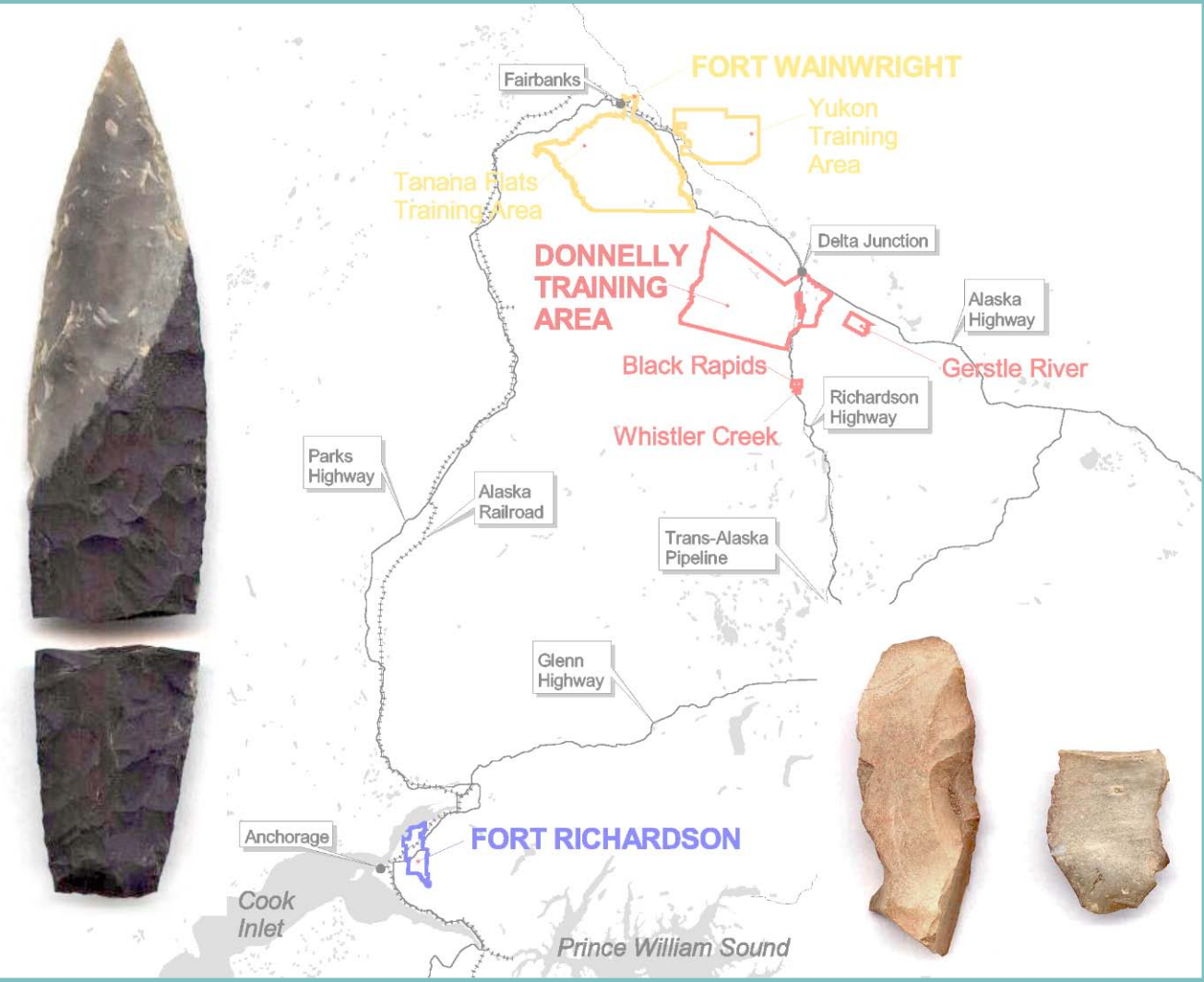
INTERIM REPORT:
ARCHAEOLOGICAL SURVEY & EVALUATION
FORT RICHARDSON & FORT WAINWRIGHT, 2002



APRIL 2003

INTERIM REPORT:
ARCHAEOLOGICAL SURVEY & EVALUATION
FORT RICHARDSON & FORT WAINWRIGHT, 2002

Bill Hedman, Aaron Robertson, Nancy Fichter & Kirsten Anderson

Edited by
K. Anderson

Prepared by:
Center for Environmental Management of Military Lands
Colorado State University
Ft. Collins, CO 80523-1500

Russell H. Sackett
Conservation Branch
Directorate of Public Works
U.S. Army Garrison Alaska
Fort Richardson, AK

April 2003

Acknowledgements

In addition to the authors, many field technicians contributed valuable labor, expertise and effort to undertake the work conducted in the 2002 season:

Fort Richardson:
Rebecca Bard
Seth DePasqual
Nancy Fichter*
Kristy Hollinger
Tom Keating

Fort Wainwright:
Thomas Gamza
Tammy Green*
Daniel Proulx

Donnelly Training Area:
James Allen
Mark Busse
David Cory
Edmund Gaines
Wade Haakenson*
Tammy Hilburn
Michael Holt
Robert Miller*
Nicole Mills
Joanne Minerby
Chris Parrish*
Naomi Rintoul
Aaron Robertson*
Scott Shirar
Garrett Williams
Brian Wygal*
Glenn Zalubil

* archaeology fieldcrew leader

TABLE OF CONTENTS

1.0 Introduction

2.0 Fort Richardson

2.1 Multi-Purpose Training Range (MOUT), Infantry Platoon Battle Course (IPBC) and Infantry Squad Battle Course (ISBC) Training range Surveys
2.2 School Fish Camp Site Relocation
2.3 Beaver Dam restoration project, Otter Lake
2.4 Fire Tower Ridge Road upgrade project

3.0 Fort Wainwright (Including Donnelly Training Area)

3.1.1 Infantry Platoon Battle Course (IPBC) and Infantry Squad Battle Course (ISBC) Training Ranges, Yukon Training Area
3.1.2 Multi-Purpose Training Range Construction, Yukon Training Area
3.1.3 Access Road and Parking Improvements, Husky Drop Zone & Horseshoe Lake, Yukon Training Area
3.1.4 Horseshoe Lake Site
3.1.5 Johnson Road, Skyline Drive Upgrade Improvements, Yukon Training Area
3.1.6 Manchu Road Maneuver Corridor Upgrade, Yukon Training Area
3.1.7 River Road Upgrade Improvements, Yukon Training Area
3.1.8 Russian Trench Live-Fire Facility, Access Road Upgrade, Yukon Training Area

3.2 Donnelly Training Area Introduction (Formerly within boundaries of Fort Greely)
3.2.1 Combined Arms Collective Training Facility (CACTF) Range Construction, North Jarvis Training Area, Donnelly Training Area East
3.2.2 Battle Area Complex (BAX) Area A, Combined Training Range (CTR)/Battle Area Complex (BAX) Area B Training Ranges, Donnelly Training Area East
3.2.3 33-Mile Loop Road Upgrade and Rehabilitation Project, Donnelly Training Area East

4.0 References

LIST OF FIGURES

Fig. 1: Location of Fort Richardson and Fort Wainwright, including Donnelly Training Area.
Fig. 2: Location of proposed training range construction footprints.
Fig. 3: Location map of School Fish Camp Site, near Whitney Point.
Fig. 4: View of School Fish Camp site heading southwest.
Fig. 5: Example of probable fish cache depression.
Fig. 6: Project location of Otter Lake Beaver Dam restoration project.
Fig. 7: Location of Fire Tower Road upgrade project.
Fig. 8: General view of project area from southern boundary, at junction of Fire Tower Ridge Road and unnamed road, north of Waldon Lake. View heading north.
Fig. 9: General view of project area near northern boundary, direction heading north.
Fig. 10: Location of Fort Wainwright, including Donnelly Training Area.
Fig. 11: Location of IPBC and ISBC training ranges, Yukon Training Area.
Fig. 12: Aerial view of terrain at proposed training ranges, Yukon Training Area.
Fig. 13: Location of proposed Multi-Purpose Training Range, Yukon Training Area.
Fig. 14: Location of proposed Horseshoe Lake access improvements, Husky Drop Zone (from USGS Big Delta quad).
Fig. 15. Location of Horseshoe Lake, near Husky Drop Zone, with site FAI-1556 illustrated (Yukon Training Area, Fort Wainwright).
Fig. 16: Location of proposed Johnson Road/Skyline Drive road upgrade.
Fig. 17: View of Skyline Drive road corridor.
Fig. 18: Location of Manchu Road corridor improvements (from USGS Big Delta quad).
Fig. 19: Location of proposed River Road upgrade project.
Fig. 20: View of River Road Pond.
Fig. 21: View of River Road corridor and surrounding vegetation.
Fig. 22: Location of access road to Russian Trench live-fire facility.
Fig. 23: View of Russian Trench live-fire facility.
Fig. 24: Map of Donnelly Training Area, with proposed range construction areas identified.
Fig. 25: Location of proposed CACTF and BAX (Area A alternative) training ranges, Donnelly Training Area East.
Fig. 26: General view of terrain and vegetation at proposed CACTF training range.
Fig. 27: Location of proposed BAX Area A and B alternatives, and CTR training ranges, Donnelly Training Area East.
Fig. 28: General location of proposed BAX Area A alternative, with sites recorded in 2002 field season illustrated.
Fig. 29: Location of site XMH-873 (from USGS Big Delta quad).
Fig. 30: General view of site XMH-873, heading north.
Fig. 31: Site map of testing at XMH-873.
Fig. 32: Location of site XMH-874 (from USGS Big Delta quad).
Fig. 33: View of site XMH-874, heading south.
Fig. 34: Site map of evaluations at XMH-874.
Fig. 35: Location of site XMH-875 (from USGS Mt. Hayes (D-4) quad).
Fig. 36: General view of site XMH-875, heading southwest.
Fig. 37: Site map of testing at XMH-875.
Fig. 38: Location of site XMH-877 (from USGS Mt. Hayes (D-4) quad).
Fig. 39: General view of site XMH-877, heading north.
Fig. 40: Site map of testing at XMH-877.
Fig. 41: General location of proposed BAX Area B alternative/Combined Training Range project, with sites recorded in 2002 field season illustrated.
Fig. 42: Location of site XMH-876 (from USGS Mt. Hayes (D-4)) quad).
Fig. 43: View of site XMH-876 to the north-northeast.
Fig. 44: Site map of evaluations at XMH-876.
Fig. 45: Location of 33-Mile Loop Road, with evaluated sites identified (from USGS Mt. Hayes (D-4) quad).
Fig. 46: Location of XMH-879 (from USGS Mt. Hayes (D-4) quad).
Fig. 47: View of XMH-879, view to south.
Fig. 48: Site map of evaluations at XMH-879.
Fig. 49: Location of site XMH-880 (from USGS Mt. Hayes (D-4) quad).
Fig. 50: View of XMH-880, heading west.
Fig. 51: Front and back view of scraper collected at XMH-880.

