Pedestrian Inventory and Testing for National Register Eligibility at Site 24ME163 in the Black Butte Copper Project Area, Meagher County, Montana

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ABSTRACT

Tintina Resources, Inc. (Tintina) has requested the Montana Department of Environmental Quality (MT DEQ) grant an amendment to their exploration license to construct a mine portal, decline, and surface waste rock dumps at their Black Butte Copper Project located between Kings Hill and White Sulphur Springs in Meagher County, Montana. The MT DEQ encouraged Tintina to conduct a cultural resource inventory prior to granting the exploration license amendment. To fulfill this request, Tintina contracted Tetra Tech, Inc. of Helena to conduct an intensive pedestrian inventory of 970 acres of private land within the mine area. Inventories were conducted in 2011 and 2012; a total of 10 newly identified cultural resources (seven prehistoric sites and three historic sites), two isolated finds (prospect pits) and one previously recorded site (the Butte Creek Road) were documented.

As decline plans continued to develop, it was recognized that an additional cultural resource inventory was needed along underground Land Application Disposal (LAD) System lines as ground disturbance is expected during LAD System construction. Additionally, Site 24ME163 is a prehistoric lithic scatter that lies along an existing two-track road that will be developed into a decline portal access road in 2013. Site 24ME163 was identified by Tetra Tech in 2011. The MT DEQ has subsequently encouraged Tintina to test 24ME163 to determine the site's eligibility to the National Register of Historic Places (NRHP) before road modification work begins. Tintina contracted Tetra Tech to perform this additional cultural resource work in the fall of 2012.

The pedestrian inventory examined 1.7 miles of Underground LAD System lines in Sections 25 and 36 in T12N R6E and Section 30, T12N, R7E on November 7, 2012. No cultural resources were identified.

Testing work at Site 24ME163 identified the presence of an intact, buried cultural deposit that will likely address research questions concerning prehistory. As such, this site is recommended eligible to the NRHP under Criterion D. Proposed road modification work provided by Tintina includes down-cutting, filling, and widening of areas of the two-track road as necessary to create a fairly level surface that will be finished with a layer of gravel. Because the existing two-track road occurs in a topographically low area, Tintina indicates only fill work will be necessary within the boundary of Site 24ME163. Fill work is not anticipated to cause an adverse effect to Site 24ME163 as the buried cultural deposit will remain undisturbed, although buried a little deeper. In conclusion, no further cultural resource work is recommended at Site 24ME163 if road modification work proceeds as planned. If changes occur and downcutting work is necessary at Site 24ME163, Tintina should contact James Strait, archaeologist for the MT DEQ. Additionally, the site boundary defined for 24ME163 was based on the identification of surface artifacts. It is possible that downcutting work may reveal the subsurface deposit extends beyond the defined surface boundary. If road workers encountered any archaeological materials, James Strait should be contacted.

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1.0 INTRODUCTION

This report details cultural resource inventory results and archaeological testing results from 24ME163, a prehistoric lithic scatter located in Meagher County, Montana. Tintina Resources Inc. (Tintina) has requested the Montana Department of Environmental Quality (MT DEQ) grant an amendment to their exploration license in order to construct a mine portal, decline, and surface waste rock dumps at their Black Butte Copper Project. The MT DEQ encouraged Tintina to conduct a cultural resource inventory prior to granting the exploration license amendment. To fulfill this request, Tintina contracted Tetra Tech, Inc. of Helena to conduct an intensive pedestrian inventory of 970 acres of private land within the mine area. Inventories were conducted in 2011 and 2012; a total of 10 newly identified cultural resources (seven prehistoric sites and three historic sites) were documented. Additionally, two prospect pits were recorded as isolated finds and previously recorded Site 24ME936 (the Butte Creek Road) was updated.

As exploration decline plans continued to develop, it was recognized that additional cultural resource inventory was needed along proposed underground Land Application Disposal (LAD) System lines as ground disturbance is expected during LAD System construction. Additionally, Site 24ME163 is a prehistoric lithic scatter that lies along an existing two-track road that will be developed into a proposed exploration decline access road in 2013. Site 24ME163 was identified by Tetra Tech in 2011 (Barnett 2011). The MT DEQ has subsequently encouraged Tintina to test 24ME163 to determine the site's eligibility to the National Register of Historic Places (NRHP) before road modification work begins. All cultural resource work was conducted on behalf of Tintina at their Black Butte Copper Project area in Meagher County, Montana.

