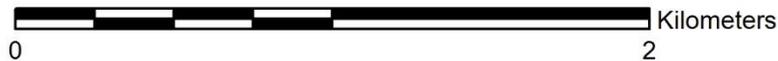
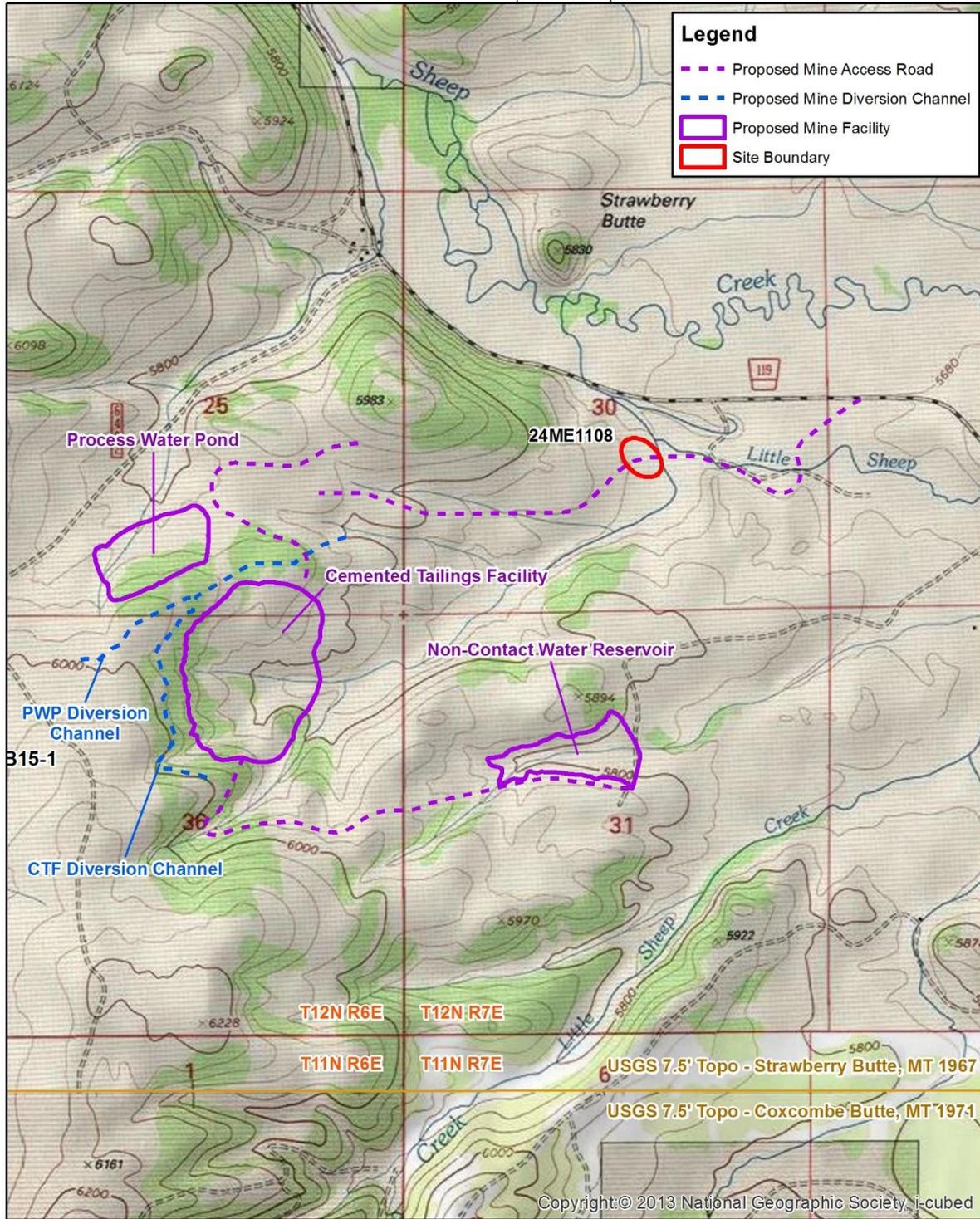
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0 300 Feet

0 100 Meters





Scale = 1:24,000

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

5. ENVIRONMENTAL SETTING

Smithsonian Number:

24ME1109

5.1 Geographic Setting: Park Woodland

5.2 Contour: Known Approximate Unknown

5.3 Elevation: 5880 ft

5.4 View/Aspect (estimated direction and distance): Southeast

5.5 Sediments: Stubbs-Copenhaver complex. Surface soil is a loam that becomes a clay loam and then loam with depth. Argillite bedrock occurs at 35-60 inches (NRCS 2015).

Deposition: Surface Only Buried Only Surface and Buried Redeposited Other

5.6 Available Water Sources (use dropdown): Intermittent Strem

5.7 Major River Drainage (name, distance, elevation): Sheep Creek 900 meters 5620 ft.

5.8 Minor Drainage (name, distance, elevation): unnamed small creek 190 meters 5840 ft

5.9 Local Vegetation: Sagebrush, and grasses.

Regional Vegetation: Douglas fir, lodgepole pine, sagebrush, juniper, birch-leaf spirea, showy aster, Oregon-grape, twinberry, and bearberry.

6. ASSESSMENT, RECORDING & MANAGEMENT

6.1 Significance: Most prehistoric sites are recommended eligible under Criterion D for their ability to contribute information important to prehistory. This site should be tested to determine if an intact subsurface deposit exists that can address appropriate research questions. Additionally, further documentation, research and consultation with tribes is recommended to determine eligibility under Criteria A, B or C.

6.2 Condition/Integrity: This site should be tested to determine if this lithic scatter retains integrity of location, materials and association. These aspects require that the site be in its original depositional context; exhibit tools and sufficient lithic materials to answer appropriate research questions concerning lithic technology; and contain temporally diagnostic artifacts or datable materials.

6.3 Possible impacts to site: The site area occurs within the Black Butte Copper Mine and a proposed access road bisects the site area. At this time, it is not known if access road development will involve cut or fill construction methods.

6.4 Evaluation: Does this property meet National Register criteria for eligibility? Yes No Unevaluated

Evaluation Procedures/Justification: See 6.1

6.5 Recording status: surface examination photo map subsurface tested

6.6 Recommendations (use dropdown): Test excavate

Comments:

6.7 Site Located by: Lynn Peterson, Kyle Barnett

Date Located: 8/1/2015

6.8 Site Recorded by: Lynn Peterson, Kyle Barnett

Date Recorded: 8/1/2015

6.9 Site form update and revisions by:

Date updated:

6.10 Federal/State Permit No: n/a

6.11 Publication(s)/Report(s) where site is described: 2015 Cultural Resource Inventory of Proposed Mine Facilities and Access Roads within the Black Butte Copper Project Area, Meagher County, Montana.