Fig. 52: Site map of evaluations at XMH-880.
Fig. 53: Location of site XMH-881 (from USGS Mt. Hayes (D-4) quad).
Fig. 54: View of site XMH-881, heading southwest.
Fig. 55: Site map of evaluations at XMH-881.
Fig. 56: Location of site XMH-882 (from USGS Mt. Hayes (D-4) quad).
Fig. 57: View of site XMH-882, heading north.
Fig. 58: Site map of evaluations at XMH-882.
Fig. 59: Location of site XMH-883 (from USGS Mt. Hayes (D-4) quad).
Fig. 60: View of site XMH-883, heading east.
Fig. 61: Site map of evaluations at XMH-883.
Fig. 62: Location of site XMH-884 (from USGS Mt. Hayes (D-4) quad).
Fig. 63: View of site XMH-884, heading north.
Fig. 64: Site map of evaluations at XMH-884.
Fig. 65: Location of site XMH-885 (from USGS Mt. Hayes (D-4) quad).
Fig. 66: View of site XMH-885, heading south.
Fig. 67: Site map of evaluations at XMH-885.
Fig. 68: Location of site XMH-886 (from USGS Mt. Hayes (D-4) quad).
Fig. 69: View of site XMH-886, heading south.
Fig. 70: Site map of evaluations at XMH-886.
Fig. 71: Location of site XMH-887 (from USGS Mt. Hayes (D-4) quad).
Fig. 72: View of site XMH-887, heading south.
Fig. 73: Projectile point, microblade fragment and biface fragment recovered from XMH-887.
Fig. 74: Site map of evaluations at XMH-887.
Fig. 75: Location of site XMH-888 (from USGS Mt. Hayes (D-4) quad).
Fig. 76: View of site XMH-888, heading north.
Fig. 77: Site map of evaluations at XMH-888.
Fig. 78: Location of site XMH-889 (from USGS Mt. Hayes (D-4) quad).
Fig. 79: View of site XMH-889, heading south.
Fig. 80: Site map of evaluations at XMH-889.
Fig. 81: Location of site XMH-890 (from USGS Mt. Hayes (D-4) quad).
Fig. 82: View of site XMH-890, heading north.
Fig. 83: Chert blade from XMH-890.
Fig. 84: Site map of evaluations at XMH-890.
Fig. 85: Location of site XMH-891 (from USGS Mt. Hayes (D-4) quad).
Fig. 86: View of site XMH-891, heading south.
Fig. 87: Site map of evaluations at XMH-891.
Fig. 88: Location of site XMH-892 (from USGS Mt. Hayes (D-4) quad).
Fig. 89: View of XMH-892 to the southeast, with 33-Mile Loop Road in the foreground.
Fig. 90 Location of site XMH-323 (from USGS Mt. Hayes (D-4) quad).

LIST OF TABLES

Table 1: Features identified at School Fish Camp Site and location.
Table 2. Totals for recovered cultural material at FAI-1556.
Table 3. Totals of lithic material recovered at FAI-1556.
Table 4: Lithic debitage counts from test units 1 and 2, XMH-874.
Table 5: XMH-879, general attributes.
Table 6: XMH-879, artifacts collected.
Table 7: XMH-880, general attributes.
Table 8: XMH-880, artifacts collected.
Table 9: XMH-881, general attributes.
Table 10: XMH-881, artifacts collected.
Table 11: XMH-882, general attributes.
Table 12: XMH-882, artifacts collected.
Table 13: XMH-883, general attributes.
Table 14: XMH-883, artifacts collected.
Table 15: XMH-884, general attributes.
Table 16: XMH-884, artifacts collected.
Table 17: XMH-885, general attributes.
Table 18: XMH-885, artifacts collected.
Table 19: XMH-886, general attributes.
Table 20: XMH-886, artifacts collected.
Table 21: XMH-887, general attributes.
Table 22: XMH-887, artifacts collected.
Table 23: XMH-888, general attributes.
Table 24: XMH-888, artifacts collected.
Table 25: XMH-889, general attributes.
Table 26: XMH-889, artifacts collected.
Table 27: XMH-890, general attributes.
Table 28: XMH-890, artifacts collected.
Table 29: XMH-891, general attributes.
Table 30: XMH-891, artifacts collected.
Table 31: XMH-892, general attributes.
Table 32: XMH-892, artifacts collected.
Table 33. XMH-323, general attributes.
Table 34. XMH-323, artifacts collected.

1.0 INTRODUCTION

In 2002, U.S. Army Alaska undertook the development of several proposed projects which triggered an archaeological and cultural resources analysis of proposed areas of potential effect. This report details the archaeological review and analysis which was conducted for each undertaking, at each post under U.S. Army Alaska's management: Fort Richardson and Fort Wainwright, including Donnelly Training Area, within the boundaries of the former Fort Greely.

Survey and sub-surface testing was conducted, following procedures defined in U.S. Army Alaska's archaeological research design (Hedman 2002) and Integrated Cultural Resources Management Plan (ICRMP; CEMML 2001). Where archaeological sites were identified within a project's area of potential effect, evaluative testing was conducted to determine eligibility for listing in the National Register of Historic Places, based on National Register criteria detailed in 36 CFR 79, and pursuant to Section 106 of the National Historic Preservation Act (NHPA; 36 CFR 800).

Archaeological field crews, comprised of employees of the Center for Environmental Management of Military Lands (CEMML), Colorado State University, conducted surveys of all areas potentially impacted (both directly and indirectly) by proposed undertakings. One crew, comprised of five archaeologists, conducted surveys at Fort Richardson; one crew, comprised of four archaeologists, conducted surveys at Fort Wainwright cantonment area and Yukon Training Area; and four crews, comprised of four archaeologists each, conducted surveys at Donnelly Training Area.

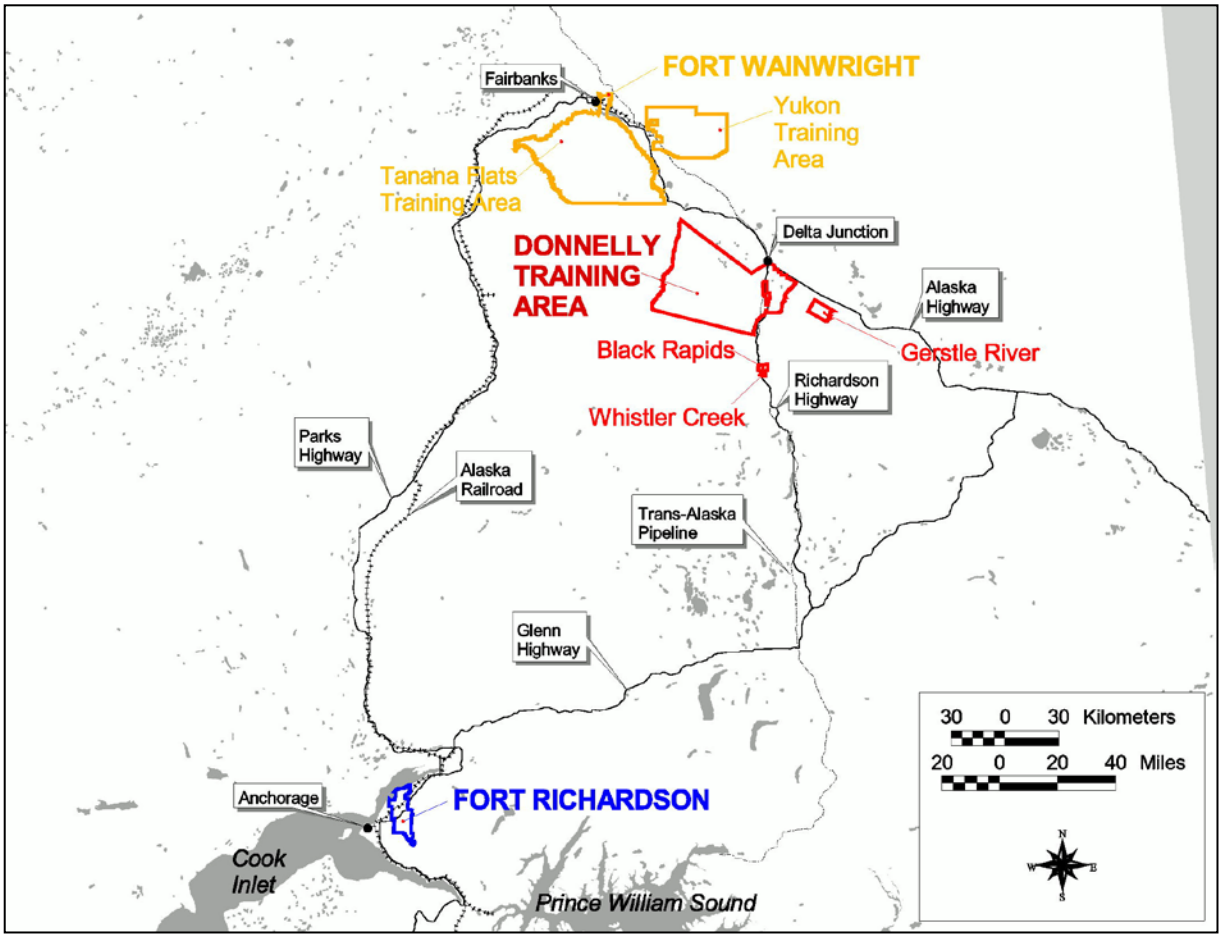


Figure 1. Location of Fort Richardson and Fort Wainwright, including Donnelly Training Area.

2.0 Fort Richardson

Introduction

Three range construction projects were the primary focus of archaeological work at Fort Richardson in 2002. These ranges included: a multi-purpose training range located in the northeastern section of Fort Richardson; an Infantry Platoon Battle Course (IPBC), located to the south of the MOUT range, west Fort Richardson; and an Infantry Squad Battle Course (ISBC), located in the southeastern section of Fort Richardson (see figure 2). Additional archaeological fieldwork involved a road upgrade project at Firetower Ridge Road, as well as a migratory bird habitat enhancement/beaver dam restoration project at Otter Lake, western Fort Richardson. No historic properties will be affected by any of these proposed projects.

Setting

A recent floristic study of Fort Richardson was conducted by Lichvar *et al.* (1997), with a thorough description of the Fort's ecological setting. The following description is from *Vegetation of Fort Richardson* (Lichvar *et al.* 1997):

'Fort Richardson falls within the Cook Inlet Lowlands Section of the Coastal Trough Humid Taiga Province of Bailey's Ecoregions of the United States (McNab and Avers 1994). Forests in the Anchorage area closely resemble the Boreal Forest of Interior Alaska, although some understory and tree species occur that are typically found in the Coastal Spruce-Hemlock Forest. Fort Richardson's forests have been described as open, low-growing spruce and closed spruce-hardwood forests by Viereck and Little (1972), and as a lowland spruce-hardwood forest by the Joint Federal-State Land Use Planning Commission (1973).