Lynn Peterson served as the Principal Investigator and Kyle Barnett served as an archaeological technician for inventory and testing work within the Black Butte Copper Mine.

1.1 Project Location

The Black Butte Copper Mine area is located in Meagher County, between Kings Hill and White Sulphur Springs. The underground LAD System lines are located in the SE1/4 of Section 25 and the NE1/4 of Section 36, T12N, R6E and the SW1/4 of Section 30, T12N, R7E. Site 24ME163 is located in Section 25, T12N, R6E. Figure 1.1 shows the location of the project area.

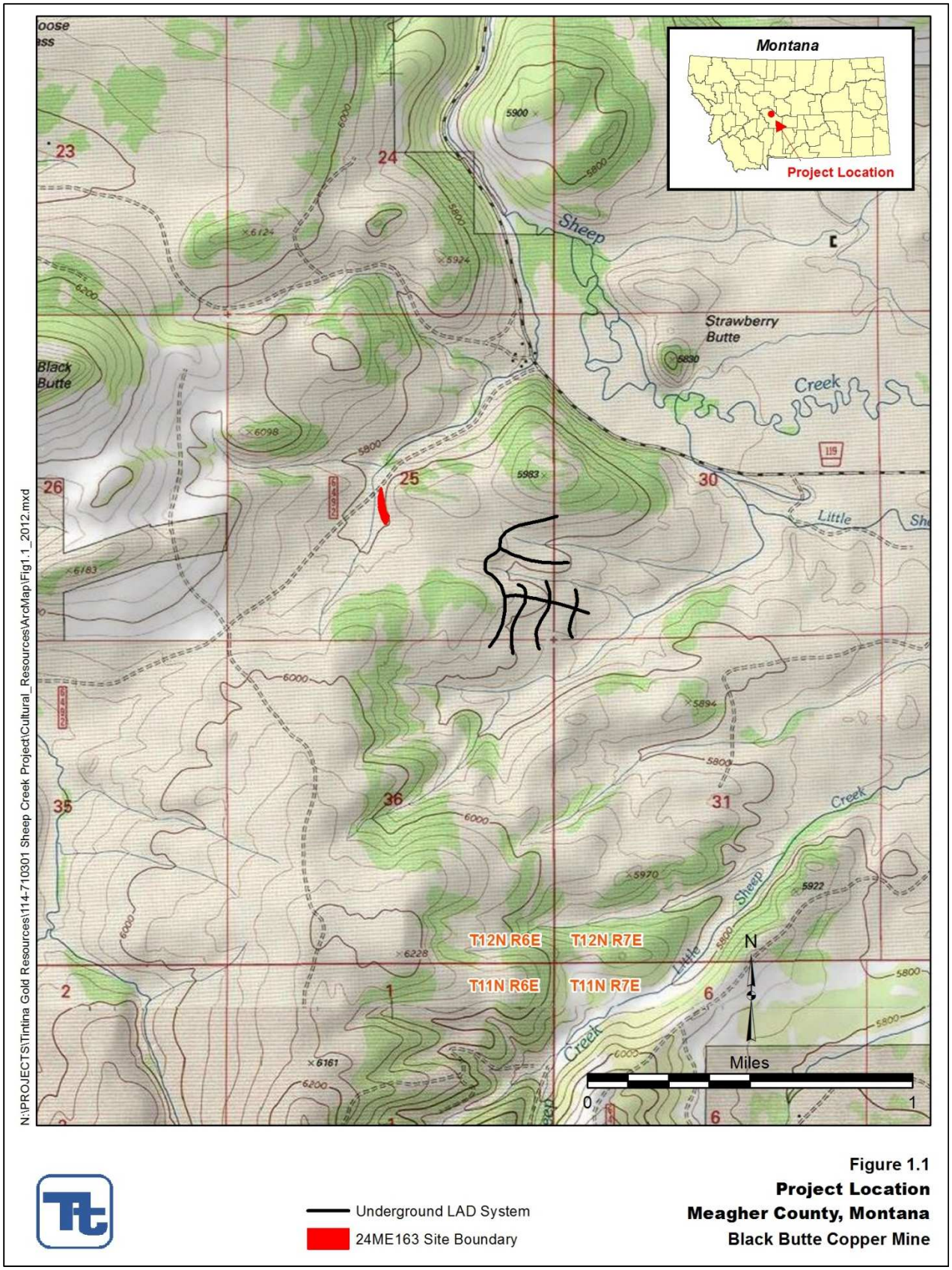

Figure 1.1
Project Location
Meagher County, Montana
Black Butte Copper Mine

2.0 LITERATURE SEARCH

Prior to fieldwork, Tetra Tech requested a file and literature search for T12N, R6E, Sections 25 and 36, and T12N R7E, Section 30 from the Montana State Historic Preservation Office (MT SHPO). In addition to the 2011-2012 Tetra Tech inventories that recorded 10 sites, the search indicated that two cultural resource projects have been conducted in the project vicinity and one site (24ME936) has been recorded.

In 2008, Ethos Consultants examined an area north of the current project area for a Central Montana Communications buried cable line (Brumley 2010, 2011). Site 24ME936, the Butte Creek Road, was recorded during this project. Butte Creek Road is north of the current project area and the road is currently in use as designated Forest Service Road #6492. Ethos recommended that the Butte Creek Road is not eligible to the NRHP.

The second project examined six acres in Section 25, T12N, R6E. This project was conducted in 2009 by the Natural Resource Conservation Service; no cultural resources were identified (Passman 2009).

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 ft 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 area include Douglas fir, Lodgepole pine, Engleman spruce and Ponderosa pine. 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 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 evidence 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-Boral 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 environmental diverse sites found in major river valleys and the 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 the replacement of the atlatl by 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 boast 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).

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4.0 INVENTORY AND TESTING METHODS AND RESULTS

Cultural Resource Inventory