6.12 Artifact Repository: n/a

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

6.13 Field notes/maps/photos repository: Tetra Tech, 303 Irene, Helena, MT

6.14 Photographs: DSCN1011-1012.

***6.15 Map: Attach a sketch map (if applicable) and photocopy of 7.5' Quad showing site location.**

7. DESCRIPTION OF HISTORIC SITES

Smithsonian Number:

7.1 Property boundaries and justification:

: estimated

. : measured

7.2 Physical description of buildings/ structures/ features; dates of construction and major alterations; contribution of building/ structure to property significance:

7.3 Artifacts observed, collected:

7.4 Subsurface Testing Methods and Results:

7.5 Historical Information and Context (footnote sources):

7.6 Sources, files, people consulted: Natural Resources Conservation Service, SSURGO database, accessed August 2015. <http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>

After Smithsonian number received, submit completed form to the SHPO.

Site Form Photograph Field No./Name BB15-6

Site No. 24ME1109

Photo I.D. Code: DSCN1012

Storage Location: Tetra Tech, Helena, MT

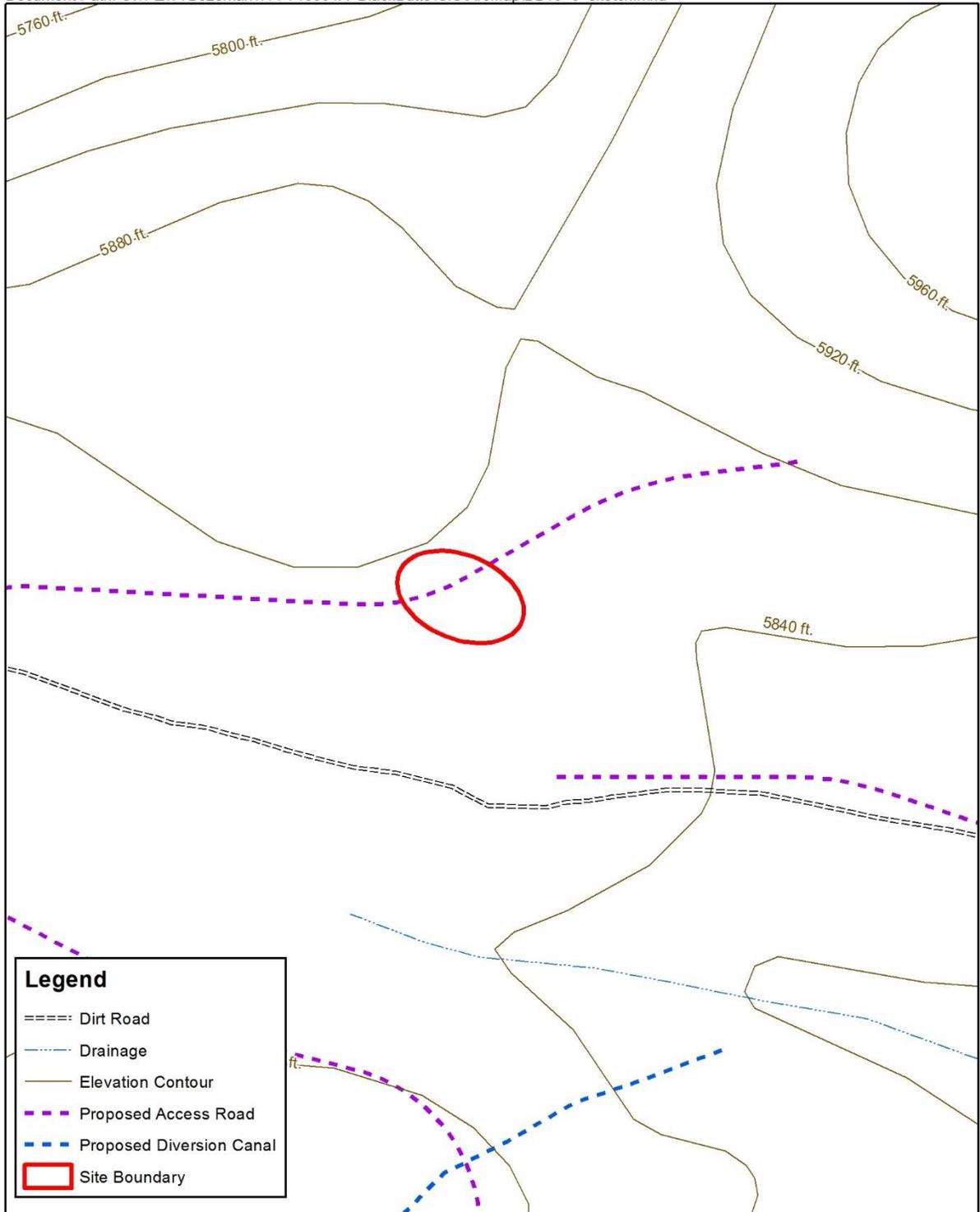
Include direction facing, feature number, and photo caption of each submitted photograph.

Site Overview, Facing Northwest



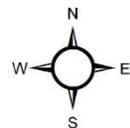
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Site No. 24ME1109

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0 300 Feet

0 100 Meters



MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

5. ENVIRONMENTAL SETTING

Smithsonian Number:

24ME1110

5.1 Geographic Setting: Park Woodland

5.2 Contour: Known Approximate Unknown

5.3 Elevation: 5860 ft

5.4 View/Aspect (estimated direction and distance): West

5.5 Sediments: Stubbs-Copenhaver complex. Surface soil is a loam that becomes a clay loam and then loam with depth. Argillite bedrock occurs at 35-60 inches (NRCS 2015).

Deposition: Surface Only Buried Only Surface and Buried Redeposited Other

5.6 Available Water Sources (use dropdown): Intermittent Strem

5.7 Major River Drainage (name, distance, elevation): Sheep Creek 1070 meters 5620 ft.

5.8 Minor Drainage (name, distance, elevation): unnamed small creek 280 meters 5800 ft

5.9 Local Vegetation: Sagebrush, and grasses.

Regional Vegetation: Douglas fir, lodgepole pine, sagebrush, juniper, birch-leaf spirea, showy aster, Oregon-grape, twinberry, and bearberry.

6. ASSESSMENT, RECORDING & MANAGEMENT

6.1 Significance: Most prehistoric sites are recommended eligible under Criterion D for their ability to contribute information important to prehistory. This site should be tested to determine if an intact subsurface deposit exists that can address appropriate research questions. Additionally, further documentation, research and consultation with tribes is recommended to determine eligibility under Criteria A, B or C.

6.2 Condition/Integrity: This site should be tested to determine if this lithic scatter retains integrity of location, materials and association. These aspects require that the site be in its original depositional context; exhibit tools and sufficient lithic materials to answer appropriate research questions concerning lithic technology; and contain temporally diagnostic artifacts or datable materials.

6.3 Possible impacts to site: The site area occurs within the Black Butte Copper Mine and a proposed access is about 8 meters away from the site area and will likely disturb this site. At this time, it is not known if access road development will involve cut or fill construction methods.

6.4 Evaluation: Does this property meet National Register criteria for eligibility? Yes No Unevaluated

Evaluation Procedures/Justification: See 6.1

6.5 Recording status: surface examination photo map subsurface tested

6.6 Recommendations (use dropdown): Test excavate

Comments:

6.7 Site Located by: Lynn Peterson, Kyle Barnett

Date Located: 8/1/2015

6.8 Site Recorded by: Lynn Peterson, Kyle Barnett

Date Recorded: 8/1/2015

6.9 Site form update and revisions by:

Date updated:

6.10 Federal/State Permit No: n/a

6.11 Publication(s)/Report(s) where site is described: 2015 Cultural Resource Inventory of Proposed Mine Facilities and Access Roads within the Black Butte Copper Project Area, Meagher County, Montana.