'Packee (1994), in examining Alaska's forest vegetation zones, characterizes the region as an area where white spruce *(Picea glauca*) and Sitka spruce (*Picea sitchensis*) naturally hybridize; balsam poplar (*Populus balsamifera*) and black cottonwood *(Populus trichocarpa*) intergrade; and mountain hemlock *(Tsuga mertensiana*) may form the subalpine forest. Vegetation reflects the transitional nature of the climate between maritime and continental. This maritime climatic influence has resulted in a lower incidence of natural fire than is found in the spruce-hardwood forests of interior Alaska (Gabriel and Tande 1983).

'Upland sites on Fort Richardson are dominated by paper birch (*Betula paperifera*), white spruce, and, on drier sites, quaking aspen *(Populus tremuloides*). Cottonwood and poplar are common in areas bordering principal streams. Black spruce *(Picea mariana*) is the dominant tree in wetter areas and on some well-drained sites. Most bogs are treeless or support stands of stunted black spruce. Grasses, herbs, willows (*Salix* spp.), and alders (*Alnus* spp.) dominate the vegetation in a narrow band along the Inlet and at elevations above 1,500 feet on the Chugach Mountain slopes' (Lichvar *et al.* 1997: Appendix I.).

Specifically, the project areas surveyed are largely comprised of upland vegetation, including paper birch (*Betula paperifera*), white spruce (*Picea glauca*), aspen (*Populus tremuloides*) and alders (*Alnus spp.*). Understory vegetation is moderate to dense, with various grasses and herbs, including fireweed (*Epilobium spp.*), lupine (*Lupinus spp.*) and high-bush cranberry (*Viburnum spp.*). Vegetation in the ISBC project area is considerably denser, dominated by alders (*Alnus spp.*), devil's club (*Oplopanax horridus)* and cow parsnip (*Heracleum maximum*). Visibility in the ISBC project area, specifically, was greatly reduced due to this dense vegetative cover.

Background

Fort Richardson withdrawn lands fall within the traditional lands of the Dena'ina, northern Athabaskan Tribes of the Cook Inlet. In general, the Dena'ina traditionally pursued a semi-permanent lifeway, spending winters in permanent settlements and dispersing in the summer months with the onset of

summer fish runs. Seasonal camps at favorable fishing locations were established along river banks, coastal edges and lake shores, and were returned to each year. Once salmon runs had ended, groups would often focus on travel into the mountains to hunt caribou and mountain sheep; such trips to the interior would also be a time for trading with other groups encountered during these seasonal hunts. Moose, bear, mountain goats and Dall sheep were often hunted year-round in areas outlying winter village settlements (Townsend 1981: 626-627). Specifically, settlements at Knik Arm have been well-summarized by Fall (1987):

> In the nineteenth century this group included those Tanaina living along the shores of Knik Arm and the Matanuska and Knik rivers. They used the present day Anchorage area for salmon fishing and the Chugach and Talkeetna Mountains for hunting. In 1978-9, the only Tanaina village in this area was Eklutna, but in the past this was a highly populated area (Osgood 1937: 18) and many former village sites have been recorded (Kari 1978; Kari & Kari 1982).

The Anchorage area held several village sites prior to the arrival of Russian and Euro-American settlers; Anchorage itself was called *Qatuk'e'usht* (also *Xa'tikiuet*) by the people of Kenai, and once supported a Dena'ina village (Carberry & Lane 1986: 177; Yaw Davis 1965: 3). The mouth of Ship Creek historically supported a significant fish run, and was the focus of fish camps and seasonal subsistence fishing, prior to the advent of canneries and commercial fishing.

The introduction of Russian and Euro-American settlers into the region began with the famous voyages of Bering and Cook; in 1786, St. George became the first permanent Russian settlement established at Cook Inlet, at the mouth of the Kasilof River, Kenai Peninsula.

Archaeology

Although glacial studies indicate that Cook Inlet may have been habitable by about 11,000 BP (Reger and Pinney 1996), few archaeological sites dating earlier than the late prehistoric period have been identified within the Cook Inlet region. The earliest and arguably the most significant site in the Cook Inlet area is Beluga Point, located approximately 10 miles to the southeast of Fort Richardson, near the entrance to Turnagain Arm. Though largely lacking datable material beyond 4000 BP, artifact assemblages at Beluga Point indicate consistent use of the location throughout the Holocene.

The earliest component at Beluga Point is the undated BPN-I core and blade component, estimated at 8000 to 10,000 BP, based on similarities with dated material found elsewhere in Alaska (Reger 1977, 1981). The presence of this assemblage, which could be designated as a regional variant of the American Paleoarctic Tradition (e.g. Anderson 1970a, 1970b; Dumond 1977), makes Beluga Point the lone early Holocene site in the Cook Inlet region identified to date. The only other site in the region that exhibits a similar assemblage is the early middle Holocene Long Lake site, dating to approximately 6600 BP in the Matanuska Valley (Reger and Bacon 1996). Despite the coastal location, these early microblade assemblages have been interpreted as reflecting the activities of terrestrial hunter-gatherers (Workman 1996).

The middle Holocene (6000 to 4000 BP) in Cook Inlet is represented by components BPN-II and BPS-II at Beluga Point. Though also undated, the presence of microblades and ground slate indicate an association with the maritime-adapted Ocean Bay I and II assemblages in the Kodiak archipelago, the Takli Alder and Birch assemblages of Shelikof Strait (Reger 1981:185-186), and assemblages from the Alaska Peninsula that appear to be associated with the Arctic Small Tool tradition (Dumond 1977; Henn 1978).

Sites dating between 3000 and 1000 BP in the Cook Inlet region suggest the development and/or spread of Pacific Eskimo culture, seen in Norton affinities of a Beluga Point component dating prior to 1500 BP. It has been suggested that this period saw the spread of Norton peoples and technology from the Bristol Bay area (Reger 1981). Norton influence in Cook Inlet is overshadowed in this period by a number of

sites exhibiting strong similarities to Kachemak tradition sites to the south. Upper Cook Inlet Kachemak components differ from those of the Kenai Peninsula and Kodiak in that they exhibit a toolkit that is apparently more adapted to terrestrial hunting and riverine exploitation than maritime subsistence. Components at the Knik Arm sites of Cottonwood Creek (Decagonal 1975:25-26, 35-41), Fish Creek (Dumond & Mace 1968) and Moose River (Dixon 1980:32-34; Reger & Boraas 1991) are representative of this adaptation, later defined as Riverine Kachemak by Reger and Boraas (1996), dating to between 2000 and 1000 BP on the Kenai Peninsula.

By far the most visible prehistoric site type in the Cook Inlet region is that of the late prehistoric Athapaskan Tradition. These sites, often characterized by rectangular house depressions, cache pits, few diagnostic artifacts, and an abundance of fire-cracked rock, are presumably associated with the Dena'ina Athapaskans that are thought to have replaced local Eskimo groups in the archaeological record by perhaps 750 or 1000 BP (McMahan et al. 1991). Linguistic evidence and Dena'ina oral history suggest that Athapaskan groups from the Copper River drainage and the upper Stony and Mulchatna Rivers began moving into upper Cook Inlet between 1,500 and 2,000 years ago (Kari 1988). Of special significance is the existence of the modern Athapaskan village of Eklutna, located to the north of Fort Richardson on Knik Arm; important aspects of the history of this village are found in the work of Chandonnet (1979, 1985), Yaw Davis (1965, 1994) and Yarborough (1996). General information on the Dena'ina Athapaskans gathered from studies in the Lake Iliamna – Lake Clark region is found in the work of Townsend (1965, 1970, 1975, 1981) as well as that of Ellanna and Balluta (1992).

Previous archaeological work at Fort Richardson includes at least eight projects since the late 1970s (Bacon 1979; Hedman et al. 2003; Holmes 1979; Reynolds 1996; Shaw 2000; Steele 1978, 1980; Veltre 1978). Of these surveys, only Steele, Reynolds, and Shaw reported the discovery of archaeological sites. Steele's 1980 work produced 4 sites, (ANC-263, 264, 265, and ANC-268), all of which were historic 20th century cabins. Reynolds (1996) recorded the multi-component (historic and late prehistoric) site ANC-822 near Ship Creek in the vicinity of the Moose Run Driving Range. Shaw (2000) recorded approximately 20 sites, the majority of which were Army related mounds, foxholes, and bunkers. Shaw's work also revealed a single prehistoric site, ANC-1175, composed of a single lithic flake and a small lithic spall. This discovery is associated with a cleared area located along the edge of the Elmendorf Moraine (Shaw 2000: 97). The work of Shaw, Steele (1978), and Dilley (1996) indicate that moraine features scattered across Fort Richardson and oriented roughly northeast by southwest, represent a relatively high probability location for discovering prehistoric archaeological sites on Fort Richardson.

Historic resources

In addition to the known archaeological sites on Fort Richardson, there are numerous locations of historical and cultural significance, though the exact locations of many of these features have not been recorded to date. Portions of the Iditarod Historic Trail (ANC-270 and 280) are recorded and known to potentially exist on Fort Richardson. The Girdwood-Ship Creek Connecting Trail (ANC-280), descended the Ship Creek valley to the vicinity of Fort Richardson, where it presumably joined the Eagle River-Knik Trail (ANC-270). Though it is likely that ANC-270 lies outside of Fort Richardson lands, a connecting trail from Anchorage to ANC-270 is known to have existed. This connecting trail is recorded as following the Eagle River drainage (presumably from Knik Arm) to Lake Clunie, and on to Birchwood (CEMML 2001:26). This route is likely to have followed Clunie Creek north from Eagle River to Lake Clunie, a route that crosses the northern portion of Fort Richardson.

A number of historic properties are located on or near Army lands in Alaska; many of these properties are historic structures and buildings pre-dating or associated with World War II and Cold War era Army activities (see e.g., Hollinger 2001; Shaw 2000). As found during previous surveys on Fort Richardson (e.g., Shaw 2000), evidence of previous military training activity was prolific throughout the proposed training project areas. Heavy disturbance from trench building, foxholes and unexploded ammunitions (UXO) were found frequently during survey. Although there is a possibility that some of these features may date to trainings undertaken during World War II and the immediate post-war period, none of these

features can be clearly assigned to a specific date. Features such as these were referred to as 'Base Ground Defense Sites' in Shaw (2000), and were uniformly determined to be ineligible to the National Register (Shaw 2000: 16-22, 121). As Shaw explained:

> '[such sites are] temporary, theater-of-operations type structures, which are in a deteriorated condition with the construction date being uncertain within about 10 years. Most [military training] sites…have lost physical integrity through neglect after abandonment. The sites have also lost other aspects of integrity regarding design, setting, materials, workmanship, feeling and association over the years by neglect and/or direct actions resulting from operating a military base with changing physical requirements associated with execution of the primary mission. Such actions range among planned demolition of buildings judged to be excess property, inadvertent destruction of structures during new uses of the land such as for gravel pits, construction of new facilities which intrude into and radically change the site setting that existed during WWII, and direct efforts to "clean up" the sites when use stopped' (Shaw 2000: 16).