The pedestrian inventory examined 1.7 miles of underground LAD System lines in Sections 25 and 36 in T12N R6E and Section 30, T12N, R7E on November 7, 2012. Transect intervals were spaced at 10 m intervals and a Trimble GeoExplorer (equipped with the LAD shapefile) was used to identify the LAD lines in the field. 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. No cultural resources were identified by the current inventory.

Testing of Site 24ME163

Site 24ME163 was originally recorded as a sparse lithic scatter of approximately 40 primary chert flakes that were found in rodent backdirt piles or along the two-track road (Barnett 2011). In addition to the chert, one grey quartzite flake and one obsidian flake were also observed. Two large chert outcrops were identified just east of the site and it was speculated these outcrops were the likely source of the lithic material. The site is located on a gentle slope above Coon Creek and a local informant reported that the Blackfeet were known to camp at this site location. Barnett also wrote that Site 24ME163 probably contained a buried cultural deposit based on the lithic debitage observed in the rodent disturbance areas and recommended that the site be tested to determine eligibility to the National Register of Historic Places.

As mentioned above, Tintina proposes to modify the two-track road that bisects Site 24ME163 into an exploration decline access road . Work will include downcutting, widening, and filling areas of the roadbed as needed to create a fairly level surface. The final road surface will be covered with a layer of gravel. Figure 4.1 depicts the downcutting and fill work proposed by Tintina. Tintina contracted Tetra Tech to test Site 24ME163 for NRHP eligibility before road modification work begins in spring 2013. Tetra Tech consulted with James Strait, MT DEQ archaeologist, and Stan Wilmoth, State Archaeologist at MT SHPO, on the methods used to test Site 24ME163.

Testing work at Site 24ME163 was completed on November 6-7, 2012. Initially, all artifacts visible on the surface were flagged to establish a site boundary. Next, a series of eight shovel probes were excavated along a north-south line within the road disturbance area. Shovel probes were spaced at 20 m intervals and measured 30 cm in diameter and extended to a depth of 30 cm below surface. All fill was screen through ¼" mesh. Table 4.1 presents the results of the shovel probes. All of the lithic debris recovered from the shovel probes consisted of chert, mainly red in color.

Table 4.1 Shovel Probe Results at 24ME163.