6.12 Artifact Repository: n/a

6.13 Field notes/maps/photos repository: Tetra Tech, 303 Irene, Helena, MT

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6.14 Photographs: DSCN1013-1014.

***6.15 Map: Attach a sketch map (if applicable) and photocopy of 7.5' Quad showing site location.**

7. DESCRIPTION OF HISTORIC SITES

Smithsonian Number:

7.1 Property boundaries and justification:

: estimated

. : measured

7.2 Physical description of buildings/ structures/ features; dates of construction and major alterations; contribution of building/ structure to property significance:

7.3 Artifacts observed, collected:

7.4 Subsurface Testing Methods and Results:

7.5 Historical Information and Context (footnote sources):

7.6 Sources, files, people consulted: Natural Resources Conservation Service, SSURGO database, accessed August 2015. <http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>

Site Form Photograph Field No./Name BB15-7

Site No. 24ME1110

Photo I.D. Code: DSCN1014

Storage Location: Tetra Tech, Helena, MT

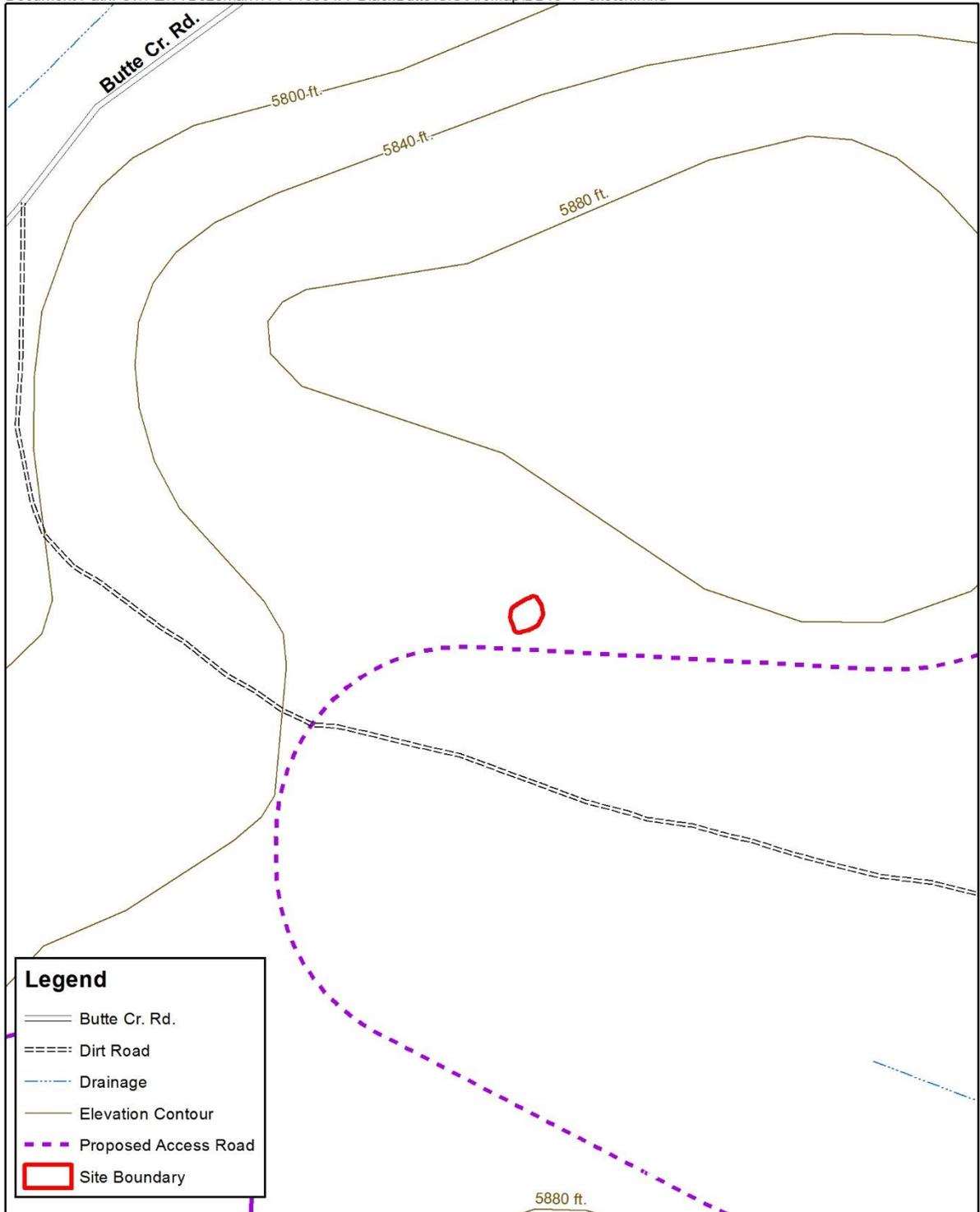
Include direction facing, feature number, and photo caption of each submitted photograph.

Site Overview, Facing Southwest



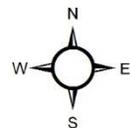
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Site No. 24ME1110