Features associated with past military training operations, falling under Shaw's 'Base Ground Defense Site' classification (i.e., foxholes and bunkers), were found throughout the proposed project areas reviewed in 2002, and show no clear pattern or relationship as identified in the field. In agreement with Shaw, archaeological evaluations of these features would not contribute significantly to our understanding of military training history in WW II, and do not qualify under National Register criteria D (36 CFR § 60.4). Similarly to Shaw's findings, the continued use of these areas for subsequent base activities has heavily impacted the original structural integrity of the features. As a result of these conclusions, these features have been determined ineligible for listing in the National Register.

2.1 Multi-Purpose Training Range (MOUT), Infantry Platoon Battle Course (IPBC) and Infantry Squad Battle Course (ISBC) Training Range Surveys

In 2002, the United States Army proposed range development projects within U.S. Army Alaska (USARAK) lands at Ft. Richardson, involving the construction of three training ranges: The Multi-Purpose training range upgrade/expansion project (MOUT), located immediately south of the coast line in the northern quadrant of Fort Richardson; the Infantry Platoon Battle Course (IPBC), located north of Eagle River and immediately east of the coastline; and the Infantry Squad Battle Course (ISBC), located south of Arctic Valley Road (figure 2).

The proposed projects would construct facilities that meet requirements for implementation of the USARAK military mission at Fort Richardson. All projects would support proposed implementation of the proposed Stryker Brigade Combat Team transformation within USARAK (which is being analyzed overall in a specific Environmental Impact Statement (EIS)), but all proposed training range projects are mission-essential for the existing force, the 172nd Infantry Brigade (Separate), as certified by U.S. Army Pacific.

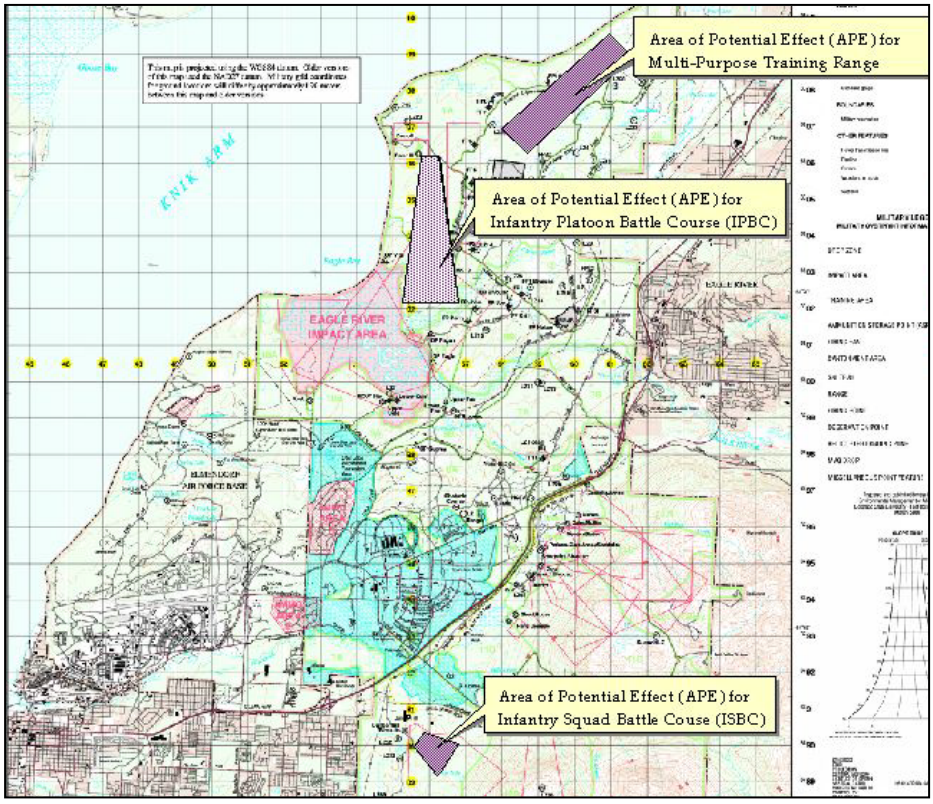


Figure 2. Location of proposed training range construction footprints.

The Multi-Purpose training range (MOUT) upgrade/expansion would create a training range in the northeastern corner of Fort Richardson, oriented towards Eagle River Flats Impact Area. The range would consist of two lanes (with service roads) along which vehicle-mounted weapons crews would travel and engage moving and stationary targets. Support facilities would include a warm-up facility, arctic latrines, an ammunition breakdown facility, control tower, power and data system, electric service, crushed aggregate parking area and site improvements.

The remaining Infantry Platoon Battle Course (IPBC) and Infantry Squad Battle Course (ISBC) training ranges would provide supporting facilities to train USARAK and other Alaska soldiers in infantry squad/platoon tactics and basic urban/suburban operations using automated targetry, enabling trainers to vary scenarios presented to trainees. The IPBC, proposed for north Post between Malemute Drop Zone and Eagle River Flats, is a larger-scale course designed for combat realism and larger unit (platoon) training. As a part of training exercises at the IPBC, other weapons (e.g., mortars, artillery) could be indirectly fired over this range to provide combat realism. These rounds would impact in Eagle River Flats and would be fired within restrictions established for such firing within U.S. Army Alaska Regulation 350-2, *Training*.

The Infantry Squad Battle Course (ISBC), proposed for south Post on what is now Davis Range (built on top of a former tank table range), would include a breach facility, an urban assault course, and a shoot house. These ancillary ranges would be arranged near the Infantry Squad Battle Course and share common support facilities. This part of the project is primarily an upgrade rather than new construction, as many course requirements already exist at Davis Range.

No historic properties or archaeological sites have previously been identified within the proposed training range construction footprints.

Survey and Field Methods

Based on previous survey findings outlined above, the primary focus of the current field inventory was to identify non-military archaeological resources located beyond cantonment areas on Fort Richardson, as described in the project research design (Hedman 2002). Special attention was focused on glacial moraines and ridges as potential high probability areas.

In July 2002, an archaeological survey crew, comprised of five archaeologists employed by the Center For Environmental Management of Military Lands (CEMML), Colorado State University, conducted a pedestrian survey of the three proposed range construction areas. The projects' area of potential effect (APE) encompassed areas larger than proposed range construction footprints, in order to ensure coverage of areas that may incur secondary impacts during construction or use (e.g., access, staging of equipment, etc.). The survey area total for all three proposed training ranges was 5,641 acres. Once the specific construction footprint and surrounding areas of potential effect were surveyed, initial work was begun to survey lands that may be impacted by firing fans associated with the proposed training ranges. Survey of firing fans for each training range will continue in the 2003 field season.

Parallel pedestrian transects spaced at approximate 20m intervals were walked either north-south or east-west, depending on terrain and access. Transect survey units were partitioned according to existing roads and trails where possible. When existing roads did not provide for practical unit boundaries, a one square kilometer work unit was defined.

Random sub-surface testing to identify potentially buried cultural material was initially conducted every 100m of surveyed area, due to minimal ground surface visibility. However, given the low probability and level of disturbance at many of these areas, systematic sub-surface testing continued only in areas determined to be high probability (e.g., lake margins, glacial moraines and ridges, river/stream confluences) during initial review of the proposed project area, and as determined by the supervising archaeologist and field crew leader based on survey findings. Shovel tests were approximately 40 x 40cm, and frequently did not extend below a depth of 70cm. Levels were dug at 7cm levels, unless clear stratigraphy dictated otherwise, and screened through ¼" hardware cloth. No cultural materials were identified or recovered during the field inventory.

Summary

Survey and sub-surface testing failed to identify any cultural resources within the boundaries of any of the three proposed training range projects' areas of potential effect. The project areas have undergone heavy disturbance resulting from previous military activities, evident in interspersed foxholes, bunkers, UXO, and military training debris found throughout the surveyed area. As described above, none of these features were determined eligible for the National Register, based on defined criteria (36 CFR § 60.4).

2.2 School Fish Camp Site Relocation

As surveys for the proposed training ranges were completed in 2002, a section 110 investigation was conducted in remaining time to relocate a recorded historic site: the remains of a Bureau of Indian Affairs school fish camp site located near Whitney Point.

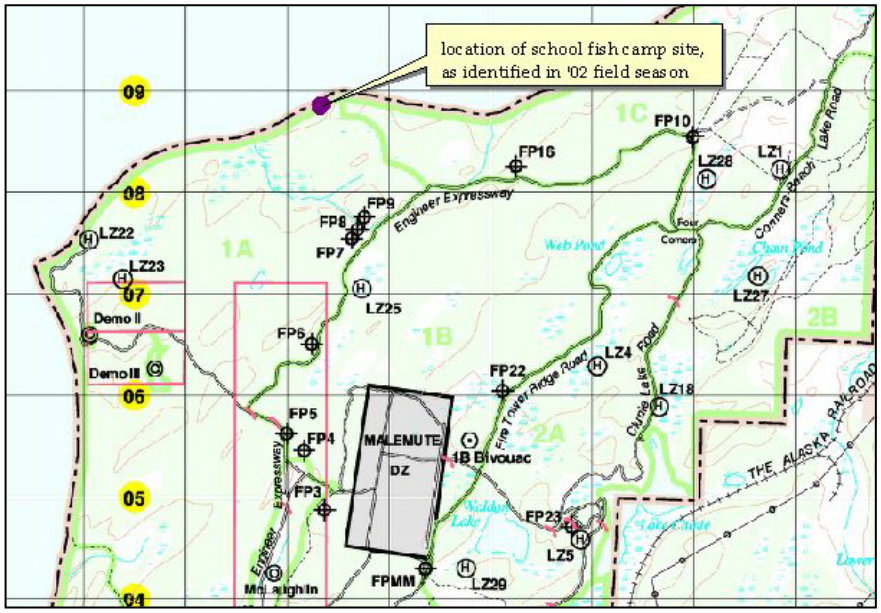


Figure 3. Location map of School Fish Camp Site, near Whitney Point.

In 1994, Yaw Davis conducted a collaborative study with the Dena'ina team from the Native Village of Eklutna to identify traditional cultural sites and document ethno-historic land use on Elmendorf Airforce Base. This study was not confined only to Elmendorf, but also extended onto Fort Richardson near its southern boundary with Elmendorf, and north of Eagle River Impact Area, to Whitney Point (see figure 3). A fish camp site was identified at that time near Whitney Point, which was used by the Eklutna Industrial (Vocational) School from 1924 – 1946. The site was identified during the 1994 study, however no locational details were recorded, or clear photographic record documented. Location details, Photo log and sketch map were recorded and a site record was produced for formal documentation of the site.

In 1924, the Department of the Interior Bureau of Education built and maintained the Eklutna Industrial (Vocational) School. The school was established to house 26 orphans, whose parents had died in the flu epidemic of 1918 (Carberry & Lane 1986: 174). The industrial school was a multi-faceted institution that included a collection of buildings (including a six room hospital, isolation ward, director's cottage, girls' and boys' dormitories, shop, gymnasium, cannery car; meat house, paint house, barn, brooder shed, laying house, waiting station and hog house (Chandonnet 1979: 21)). Within two years the school's population doubled, and there was a waiting list for new students. The fish camp site was constructed and used by the school to provide training in traditional fishing methods, while also providing fish for the school's subsistence (Yaw Davis 1994: 53). By 1946 the buildings had been condemned and the school was permanently closed (Chandonnet 1979: 22).