Shovel Probe No.	Primary Flake	Secondary Flake	Tertiary Flake	Shatter	Total
SP-1					Negative
SP-2			4		4
SP-3		2	1		3
SP-4			2		2
SP-5			3		3
SP-6			2		2
SP-7			7		7
SP-8			7		7

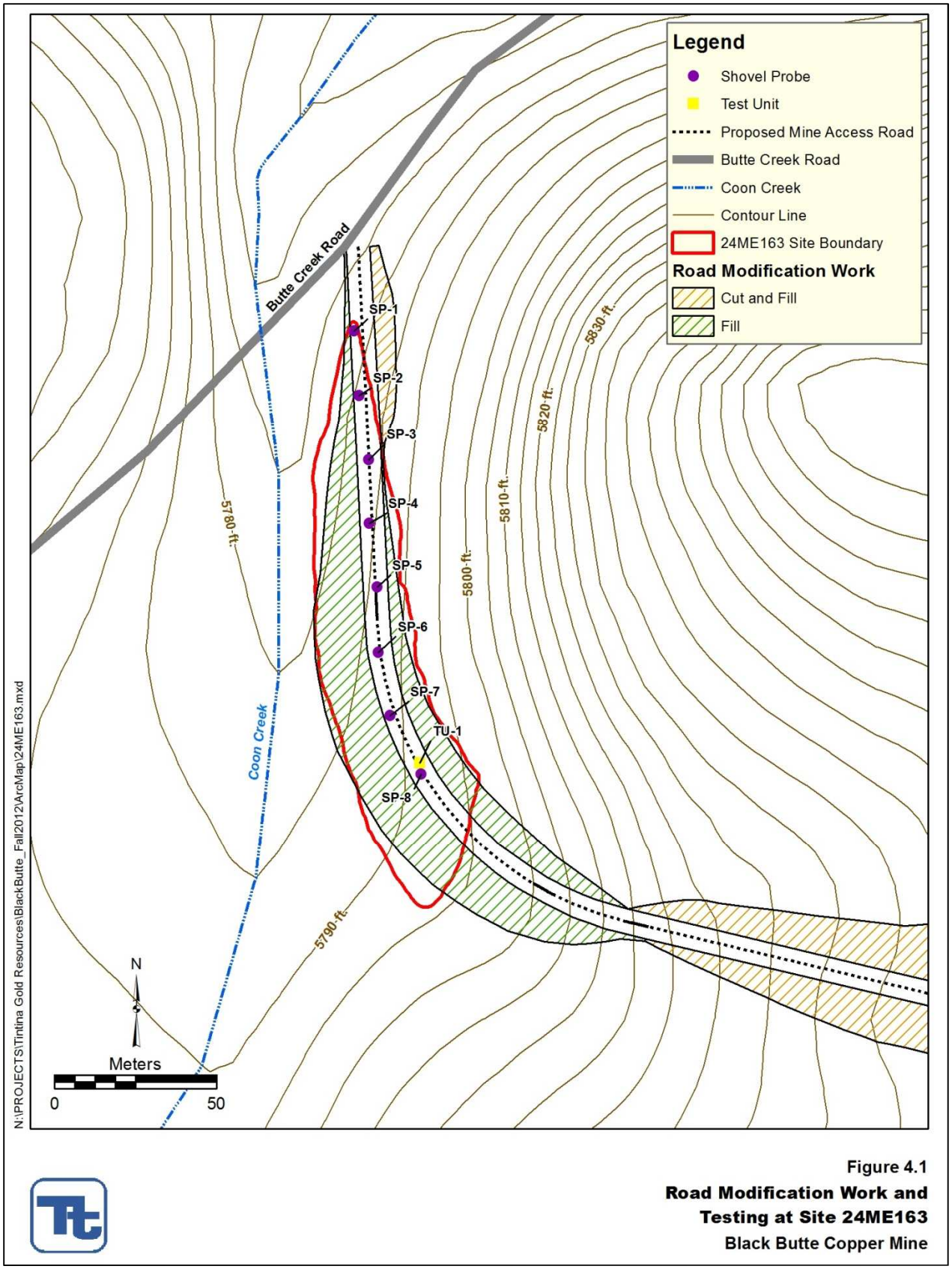

Figure 4.1
Road Modification Work and Testing at Site 24ME163
Black Butte Copper Mine