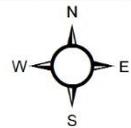
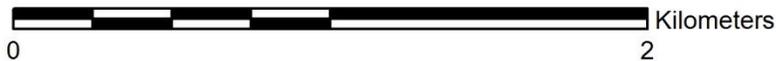
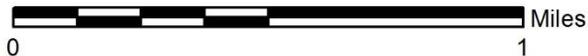
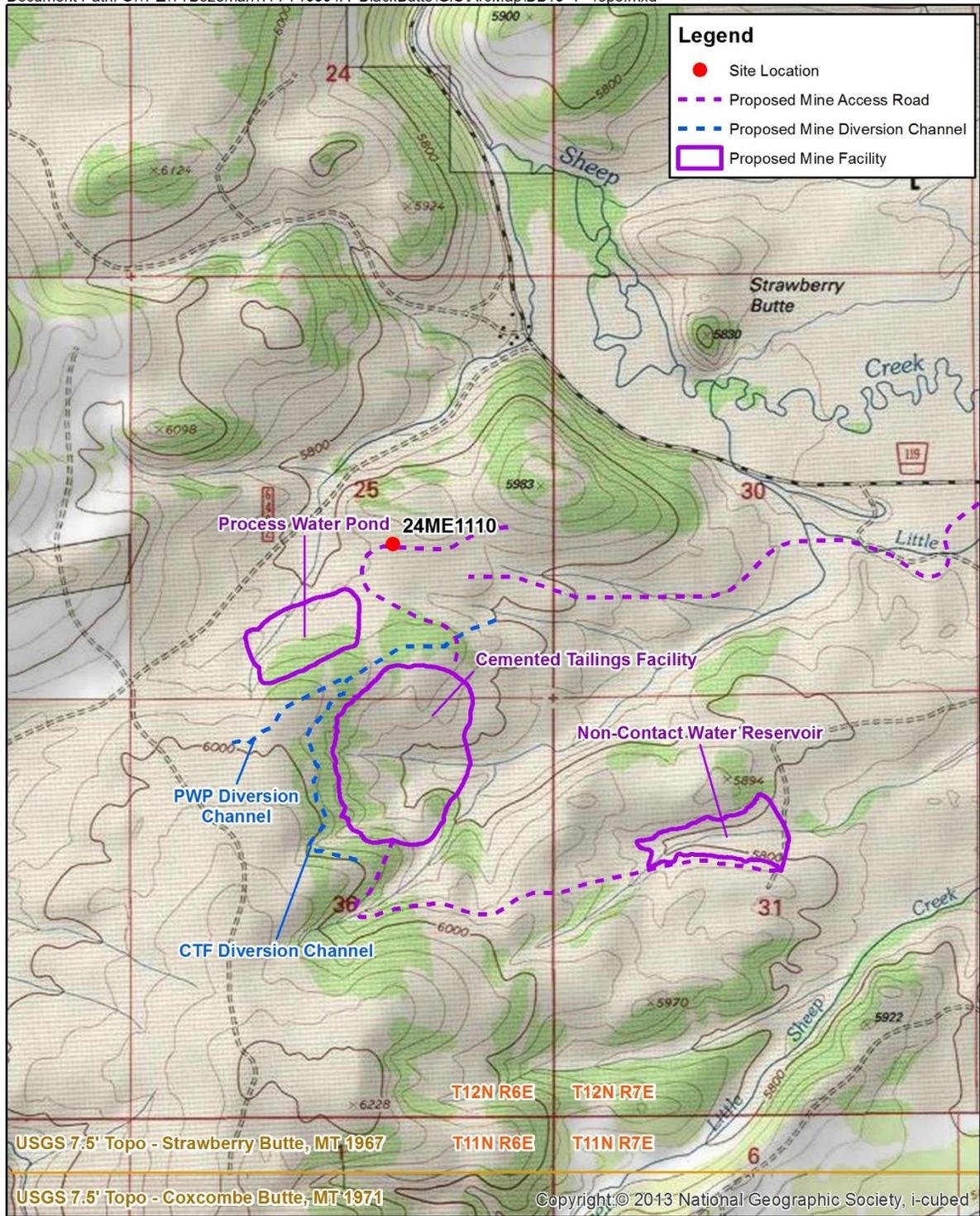
Document Path: O:\T-Z\TTBozeman\114-710301A BlackButte\GIS\ArcMap\BB15_7 sketch.mxd



0 240 Feet

0 80 Meters





Scale = 1:24,000

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

1. IDENTIFICATION

*required to receive Smithsonian number

1.1 Smithsonian Number: 24ME1111

1.2 Field Designation: BB15-8

1.3 Project Name: Black Butte Copper Mine Inventory 2015

1.4 Agency Project Number:

1.5 Consultant Project Number: 114-710301A

2. LOCATION

*2.1 Township: 12 N Range: 6 E Section: 25 ¼ Section(s): , ,
QQQ QQ Q

*2.2 County: Meagher

*2.3 UTM Coordinates: Zone 12 E see 3.3 m; N m

*Datum used: NAD 83 conus

*2.4 Administrative/Surface Ownership: (Agency/Region/District/Office) Private

*2.5 7.5' USGS Map Name, Date: Strawberry Butte, MT 1967

2.6 Narrative of access: From the junction of Hwys 12 and 89 go 15 miles north on 89 to Sheep Creek Rd (FR 119). Turn west and drive 1.7 miles to park off road in between Strawberry Butte and a tree-covered knoll. From the south side of the road, follow an old road (littered with chert) and you have accessed the east side of the district area. To access the west side, continue along Sheep Creek Rd. until you reach Butte Creek Rd. Turn left and drive southwest for 0.5 mile. Lithic artifacts occur on both sides of Butte Creek Rd.

2.7 City/Town: Vicinity of: White Sulphur Springs

3. DESCRIPTION

*3.1 Site Category (choose one): Prehistoric Historic Paleontological Combination Other

*3.2 Site Type (see recommended site type list, choose all that apply): Archaeological District

3.3 Narrative Description of Site: The boundary for the Sheep Creek Quarry Archaeological District is defined by a group of 13 lithic scatters (24ME160-24ME166, and 24ME1105-24ME1110) containing from five to 40 chert flakes identified in the Black Butte Copper Mine project area since 2011. Cultural resource inventories have also noted numerous isolated flakes between these sites.

The large number of isolated flakes precluded their individual recording beyond the definition of a loose boundary and the identification of the 13 lithic scatter sites that lie within the greater 24ME1111 district boundary. The inclusion of smaller sites, in this case lithic scatters, within a larger defined boundary follows a similar methodology employed by the Montana SHPO for historic districts where individual properties receive their own Smithsonian trinomial but lie within a larger historic district which is assigned its own number.

The number of lithic scatter sites and isolated flakes indicate the Sheep Creek Quarry Archaeological District was used as a surface stone quarry by prehistoric peoples. No quarry pits or stone ring features have been identified to date, and there appears to be a near absence of patterned tools and a total absence of diagnostic artifacts. Additionally, the available chert is generally a poor quality toolstone material. The district's composition suggests moderate use by prehistoric people who tested chert nodules, conducted some lithic reduction, but did not produce highly patterned tools.

Chert naturally occurs across the district area and J. Zieg, geologist at Tintina Resources, Inc., describes the geology of the Black Butte Copper Mine project area below (Personal communication, August 2015):

"The Black Butte project area is hosted by a geology that produces voluminous amounts of 'cherty' material, generally called 'jasperoid' by geologists, or in this area 'silicified gossan' (remnants of intensely weathered iron-sulfide mineralization). The genesis of this material involves the surficial weathering of the aerially extensive bedded pyrite zones in the host-rock of the Newland shale. The portion of the Newland outcrop belt that contains the greatest abundance of jasperoid extends from about two miles east of US Highway 89 to west of the Smith River – a distance of approximately 20 miles. This exposure belt averages approximately five miles in width. Bedded pyrite zones are scattered across 3,000 feet of Newland stratigraphy. When these zones oxidize near surface, liberation of the sulfur ions from the weathering of pyrite create sulfuric acid,

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which carries silica as well as many other ions. This acid is then buffered by the high concentrations of dolomite (a carbonate-rich rock) in the Newland shale, and as the acid is consumed, silica then precipitates as very fine-grained massive material along with a good deal of the iron-oxide liberated during oxidation of pyrite. Huge volumes of this iron-rich silicified material have developed across this 100 square mile area and as a result form a ubiquitous component of the surficial geology – weathered fragments of this material are common in the alluvial material and especially in the soils on and near the exposed weathered portions of the extensive pyrite zones. A good example of this surrounds the Black Butte Iron mine, on Iron Butte, where the owners mine this material – there the silica contents are highly variable but bands of very silicified material are common."