Figure 4. View of School Fish Camp site heading southwest..

The school fish camp site, as it was referred to in Davis' report (1994), borders two vegetation zones: halophytic and lowland interior forest. The halophytic zone north of the site is composed of barren and vegetated mud flats. The lowland interior zone consists of several lower elevation upland forests, characterized by diverse woodland vegetation. The fish camp site is located within an area where the majority of the forest floor is covered with a dense layer of decaying birch and spruce trees, due to fungal decay and insect damage. The area is overgrown with dense stands of alders (*Alnus sinuata*), devil's club (*Oplopanax horridus*), and blue joint grass (*Calamagrostis sp.*). Cottonwood trees (*Populus trichocarpa*) are sparsely present.

The site is located on the edge of estuarine marshes that form a crescent shaped beach (east-west), which offers limited protection from wind currents. There is a pond formed by wetlands northwest of the smoke house that is most likely the water source described in Yaw Davis' report (1994: 54). The site also rests at the base of a slope rising up to coastal bluffs; erosion of the bluffs does not appear to have damaged the site to date, but increased erosion may soon affect the site's integrity.

Findings

The site was re-located by following the narrative description provided in Davis (1994: 52 – 56). The cottonwood trees mentioned in a description of the fish camp site location in the 1994 report are located approximately 80m east of the smoke house.

Figure 5. Example of probable fish cache depression.

The site consists of three primary levels, with the smoke house serving as the main focus. The smoke house is located on the first level, at 10m above sea level; it is no longer completely standing, and is partially buried with thick ground cover. Vegetative intrusion has occurred, with an alder branch having grown through the east wall of the smoke house. Three possible fish caches were found southeast of the smoke house on the second level, incorporating the lower end of the slope. To the southwest of the smoke house is a deep, irregular-shaped square depression bordering the base of the slope, leading up to a flat, open area approximately 11m above sea level. This open area comprises the third level, and is the only flat area near the site, suggesting a possible occupational use. Well-defined animal and recreational trails linked the entire site area up to the bluff's crest.

Table 1. Features identified at School Fish Camp Site and location.

Description	Easting	Northing
Smoke house	[redacted]	[redacted]
Deep depression (sw 280)	[redacted]	[redacted]
Fish cache 1	[redacted]	[redacted]
Fish cache 2	[redacted]	[redacted]
Fish cache 3	[redacted]	[redacted]
Flat, open area	[redacted]	[redacted]

No subsurface testing was undertaken at the School Fish Camp Site during the 2002 season. It is hoped that further documentation of the site will occur in conjunction with a traditional cultural property study, in collaboration with the Native Village of Eklutna. As the site lies outside the construction footprints of the proposed training range projects, no impacts are expected to occur to the site as a result of training range construction or use.

Summary

The School Fish Camp Site is considered potentially eligible to the National Register under criteria A and D, pending further evaluation and documentation of the site in collaboration with the Native Village of Eklutna. The site location does not fall within any proposed or existing construction or training areas, but will be monitored periodically to assess the site's status and ensure that it is not impacted by future projects or training use.

2.3 Beaver Dam Restoration project, Otter Lake

U.S. Army Alaska proposed a project to restore a failed beaver dam immediately south of Otter Lake on Fort Richardson. Farrel Road, a gravel road with a substantial base, was constructed in the 1960s, crossing a small drainage that flows northeast into Otter Lake (see figure 6). Beavers subsequently built a dam along the south side of the road in the early 1990's, creating a large pond to the south, encompassing a surface area of approximately 5 acres. The legal description of the project area is [redacted]

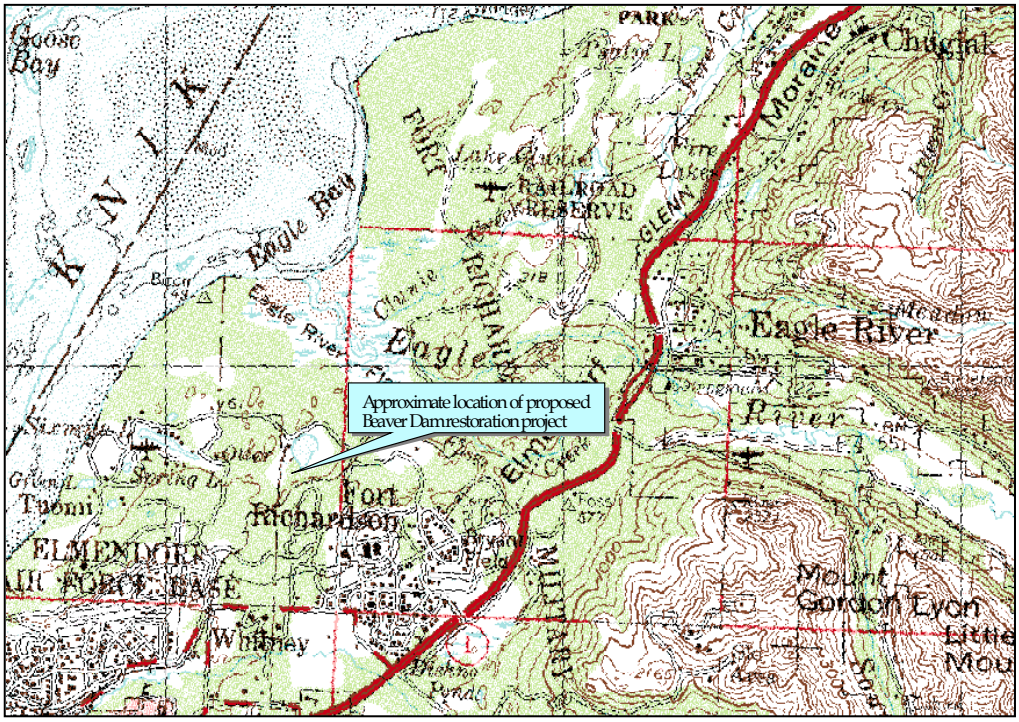


Figure 6. Project location of Otter Lake Beaver Dam restoration project.

The dam has been raised each year by the beavers' efforts; by spring 2002 the dam reached a maximum height of approximately 3.5m. In 1998, a pair of trumpeter swans used the pond created by the beaver dam after the spring migration and have returned each year to raise young. However, on 19 May 2002 the beaver dam failed and the pond dissipated down the creek and into Otter Lake. A recreational trail and board walkway was constructed prior to the beaver dam's collapse, making use of the abandoned Farrel Road base; when the dam failed, this walkway was also washed out and would be repaired under the current project. The restoration plan would perform maintenance on existing structures, e.g., the beaver dam and Farrel Road/recreational trail. This effort was conducted using existing gravel and cobbles that washed out of the beaver dam and roadway. Cobble, rock and gravel material was hauled by wheel barrows, buckets or by equipment (backhoe) to reconstruct the dam. Gabion cages were used to hold rock material in place. Once the dam has been restored, the board walkway for the recreational trail will be rebuilt over perpendicular supports that will be added to the gabions in the dam (Quirk 2002).

No historic properties or archaeological sites have previously been recorded within the proposed area of potential effect of the current beaver dam restoration project.

Survey and Field Methods

A pedestrian survey of the proposed project area was conducted on 04 July 2002. Opportunistic survey tactics were employed, focusing on areas of good visibility, and where direct impacts are anticipated, i.e., existing approaches across the flooded area and adjacent road shoulders. Transects were walked in a meandering pattern to maximize coverage of potentially impacted areas. The area shows evidence of heavy disturbance, evident in imported and re-deposited gravels/fill from construction of the road base and installation of a viewing platform, and does not represent original soil contexts. Soils are generally friable on the creek/wetland margins, with gravel inclusions. Visibility in the project area was excellent

along the road margins and around the existing viewing platform; however, visibility was extremely poor in adjacent areas, due to dense vegetative cover.

Findings/Summary

No cultural material was observed during survey. Disturbance in the area is extensive resulting from road bed construction, beaver activity and recreational trail construction, resulting in major disturbance to original soil deposition in the proposed project area. As the proposed project will restore the area to its existing condition prior to the failure of the beaver dam, new impacts will be minimal, and the project should have no effect on archaeological resources.

2.4 Fire Tower Ridge Road Upgrade and Repair Project

The Land Rehabilitation and Maintenance (LRAM) section of U.S. Army Alaska's Directorate of Public Works proposed a project to repair and upgrade the existing surface of Fire Tower Ridge Road, located northeast of Eagle Bay (figure 7). Fire Tower Ridge Road is currently a gravel and dirt road that has been in use since the 1960's for access to training grounds in the northern section of Fort Richardson. The legal description of the project area is [redacted]

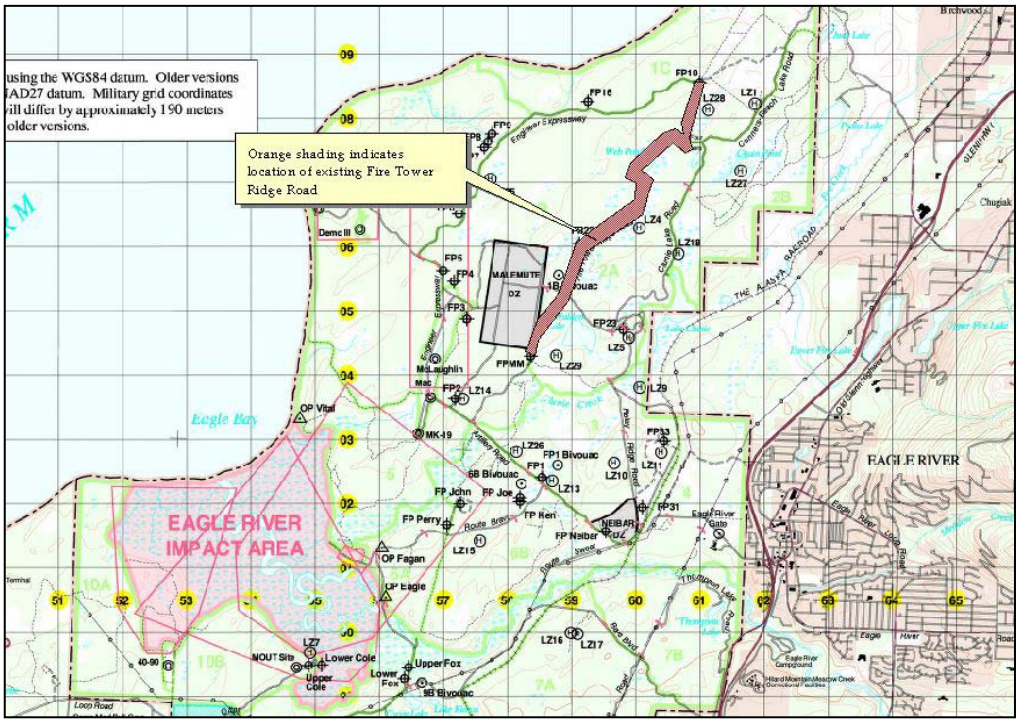


Figure 7. Location of Fire Tower Road upgrade project.