SP-7 and SP-8 yielded the highest number of flakes recovered from the shovel probes and a 1 m x 1 m test unit, designated TU-1, was established next to SP-8. TU-1 was excavated in 10 cm levels to a depth of 50 cm below surface. Two stratigraphic units were encountered during excavation. Stratigraphic Unit I extends from the surface to approximately 10 cm below surface and consists of a very dark brown (10YR 2/2) silty clay loam with a weak, fine, sub-angular blocky structure. Many fine roots are present and the lower boundary is clear and smooth. Stratigraphic Unit II extends from approximately 10 cm to 50 cm below surface. Sediment consists of a very dark brown (10YR 2/2) silty loam with a moderate, medium, sub-angular blocky structure. Many fine roots and a few, fine mottles of calcium carbonate are present. A few sub-angular gravels, pebbles and unaltered chert nodules are also present.

A total of 132 lithic artifacts were recovered from TU-1, extending from the surface to 50 cm below surface (Table 4.2). It is important to note that the depth of the cultural deposit was not established during site testing. Artifact recovery peaked between 20 and 30 cm below surface but recovery was still good to a depth of 50 cm below surface. The only tool recovered was collected approximately 48 cm below surface. TU-1 was terminated due to impending inclement weather, not upon encountering a sterile level. The results from TU-1 suggest Site 24ME163 has an intact buried cultural deposit that has the potential to address research questions concerning prehistoric lifeways.

Table 4.2 TU-1 Results at 24ME163.

Cm Below Surface	Primary Flake	Secondary Flake	Tertiary Flake	Shatter	Tool	Total
0-10			17 chert, 1 chalcedony	9 chert		27
10-20			14 chert, 3 chalcedony, 2 porcellanite	10 chert		29
20-30		3 chert, 1 chalcedony	17 chert, 5 chalcedony	11 chert		37
30-40		2 chert	10 chert	9 chert		21
40-50		2 chert, 1 chalcedony	12 chert	2 chert	1 chert uniface	18
TOTAL						**132**

5.0 SUMMARY AND RECOMMENDATIONS

Tetra Tech inventoried 1.7 miles of underground LAD System lines within Sections 25 and 36 in T12N, R6E and Section 30 in T12N, R7E in Meagher County, Montana for Tintina Gold Resources at their Black Butte Copper Mine. No cultural resources were identified during the inventory.

Cultural resource work at the Black Butte Copper Project also included testing prehistoric lithic scatter, 24ME163, for eligibility to the NRHP. Prehistoric sites are usually recommended eligible to the NRHP under Criterion D which requires a site to contain important information that contributes to our understanding of human history or prehistory (NPS 1998). With the recovery of 132 artifacts (extending from the surface to 50 cm below surface), the testing results demonstrate that Site 24ME163 has the ability to provide information on prehistoric lifeways. Testing also demonstrated that Site 24ME163 retains integrity of location with the presence of an intact, buried cultural deposit. Although no diagnostic artifacts or charcoal-bearing features were identified during testing, the recovery of such artifacts would demonstrate integrity of association. In summary, testing efforts at Site 24ME163 suggest this site is eligible to the NRHP.

Road modification work proposed by Tintina will include downcutting, filling, and widening areas of the roadbed as needed to create a fairly level surface and then capping the final road surface with a layer of gravel. Figure 4.1 depicts the location of Site 24ME163 and the road work that will be conducted in the site area. This figure illustrates that only fill work will occur within the boundary of Site 24ME163. Fill work will consist of laying down a layer of fill material and then a gravel layer across most of the road surface area; this road modification work is not considered an adverse effect as the buried cultural deposit will remain undisturbed, albeit buried a little deeper. In conclusion, no further cultural resource work is recommended at Site 24ME163 if road modification work proceeds as planned. If changes occur and downcutting work is necessary at Site 24ME163, Tintina should contact James Strait, archaeologist for the MT DEQ. Additionally, the site boundary defined for 24ME163 was based on the identification of surface artifacts. It is possible that downcutting work may reveal the subsurface deposit extends beyond the defined surface boundary. If road workers encountered any archaeological materials, James Strait should be contacted.

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