District 24ME1111 occurs in the S 1/2, S 1/2 of Section 24, all of Section 25, the E 1/2, E 1/2, SE 1/4 of Section 26, the NE 1/4, NE 1/4, NE 1/4 of Section 35, and the N 1/2, N 1/2 of Section 36, T12N, R6E; and the NW, SW, SE quarters of Section 30, and the N 1/2, NW 1/4 of Section 31, T12N, R7E.

UTM Coordinates: Northernmost - E 505968 m; N 5181113 N
Easternmost - E 508300 m; N 5179909
Southernmost - E 506097 m; N 5178932 m
Westernmost - E 505439 m; N 5179231 m

Elevation Ranges from 5640 ft. to 6080 ft.

4.1 Apparent Time Period: Although no diagnostics tools or carbon-bearing features have been identified to date, the intact subsurface deposit at 24ME163 suggests that with additional work, 24ME1111 may yield temporal information. Several sites in the nearby Smith River area have yielded diagnostic artifacts suggesting visitation of the Sheep Creek Quarry Archaeological District may have spanned thousands of years, from the Late Paleoindian Period to the Late Prehistoric Period .

Late Paleoindian Period evidence comes from Horse Thief Cave (24ME639), located at a high elevation setting in the Dry Range, where testing identified five hearths or cooking features. One of the three radiocarbon samples submitted for analysis produced a date of 8830 +/-BP (Aaberg et al. 2007).

Early, Middle, and Late Archaic Period occupations are seen at DesRosier Rockshelter (24ME1002), in the lower eastern foothills of the Big Belt Mountains, where testing yielded Mummy Cave/Bitterroot Complex, McKean Complex and Yonkee Phase projectile points (Brumley 1974). Aaberg and others (2007) also recovered an Oxbow projectile point during data recovery at 24ME747, near Camp Baker.

Other sites in the Camp Baker vicinity have produced Late Prehistoric Period diagnostics, including a small side-notched projectile point from 24ME75 (Aaberg et al. 2007), and another small side-notched point from the Camp Baker Quarry (24ME467) [Roll 2003]. Additionally, on the east side of the Smith River, Besant and Old Women's Phase projectile points have been recovered from 24ME239 (Deaver 1985).

3.4 Site Dimensions: 2800 m x 2200 m

Surface visibility: Poor to Good

3.5 Feature Descriptions: None.

3.6 Artifacts: (✓ all that apply) Chipped Stone Wood Ground Stone Ceramics Bone Trade Other

Description: Thirteen lithic scatters and numerous isolated flakes and tools have been observed. The majority of artifacts are made from chert; however, chalcedony, porcellanite, and obsidian flakes have been identified. Primary, secondary, and tertiary flakes are all represented including cores, a possible projectile point mid-section, worked flakes, and tested nodules.

3.7 Diagnostic Artifacts: none found

3.8 Subsurface Testing: Testing has occurred at 24ME163, a lithic scatter within the boundary of 24ME1111. Testing yielded 132 chert, chalcedony, and porcellanite flakes. This site was recommended eligible to the NRHP.

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3.9 Site function/interpretation: Lithic source area.

4. PERIOD

4.1 Apparent Time Period of Site (use dropdowns):

Prehistoric Prehistoric More Than One Period

Historic

Paleontological

5. ENVIRONMENTAL SETTING

Smithsonian Number:

5.1 Geographic Setting: Park Woodland

5.2 Contour: Known Approximate Unknown

5.3 Elevation: 5860 ft

5.4 View/Aspect (estimated direction and distance): All directions.

5.5 Sediments: Sediments range from loams to gravelly loams that tend to increase in clay content and percent of gravels with depth. Bedrock material consists of rhyolite, siltstone, and argillite occurring between 20 and 60 inches below surface (NRCS 2015).

Deposition: Surface Only Buried Only Surface and Buried Redeposited Other

5.6 Available Water Sources (use dropdown): Intermittent Strem

5.7 Major River Drainage (name, distance, elevation): Sheep Creek 140 meters 5640 ft.

5.8 Minor Drainage (name, distance, elevation): Little Sheep Cr. 0 meters 5640 ft

5.9 Local Vegetation: Douglas fir, lodgepole pine, sagebrush, juniper, birch-leaf spirea, showy aster, Oregon-grape, twinberry, and bearberry..

Regional Vegetation: Douglas fir, lodgepole pine, sagebrush, juniper, birch-leaf spirea, showy aster, Oregon-grape, twinberry, and bearberry.

6. ASSESSMENT, RECORDING & MANAGEMENT

6.1 Significance: Most prehistoric cultural resources are recommended eligible under Criterion D for their ability to contribute information important to prehistory. Criterion D eligibility is usually assessed through archaeological testing and the 13 lithic scatters within the boundary of 24ME1111 carry recommendations for individual site testing. In 2012, lithic scatter 24ME163 was tested prior to a road construction project. Testing identified the existence of an intact, subsurface cultural deposit and 24ME163 was recommended eligible to the NRHP (Tetra Tech 2013). However, this site was not mitigated as road modification work within the site boundary consisted of laying down a layer of fill material, thus avoiding any project impacts.

24ME1111 is a 1048-acre surface stone quarry of chert that includes 13 lithic scatters and a thin veneer of isolated flakes. Testing results at 24ME163 indicate the existence of an intact, subsurface cultural deposit, suggesting 24ME1111 is eligible to the NRHP under Criterion D. Recommendations for NRHP eligible resources, subject to project-specific impacts, usually include avoidance or mitigation of project impacts. For prehistoric cultural resources, mitigation is usually accomplished through archaeological excavation of a portion of the resource. Development of the Black Butte Copper Mine will impact 24ME1111 and avoidance does not seem to be an option.

Mitigation recommendations for 24ME1111 include archaeological excavation of a block of 1 x 1 meter units at one of the 13 lithic scatters determined eligible to be NRHP. However, other mitigation options may be appropriate for 24ME1111, a surface stone quarry, located next to Sheep Creek, a tributary of the Smith River.

The Smith River area is well known for its chert quarries (including the Camp Baker Quarry, the Dogget Quarry, and the VanAuchen Quarry) and has been the location of several important cultural resource investigations over the years including work by Aaberg and others (2007) and Roll and others (2005). The Aaberg investigation produced a prehistoric settlement model for the nearby Dry Range, and the Roll study attempted to distinguish chemical "fingerprints" of Montana chert samples (including Camp Baker Quarry) for the purpose of chemically sourcing chert artifacts. Although the chemical analyses results were mixed,

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researchers still believe this is a viable research direction. In consideration of these past investigations, alternative mitigation strategies for 24ME1111 could involve a desktop investigation of sites in the vicinity of Sheep Creek to identify patterns in prehistoric settlement and compare results to Aaberg's Dry Range Settlement Model. Another mitigation strategy could involve the chemical analysis of BB15-8 chert samples to determine if a peculiar chemical signature exists for the Sheep Creek cherts.

6.2 Condition/Integrity: Currently, the district area retains integrity of location, setting, feeling, association, and materials. Although cows graze the site area, and the development of fences and a few roads has caused some alternations to the district area, overall the site retains its physical qualities (abundant water, lithic material, and plant and animal resources) that most likely attracted prehistoric groups to the area.