The proposed upgrade project will re-grade the existing base, add geo-textile fabric for stability, and re-grade the existing road with an 18" base of gravel to improve vehicle maneuverability and maintain access along the road corridor. No work outside the existing road prism is anticipated under the proposed project. No historic properties or archaeological sites have previously been recorded within the proposed area of potential effect of the current Fire Tower Ridge Road upgrade project.

Figure 8. General view of project area from southern boundary, at junction of Fire Tower Ridge Road and unnamed road, north of Waldon Lake. View heading north.

Survey and Field Methods

A field review of the proposed project area was conducted on 15 July 2002 by two archaeologists employed by the Center For Environmental Management of Military Lands (CEMML). Opportunistic survey tactics were employed, focusing on areas of good visibility, and where direct impacts are anticipated, i.e., road shoulders and flat areas where staging for vehicles and equipment may occur. The project area has undergone heavy disturbance, evident in imported and re-deposited gravels/fill from construction of the original road base and subsequent use, and does not

represent original soil contexts. Visibility in the project area was good along the road margins; however, visibility was extremely poor in adjacent areas, due to dense vegetative cover.

Findings/Summary

No cultural material was observed during survey. Disturbance in the area is extensive from previous road bed construction and use, resulting in disturbance to original soil deposition. As the proposed project will not extend outside the existing road prism, no new impacts to undisturbed ground will occur, and the project will thus have no effect on archaeological resources.

Figure 9. General view of project area near northern boundary, direction heading north.

3.0 Fort Wainwright (Including Donnelly Training Area)

Introduction

Similar to the archaeological research undertaken at Fort Richardson, three range construction projects were the primary focus of archaeological work at Fort Wainwright's Yukon Training Area in 2002. These ranges included: an Infantry Platoon Battle Course (IPBC), located in the western portion of Fort Wainwright's Yukon Training Area, and an Infantry Squad Battle Course (ISBC), to the east of the IPBC, and a Multi-Purpose Training Range (MOUT), located in the southwestern portion of Yukon Training Area. Additional archaeological fieldwork included surveys for: a proposed access road and parking improvements at Husky Drop Zone and Horseshoe Lake; upgrade and improvements to portions of Johnson Road, Skyline Road and Manchu Road; improvements to River Road; and the Russian Trench Live-Fire Facility access road upgrade. No historic properties will be affected by any of these proposed projects.

At Donnelly Training Area, three different alternatives were proposed for a Battle Area Complex (BAX) training range and were the primary focus of survey during the 2002 field season. Additional survey and analysis was conducted at the proposed locations for a Combined Arms Collective Training Facility (CACTF), a Combined Training Range (CTR), and a road upgrade project along 33-Mile Loop Road.

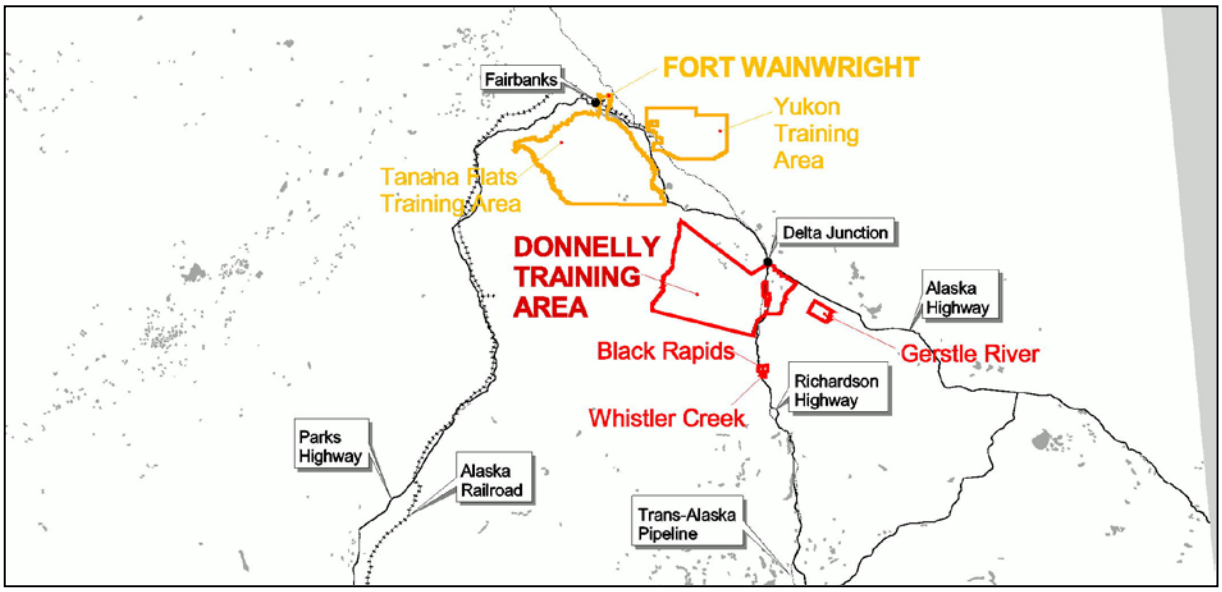


Figure 10. Location of Fort Wainwright, including Donnelly Training Area.

Setting

Fort Wainwright is located in central Alaska, north of the Alaska Range in the Tanana River Valley. The Post lies 120 miles south of the Arctic Circle near the cities of Fairbanks and North Pole in the Fairbanks North Star Borough. The installation consists of the Main Post, Tanana Flats Training Area, Yukon Training Area, Dyke Range, and Donnelly Training Area, which lies near Delta Junction, within the boundaries of former Fort Greely. The projects listed under Fort Wainwright are all located within the Yukon Training Area, approximately 20 miles southeast of Fairbanks (see figure 10).

Fort Wainwright has the northern continental climate of the Alaskan interior, characterized by short, moderate summers, long, cold winters, and little precipitation or humidity. Average monthly temperatures in Fairbanks range from –11.5° Fahrenheit (F) in January to 61.5°F in July, with an average annual temperature of 26.3°F. The record low temperature is –66°F, and the record high is 98°F. Average annual precipitation is 10.4 inches, most of which falls as rain during summer and early fall. Average annual snowfall is 67 inches, with a record high of 168 inches during the winter of 1970-71 (Natural Resources Branch 2002).

Background

Fort Wainwright training lands fall within an area occupied at the time of Euro-American contact by Lower-Middle Tanana Athapaskans, including 'bands' described generally as the Salcha, Big Delta-Goodpaster, Wood River and Chena Bands (McKennan 1981:564; Andrews 1975; 177; Mishler 1986). Traditional settlement patterns were focused on a widely mobile seasonal round, with the fall caribou hunt playing a pivotal role in subsistence preparations for the winter, while summer activities were focused at fish camps, and in berry/root collecting and sheep hunting (McKennan 1981: 565). These activities were frequently a communal focus, with several local 'bands' connected by common interest, geography and intermarriage. Despite anthropological attempts to define 'boundaries' for the peoples living in the lower Tanana River valley, natural terrain served as the only definable 'boundary' to settlement patterns (McKennan 1981).

As Euro-American traders, miners, missionaries and explorers moved into the Tanana River valley, the traditional lifeway of local Athapaskan groups was disrupted. Access to trade goods and the development of the fur trade not only affected traditional material culture, but also began to dramatically affect subsistence activities and settlement patterns. Similarly, the advent of missionaries in the Interior of Alaska profoundly affected traditional social organization. The introduction of mission schools for Native children and the doctrine of new religious beliefs contributed to an erosion of traditional settlement patterns and practices (McKennan 1981).

In 1898, the discovery of gold in the Tanana uplands began a rush of Euro-American settlement to the Tanana valley. As the economic importance of the Tanana valley increased, the need for reliable transportation routes and communication systems rose in tandem. Existing trails, such as the Bonnifield, Donnelly-Wahburn, and Valdez-Fairbanks trails saw increased use and development in the first decade of the 20th century. This activity also resulted in the establishment of several roadhouses and posts. In 1906 Congressional appropriations led to improvement of the Valdez-Fairbanks trail, crossing the Alaska Range south of Delta Junction, following the Tanana River to Fairbanks. Completion of the Alaska Railroad in 1923 was followed 20 years later by construction of the Alaska Highway in 1942, firmly tying the Alaskan interior to the outside.

As Fairbanks grew in the first decade of the 20th century, several agricultural homesteads were developed on lands now encompassed by sections of the Fort Wainwright cantonment. These homesteads provided Fairbanks with a variety of agricultural products and wood for fuel, but were subsumed when lands were withdrawn for the creation of Ladd Field, which later became Fort Wainwright (Price 2002).

Development in the Alaskan interior increased dramatically with the advent of World War II and subsequent military build-up in Alaska. Of particular significance was the development of airfields near Delta Junction (Fort Greely), Fairbanks (Ladd Field, later Fort Wainwright), and 26 miles southeast of Fairbanks (Eielson Air Force Base). These locations began as lend-lease bases and cold weather testing centers, but soon expanded with the increased need for military support during World War II and later Cold War.

Archaeology

Archaeological research on Fort Wainwright's training areas has resulted in numerous technical reports (Bacon 1978; Bacon and Holmes 1979; Dixon et al. 1980; Frizzera 1973; Higgs et al. 1999; Holmes 1979; Potter et al. 2000; Rabich & Reger 1978; Staley 1993), scientific papers (Holmes and Anderson 1986; West 1967; 1975), and the identification of at least 155 archaeological sites. Work on Fort Wainwright has been largely stratified sampling in nature, resulting at times in as little as 1% of the survey universe being inventoried. This work has largely focused on known recorded sites and areas thought to be of very highest potential for containing archaeological sites. Areas of less than ideal site potential have often been neglected, and sites that may be eligible for nomination to the NRHP have been incompletely documented or left unevaluated. Thus, while a large number of important sites have been identified on Fort Wainwright, a number of important gaps exist in the cultural resource inventory.

Despite its incomplete nature, the current archaeological record represents all of the recognized prehistoric cultures of the Alaskan interior. Of particular significance is the role played by archaeological resources located on Army lands in the definition of the Denali Complex of the American Paleoarctic Tradition (Anderson 1970; West 1967; 1981). Though not located on Army lands, two of the oldest well-dated sites in North America—Swan Point and Broken Mammoth, dated to between 11,500 and 12,000 BP—are located just to the north of Donnelly Training Area East (formerly known as Fort Greely, near Delta Junction), in the vicinity of Shaw Creek (Holmes 1996, 1998; Holmes et al. 1996; Yesner et al. 1999). Sites reflecting the influence of what has been termed Northern Archaic (e.g. Anderson 1968; Workman 1978), dating to perhaps 6000 to 2000 BP, are also present on Fort Wainwright training lands, as are late prehistoric Athapaskan (e.g. Andrews 1975; 1987; Cook 1989, Mishler 1986; Sheppard et al. 1991; Shinkwin 1979; Yarborough 1978) and Euro-American historic archaeological sites (Gamza 1995; Phillips 1984). The significance of these known sites on Army Withdrawal Lands is attested to by the fact that despite nearly 50 of these sites remain to be evaluated, 27 individual sites and 2 archaeological districts have been determined eligible for listing in the National Register of Historic Places (NRHP), while a third archaeological district remains to be evaluated.