6.3 Possible impacts to site: The district area occurs within the proposed Black Butte Copper Mine and mining facilities will be developed that include an adit, water pond, tailings facility, access roads, diversion channels, and other features. Development of the copper mine will cause major impacts to the integrity of 24ME1111.

6.4 Evaluation: Does this property meet National Register criteria for eligibility? Yes No Unevaluated

Evaluation Procedures/Justification: See 6.1

6.5 Recording status: surface examination photo map subsurface tested

6.6 Recommendations (use dropdown): Other(combination)
Comments:

6.7 Site Located by: Lynn Peterson, Kyle Barnett

Date Located: 8/1/2015

6.8 Site Recorded by: Lynn Peterson, Kyle Barnett

Date Recorded: 8/1/2015

6.9 Site form update and revisions by:

Date updated:

6.10 Federal/State Permit No: n/a

6.11 Publication(s)/Report(s) where site is described: 2015 Cultural Resource Inventory of Proposed Mine Facilities and Access Roads within the Black Butte Copper Project Area, Meagher County, Montana.

6.12 Artifact Repository: n/a

6.13 Field notes/maps/photos repository: Tetra Tech, 303 Irene, Helena, MT

6.14 Photographs: DSCN1009.

***6.15 Map:** Attach a sketch map (if applicable) and photocopy of 7.5' Quad showing site location.

7. DESCRIPTION OF HISTORIC SITES

Smithsonian Number:

7.1 Property boundaries and justification:

: estimated

. : measured

7.2 Physical description of buildins/ structures/ features; dates of construction and major alterations; contribution of building/ structure to property significance:

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

7.3 Artifacts observed, collected:

7.4 Subsurface Testing Methods and Results:

7.5 Historical Information and Context (footnote sources):

7.6 Sources, files, people consulted:

Aaberg, Stephen, Chris Crofutt, Jayme Green, Judson Finley, William Eckerle, and Sasha Taddie
2007 Archaeological and Geoarchaeological Investigations and Data Recovery at 24ME631, 24ME633,
24ME634 and 24ME747 as Part of the Dry Range Land Exchange, Meagher County, Montana, Volume I:
Report. Prepared by Aaberg Cultural Resource Consulting Service for Burnett Land, LLC, Douglass, Inc.,
the Helena National Forest, and the Bureau of Land Management, Great Falls Field Station.

Brumley, John

1974 Report on a Test Excavation at the DeRosier Site (24ME1002). Archaeology In Montana 15(3): 1-22.

Deaver, Ken

1985 Testing at 24ME239. Report by Ethnoscience prepared for the Lewis and Clark National Forest, Great Falls, MT.

Natural Resources Conservation Service, SSURGO database, accessed August 2015.

<http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>.

Roll, Tom

2003 The Camp Baker Quarry (24ME467): 2001. Report prepared by MSU Dept. of Sociology, Bozeman for the US Bureau of Land Management.

Roll, Tom, Michael Neely, Robert Speakman, and Michael Glascock

2005 Characterization of Montana Chert by LA-ICP-MS. In Laser Ablation ICP-MS in Archaeological Research edited by Robert Speakman and Michael Glascock, pp. 58-74, University of New Mexico Press, Albuquerque.

Tetra Tech

2013 Pedestrian Inventory and Testing for National Register Eligibility at Site 24ME163 in the Black Butte Copper Project Area, Meagher County, Montana. Prepared for Tintina Resources, Inc., Spokane, WA by Tetra Tech, Helena, MT.

MONTANA CULTURAL RESOURCES INFORMATION SYSTEM (CRIS) FORM

After Smithsonian number received, submit completed form to the SHPO.

Site Form Photograph Field No./Name BB15-8

Site No. 24ME1111

Photo I.D. Code: DSCN1009

Storage Location: Tetra Tech, Helena, MT

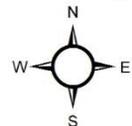
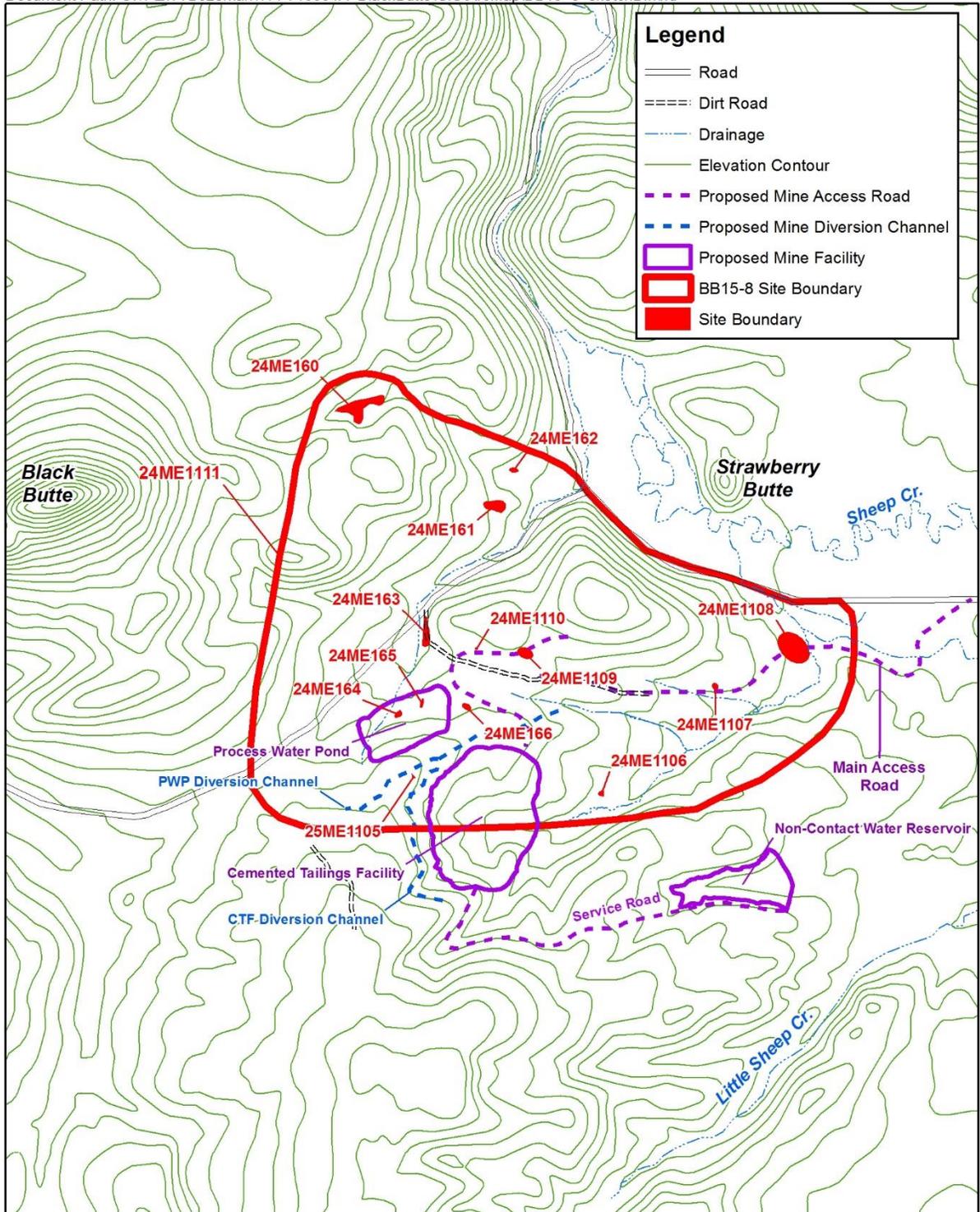
Include direction facing, feature number, and photo caption of each submitted photograph.

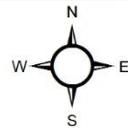
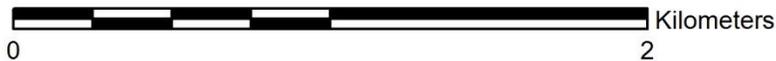
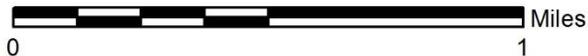
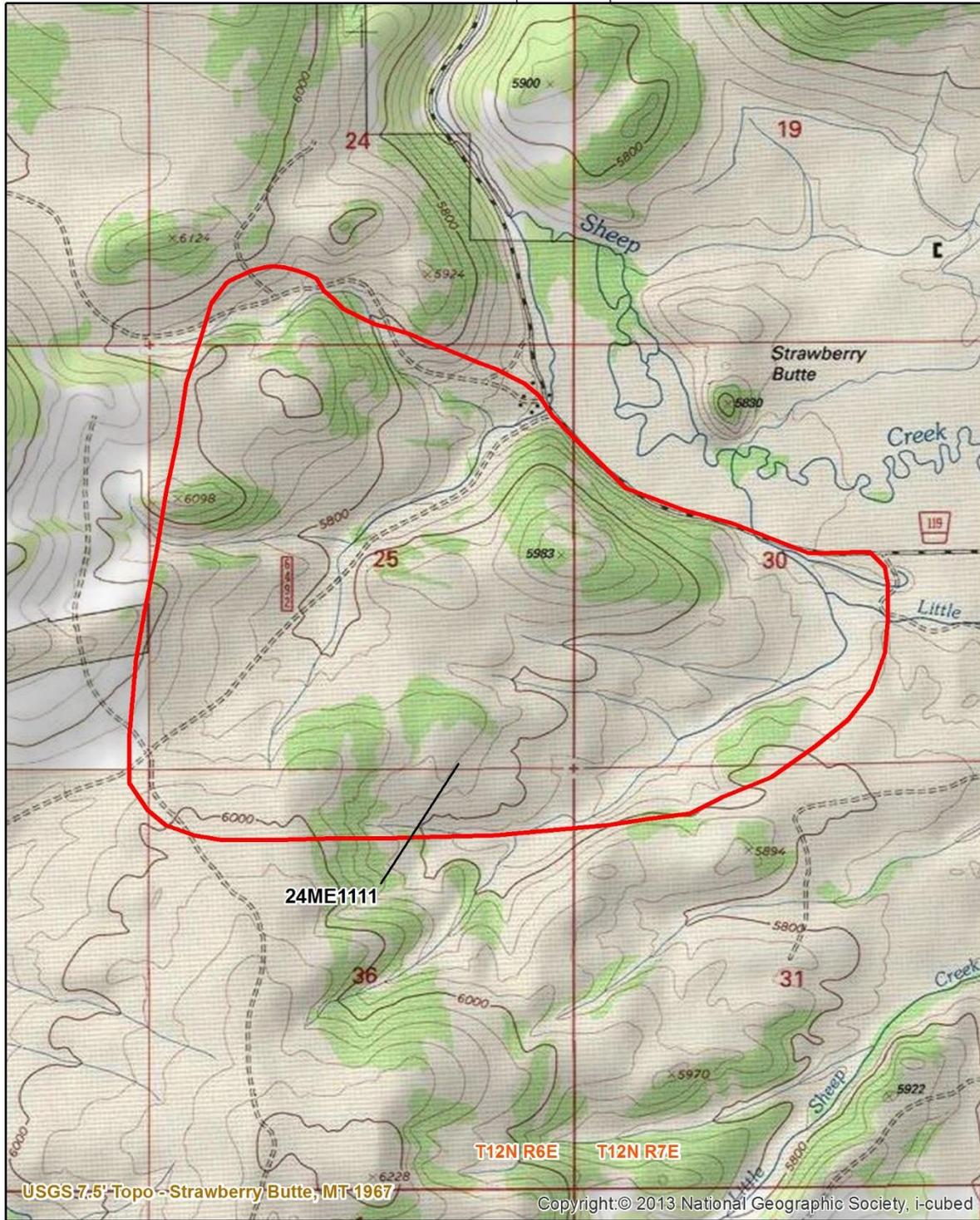
Site Overview, Facing South



Site Sketch Field No./Name BB15-8
 Site No. 24ME1111

Document Path: O:\T-Z\TTBozeman\114-710301A BlackButte\GIS\ArcMap\BB15 8 sketchB.mxd





Scale = 1:24,000

APPENDIX B

Addendum Letter to the 2015 Cultural Resource Inventory Report



July 6, 2017

James Strait
Environmental Specialist
Montana Dept. of Environmental Quality
P. O. Box 200901
Helena, MT 59620-0901

Dear Jim,

This letter report is an addendum to Tetra Tech's *2015 Cultural Resource Inventory of Proposed Mine Facilities and Access Roads within the Black Butte Copper Project Area, Meagher County, Montana (Appendix I of Tintina Resources' Mine Operating Permit Application Revision 3)*. This report details cultural resource work conducted on behalf of Tintina Resources, Inc. for their proposed Black Butte Copper Project in Meagher County. One of the lithic scatters identified, Site 24ME1108, occurs on a terrace bisected by a proposed mine access road. The 2015 report recommended Site 24ME1108 be tested for National Register eligibility if access road construction would disturb this site. Tintina Resources has subsequently realigned the proposed access road which now passes 100 feet south of Site 24ME1108 (see **Figure 1**). This distance should protect the integrity of Site 24ME1108 and testing is no longer recommended as the site will be avoided by the proposed access road.