Specific to Fort Wainright's Yukon Training Area (YTA), previous work has identified archaeological deposits in the small rises of Tanana Flats and those bordering the Tanana and Chena Floodplain. In contrast, small lithic scatters have been sparsely documented throughout the Yukon Training Area's 250,000 acres (Holmes 1980). A possible explanation for this discrepancy is that sites have been destroyed by military activity in high probability locations (i.e. along ridgelines and on hilltops). It is also possible that this lack of sites may reflect the low-intensity use of this rugged terrain. It is probable that human activity focused in areas near the Tanana, Salcha, Chena, and Wood rivers, relying on access to high country further upstream, rather than traveling overland through the hills of YTA.

Historic Resources

Historic research dealing with Fort Wainwright includes recent historic context studies that deal with homesteading (Price 2002), early mining (Neely 2001), and early transportation on Fort Wainwright (Burr Neely 2003). Although mining was perhaps the most important economic endeavor of the late 19th century and early 20th century in the Fort Wainwright area, only three archaeological sites associated with mining have been recorded on Army managed lands in Alaska (Burr Neely 2001:37). Several early transportation routes, roadhouses, and other structures associated with travel are known to exist in the vicinity of Fort Wainwright and Donnelly Training area, including the Donnelly-Washburn Bonnefield trails, for example (Burr Neely 2003). Military construction and training activities have also resulted in several potential site types, including downed aircraft, defensive fighting positions, and training and target debris. The majority of these 'Base Ground Defense Sites' are difficult to assign to a specific context, and have often been consistently used for military training exercises; such sites have thus been determined ineligible for listing in the National Register of Historic Places (see above; Shaw 2000).

3.1.1 Infantry Platoon Battle Course (IPBC) and Infantry Squad Battle Course (ISBC) Training Ranges, Yukon Training Area

U.S. Army Alaska proposed range development projects within Fort Wainwright's Yukon Training Area, involving the construction of two training ranges: an Infantry Platoon Battle Course (IPBC) and an Infantry Squad Battle Course (ISBC) (figure 11). The ranges would be located east of Eielson Air Force Base, along Manchu Road.

The Infantry Squad Battle Course (ISBC) would include a breach facility, an urban assault course, and a shoot house. Weapons fired on this course would use small arms, non-dudded ammunition, with small explosive charges used at the breach facility.

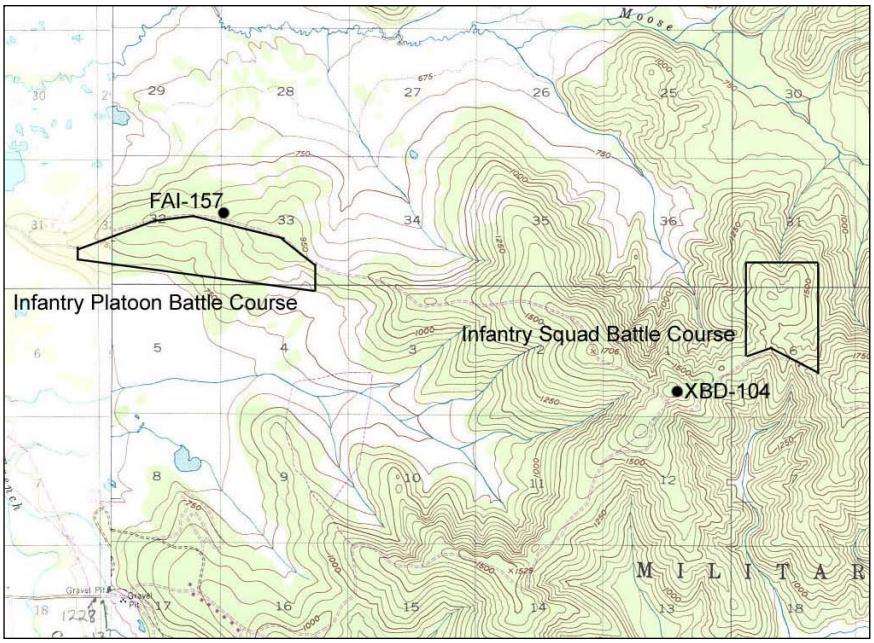


Figure 11. Location of IPBC and ISBC training ranges, Yukon Training Area.

The Infantry Platoon Battle Course (IPBC) is a larger-scale course, designed for combat realism and larger unit (platoon) training. Weapons fired on this course would be the same as those on the Infantry Squad Battle Course. Both courses would include an after-action review facility to allow the control, monitoring, and reviewing of simulations and training operations. Supporting facilities for both courses would also include communications, electric service, an ammunition breakdown facility, control tower, warm-up facility, crushed aggregate access roads and parking areas, and self-contained dry-flush, arctic latrines.

Several recorded prehistoric archaeological sites are located in the vicinity of the current projects' area of potential effect (APE): FAI-157; XBD-093; XBD-094; XBD-095; XBD-103; XBD-104; XBD-105; XBD-111 and XBD-162. Of these, only FAI-157 and XBD-104 are located directly within the proposed projects' APE.

Survey and Field Methods

In June and July 2002, an archaeological survey crew, comprised of four archaeologists employed by the Center for Environmental Management of Military Lands (CEMML), Colorado State University, conducted a pedestrian survey of the proposed range construction areas. The projects' area of potential effect encompassed an area larger than the proposed range construction footprints, in order to ensure coverage of areas that may incur secondary impacts during construction or use. The survey area thus included approximately 30 square kilometers, located to the north and south of Manchu Road.

Parallel pedestrian transects spaced at 20 meters were walked in all areas that were not deemed too wet or too steep (>40°) to contain cultural material. Transect survey units were partitioned according to existing roads and trails where possible. When existing roads did not provide for practical unit boundaries, a one square kilometer work unit was defined.

Systematic sub-surface testing was undertaken in areas considered to be high probability (e.g., lake margins, ridges, benches adjacent to steeper slopes) during initial review of the proposed project area, and as determined by the supervising archaeologist and field crew leader based on survey findings. Shovel tests were approximately 50 x 50cm, and all material removed was screened through ¼" hardware cloth. No cultural materials were identified or recovered during the field inventory. Specific effort was made to relocate the two recorded sites located within the proposed training ranges' area of potential effect (i.e., FAI-157 and XBD-104):

Figure 12. Aerial view of terrain at proposed training ranges, Yukon Training Area.

FAI-157

FAI-157 was recorded by Holmes (1979:23), consisting of a single chert flake and a segment of an obsidian microblade . The site was re-located during the 2002 field season, based on map coordinates and the location of partially filled test units. Sub-surface testing was undertaken during relocation to recover any additional cultural material and determine current boundaries; no additional cultural material was recovered. It is probable that the site was almost completely collected during the initial testing of the site. The site is not considered eligible for inclusion in the National Register of Historic Places, and no further work is recommended at this site.

XBD-104

XBD-104 was also reported by Holmes (1979:21), and relocated during the 2002 survey. The site consists of two gray chert flake fragments and a possible biface thinning flake found on the surface in a disturbed context. The site area, located near the intersection of Quarry and Manchu Roads, had been recently scraped by heavy equipment. Attempts were made to identify any further cultural material at the site, however no cultural material was observed.

Findings/Summary

Survey and sub-surface testing failed to identify any cultural resources within the boundaries of the proposed projects' area of potential effect. Two previously recorded sites, FAI-157 and XBD-104, were relocated; however both sites failed to contain any further cultural material. No additional cultural resources were identified within the proposed projects' area of potential effect.

3.1.2 Multi-Purpose Training Range Construction, Yukon Training Area

A third range development project was proposed by the U.S. Army at Ft. Wainwright's Yukon Training Area, involving the construction of a multi-purpose training range, located in the vicinity of Manchu Road immediately to the east of Eielson Air Force Base.

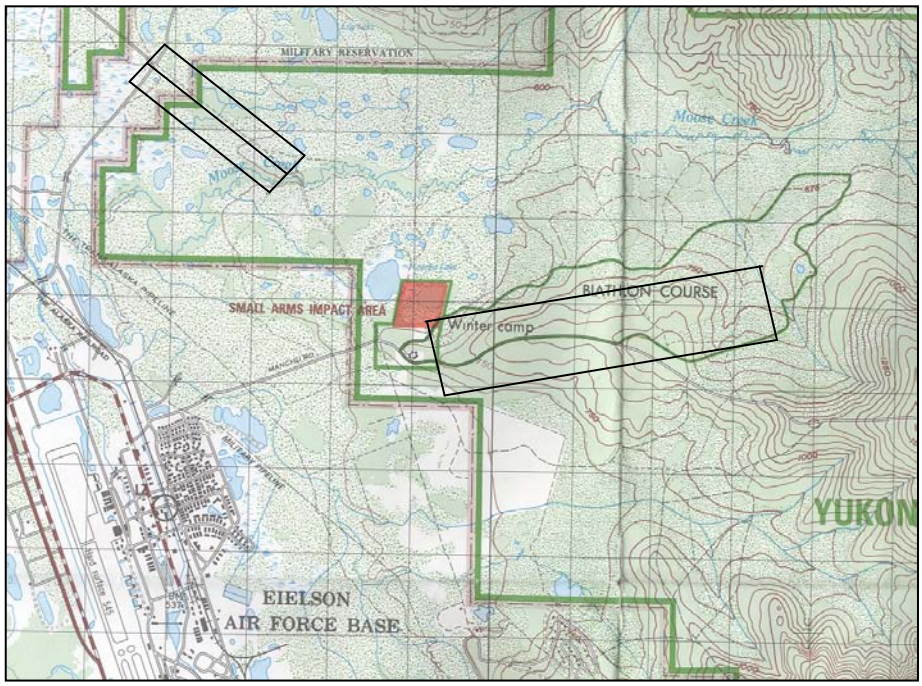


Figure 13. Location of proposed Multi-Purpose Training Range, YTA.

The project would entail construction of a control tower, an after-action-review building, warm-up facility, ammunition break-down facility, vehicle maintenance facility, vehicle holding area, gravel training roads, targets, arctic latrines, and utilities. The range, once constructed, would total approximately 850 acres. Project work would also include upgrades to the existing Manchu Lake Road, from Moose Creek to Transmitter Road. Road upgrades will include paving, ditching and replacement of abutments on the Bailey bridge, over Moose Creek.

Survey and Field Methods

Several known prehistoric archeological sites are located in the vicinity of the proposed Multi-Purpose Training Range project: FAI-157, XBD-093, XBD-094, XBD-095, XBD-103, XBD-104, XBD-105, 111, and XBD-162. Of these, only FAI-157 falls directly within the proposed project's area of potential effect (APE).