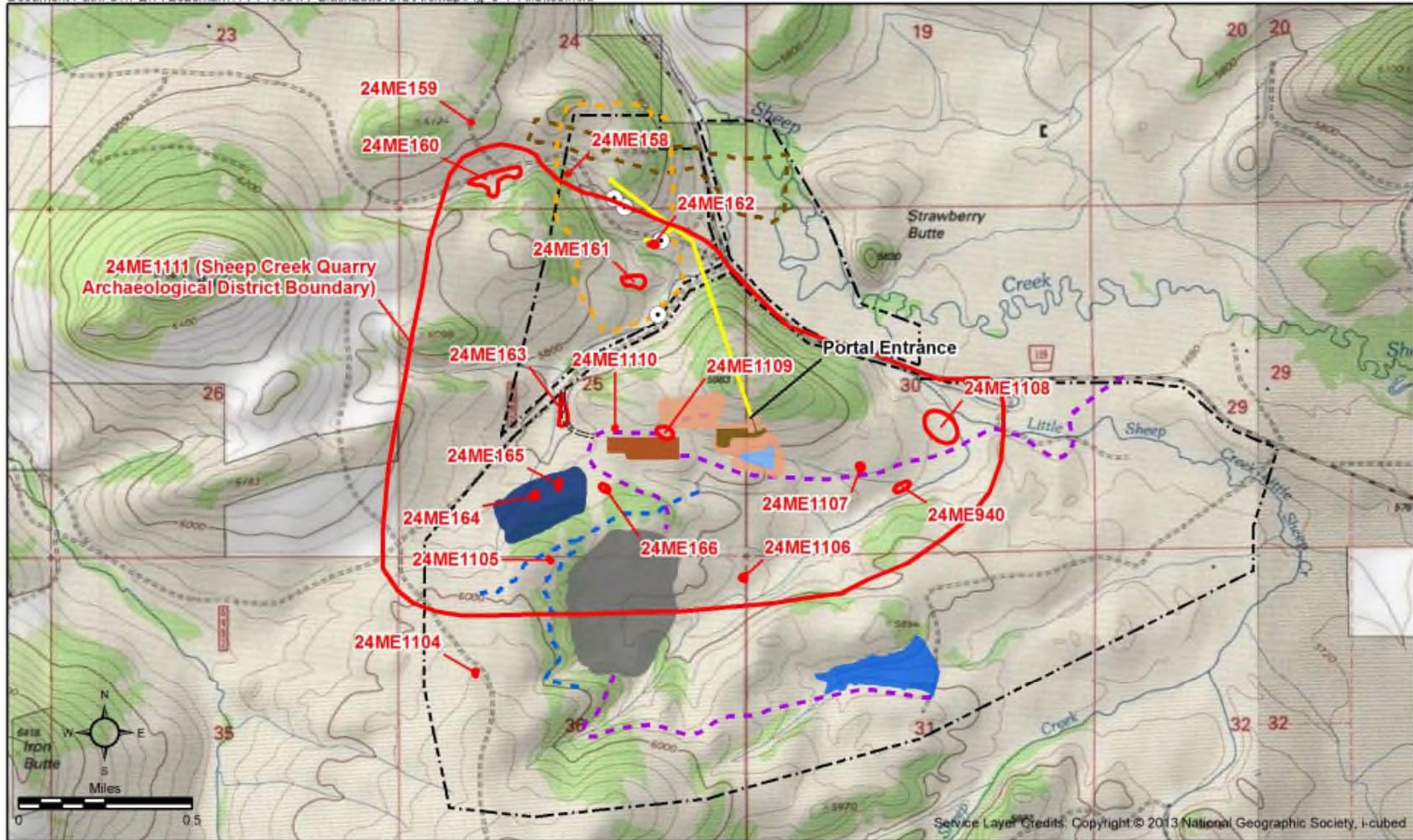
If you have any questions, please call me at (406) 447-1448.

Sincerely,

A handwritten signature in blue ink that reads 'Lynn M. Peterson'.

Lynn M. Peterson
Cultural Resource Specialist

Cc: Christina Schroeder, USACOE
John Beaver, Westech Environmental Services, Inc.



Legend

- | | | |
|---------------------------------------|-------------------------------------|--------------------------------|
| ● Vent Raise | --- Johnny Lee Lower Zone of Copper | ■ Mill Pad |
| --- Mine Access Road | --- Johnny Lee Upper Zone of Copper | ■ Non-Contact Water Reservoir |
| --- Proposed Mine Diversion Channel | --- Mine Permit Boundary | ■ Portal Pad |
| --- Proposed Mine Access/Service Road | ■ Cemented Tailings Facility | ■ Process Water Pond |
| --- Proposed Adit | ■ Contact Water Pond | ■ Temporary Waste Rock Storage |
| □ Cultural Resource | | |

Figure 1
Cultural Resources in the
Black Butte Mine Area
Tintina Resources, Inc.
Meagher County, Montana

SHPO RESPONSE LETTERS

Big Sky. Big Land. Big History.
Montana
Historical Society

Historic Preservation
Museum
Outreach & Interpretation
Publications
Research Center

February 11, 2013

Lynn M. Peterson
Cultural Resources Specialist
Tetra Tech
303 Irene Street
Helena, MT 59601

RECEIVED
FEB 13 2013
TETRA TECH, INC
HELENA, MT

RE: Black Butte Copper Project Area; Meagher County, Montana

Dear Lynn:

Thank you for the letter (received January 24, 2013) regarding the Cultural Resource Inventory of 970 Acres in the Black Butte Copper Project Area in Meagher County, Montana. We appreciate Tintina Resources recognizing the importance of conducting a cultural resource inventory prior to constructing the proposed mine portal, decline and surface waste rock dumps.

After review of the provided documentation, we agree with Tetra Tech's recommendation that 24ME0158 (log building), 24ME0159 (mine shaft), 24ME0936 (Butte Creek Road) and 24ME0940 (log cabin residence) are not eligible for listing in the National Register of Historic Places (NRHP). We also agree with Tetra Tech's recommendation that six of the seven newly identified lithic scatters (24ME0160, 24ME0161, 24ME0162, 24ME0164, 24ME0165 and 24ME0166) are potentially eligible under Criterion D. Therefore, we encourage Tintina Resources to avoid impacting these sites until further testing is completed to formally determine their NRHP eligibility.

In regard to the *Pedestrian Inventory and Testing for National Register Eligibility at Site 24ME163 in the Black Butte Copper Project Area, Meagher County, Montana*, we concur that 24ME0163 is eligible for listing in the NRHP under Criterion D. Since 24ME0163 has the potential to provide valuable information on prehistoric lifeways, we strongly recommend Tintina Resources hire a qualified archaeologist to monitor all road construction activities within the designated site boundary.

If you have any questions or concerns, please do not hesitate to contact me at (406) 444-0388 or kore@mt.gov. Thank you for consulting with us.

Sincerely,



Kathryn Ore

Review and Compliance Officer
Montana State Historic Preservation Office

225 North Roberts Street
P.O. Box 201201
Helena, MT 59620-1201
(406) 444-2694
(406) 444-2696 FAX
montanahistoricalsociety.org

File: DEQ/Hard Rock – 2013 – 2013012401

October 29, 2015

Mr. James Strait
Montana Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901

RE: Black Butte Copper Mine Cultural Inventory
Meagher County, Montana

Dear Mr. Strait:

Thank you for the letter (received October 23, 2015) and opportunity to comment on the Black Butte Copper Mine Cultural Inventory in Meagher County, Montana. Based on the received documentation, we concur that 24ME0163 is Eligible for the National Register of Historic Places.

We also concur with the results, methods, and recommendations that were made in the cultural report submitted by Tetra Tech Inc. If potentially Eligible sites cannot be avoided, we strongly encourage testing and the development of a Treatment and Mitigation Plan for Historic Properties within the project area.

If you have any questions or concerns do not hesitate to contact me directly at (406) 444-0388 or JBush2@mt.gov. Thank you for consulting with us.

Sincerely,

Jessica Bush, M.A.
Review and Compliance Officer
Montana State Historic Preservation Office