In June and July 2002, an archaeological survey crew, comprised of four archaeologists employed by the Center for Environmental Management of Military Lands (CEMML),Colorado State University, conducted a pedestrian survey of the proposed range construction area. The project's area of potential effect encompassed an area larger than the proposed range construction footprint, in order to ensure coverage of areas that may incur secondary impacts during construction or use. The survey area thus included approximately 30 square kilometers, located to the north and south of Manchu Road, and along a corridor linking Manchu Road to Transmitter Road (figure 13).

Parallel pedestrian transects spaced at 20m were walked in all areas that were not deemed too wet or too steep (>40°) to contain cultural material. Transect survey units were partitioned according to existing roads and trails where possible. When existing roads did not provide for practical unit boundaries, a one square kilometer work unit was defined.

Systematic sub-surface testing was undertaken in areas determined to be high probability (e.g., lake margins, ridges, benches adjacent to steeper slopes) during initial review of the proposed project area, and as determined by the supervising archaeologist and field crew leader based on survey findings. Shovel tests were approximately 50 x 50cm, and all material recovered was screened through ¼" hardware cloth.

No cultural materials were identified or recovered during the field inventory. Specific effort was made to relocate previously recorded sites, to assess integrity and potential for impact from construction and future training range activity.

FAI-157

FAI-157 was recorded by Holmes (1979:23) as a single chert flake with a segment of an obsidian microblade. The site was re-located during the 2002 field season, based on map coordinates and the presence of partially filled test units. The site was shovel tested extensively to determine remaining integrity and degree of intact material; however, no additional cultural material was recorded. Most likely, artifactual material at the site was almost completely collected during the previous testing of the site. This site is thus not considered eligible for inclusion on the National Register of Historic Places and no further work is recommended at this site.

Findings/Summary

Survey and sub-surface testing failed to identify any cultural resources within the boundaries of the proposed project's area of potential effect. Construction and use as proposed will not impact any identified archaeological resources.

3.1.3 Access road and parking improvements, Husky Drop Zone & Horseshoe Lake, Yukon Training Area

U.S. Army Alaska proposed two projects involving construction of new access roads and a parking pad approximately one kilometer to the east of Husky Drop Zone (within Yukon Training Area), in the vicinity of Horseshoe Lake (figure 14).

Husky Drop Zone

Husky drop zone is the Primary drop zone for all airborne operations at Fort Wainwright, supporting both light and heavy drops. The drop zone is located in a very wet area, with intermittent areas of permafrost. Heavy vehicular traffic during wet seasons (break-up & early fall) has, and continues to cause, severe degradation to the existing access road, as well as to vehicular movement within the drop zone proper.

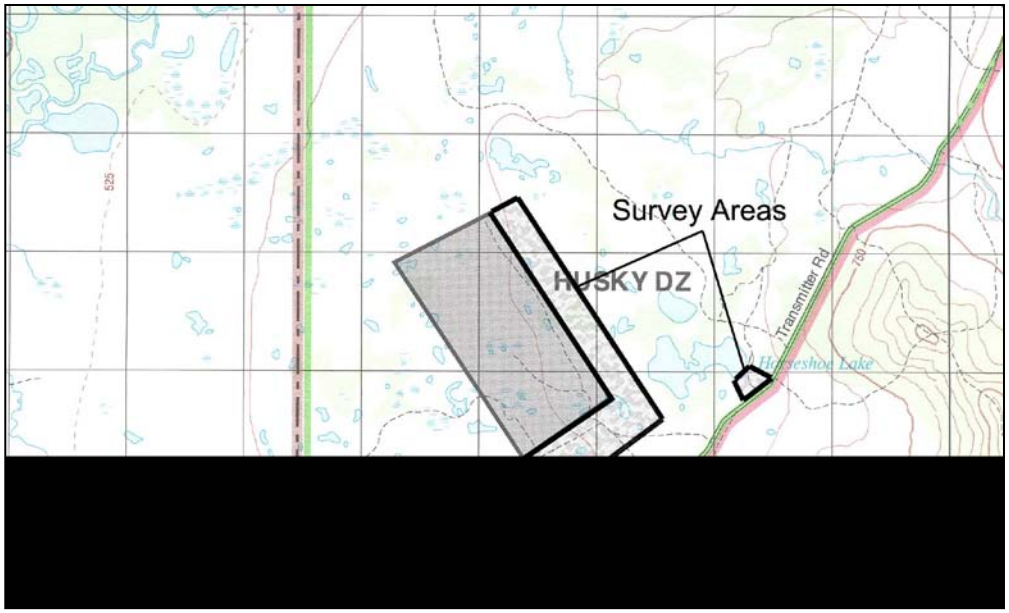


Figure 14. Location of proposed Horseshoe Lake access improvements, Husky Drop Zone (from USGS Big Delta quad).

The purpose of the proposed project is to relocate the access road from the thermo-carsted and permafrost area in the center of the drop zone, to the eastern edge of the drop zone. This would prevent further degradation of the drop zone and better enable all-weather use. The project would be accomplished in three phases: Phase 1 would reconstruct the road sub-base to the immediate east of the current trail; Phase 2 would establish the base of the new access road; and phase 3 will rehabilitate the previously used trail in the center of the drop zone.

Horseshoe Lake

Horseshoe Lake is located off Transmitter Road within Yukon Training Area (YTA), and is a popular recreation area. However, access to the lake is currently through an unimproved road that is frequently muddy and impassable. Additionally, the access road is located at an existing, unimproved secondary road intersecting with Transmitter Road, which traverses a wetland area adjacent to Horseshoe Lake. Occasional road proliferation is evident, and a burned-out car has been abandoned at the site.

The proposed Horseshoe Lake project would improve access to the lake and prevent proliferation of alternative access routes by hardening the secondary road, creating a designated parking area, and establishing a formal pedestrian footpath to the lake. Parking barriers will be installed around the access road and the parking area, to limit off-road vehicular access.

Survey and Field Methods

In May 2002, an archaeological survey crew, comprised of four archaeologists employed by the Center for Environmental Management of Military Lands (CEMML), Colorado State University, conducted a

pedestrian survey of the proposed construction project areas. In efforts to ensure coverage of areas that may be exposed to secondary impacts, the projects' area of potential effect encompassed an area larger than the proposed construction footprints.

Pedestrian transects were spaced at 15—20m intervals throughout the area of potential effect of both projects. Systematic shovel testing was utilized to determine the extent of sub-surface disturbance and to test for buried archaeological sites due to reduced visibility. At Husky drop zone, survey focused on an 80m wide section along the southern boundary of the drop zone, and a 450m wide section along the 1700m eastern boundary of the drop zone. At Horseshoe Lake, archaeological survey focused on a 120m wide section leading from Transmitter Road to the lake. Shovel tests were approximately 50 x 50cm, with all soil recovered screened through ¼" mesh hardware cloth.

Findings

The majority of the project area is wetlands, with most dry areas covered with invasive vegetation and periodic heavy equipment scrapes and debris piles. Pedestrian transects and shovel testing revealed no cultural resources at either the Husky Drop Zone or Horseshoe Lake project areas.

Summary

Survey and sub-surface testing failed to identify any cultural resources within the boundaries of the proposed project's area of potential effect. The projects will have no effect on identified cultural resources.

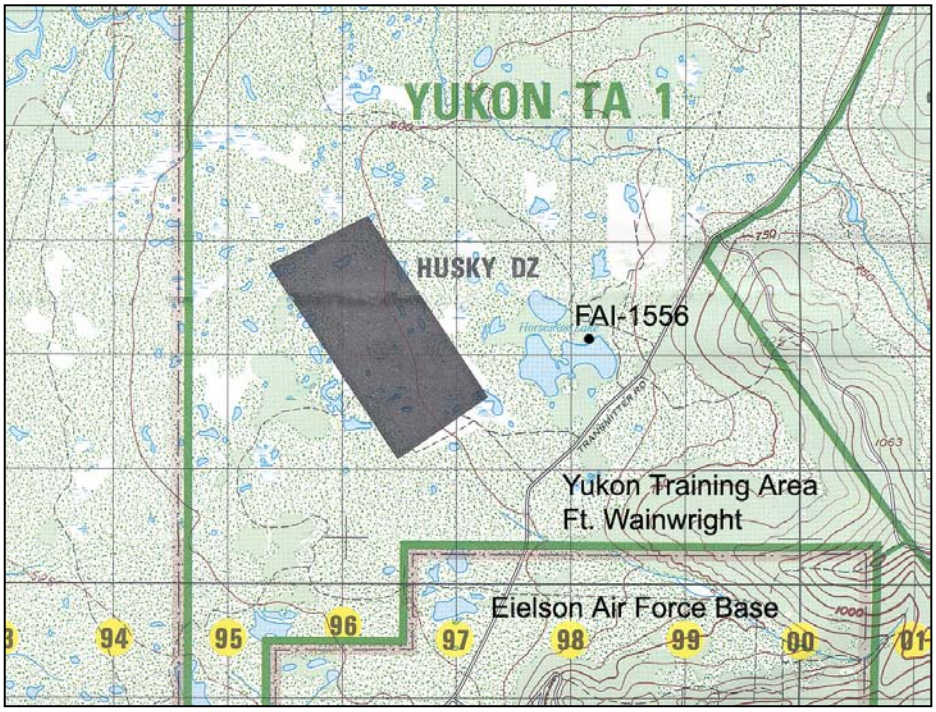


Figure 15. Location of Horseshoe Lake, near Husky Drop Zone, with site FAI-1556 illustrated (Yukon Training Area, Fort Wainwright).

3.1.4 Horseshoe Lake Site

A section 110 investigation of a high probability location in the periphery of the Husky Drop Zone/Horse Shoe Lake was conducted in the remaining field time available in 2002. One site was identified:

FAI-1556

Latitude: Not recorded.
Longitude: Not recorded.
Determination: Not evaluated.

Site FAI-1556 is located above the shoreline of Horseshoe Lake within Yukon Training Area, approximately 25 miles southeast of Fairbanks. Horseshoe Lake is located 8 km north of Eielson AFB and is accessed by Transmitter Road (figure 15). UTM coordinates for the site are: [redacted] FAI-1556 was identified during a Section 110 (National Historic Preservation Act—NHPA) inventory survey conducted in the area in 2002. The site is located on the northeast shore of the lake immediately west of a small bay and marsh. It was identified during shovel testing of a portion of slightly elevated terrain, situated approximately 20m back from the modern lakeshore. A single positive shovel test out of seventeen excavated in the area recovered 5 small (>2cm diameter) chert and basalt flakes. Two 1x1m test units were placed in the vicinity of the positive test and all removed soil was screened through ¼" mesh hardware cloth. Tests yielded a total of 87 late stage reduction and thinning flakes (all >2cm diameter) and 82 small fragments of calcined bone (also all >2cm diameter.). Artifacts were found from root mat to 15cm, primarily concentrated at 5-10cm below the surface. The lithic assemblage is dominated by dark gray to black banded chert and basalt.

Findings

Tight vertical and horizontal distribution of artifacts within the units, homogeneity of raw material, and late reduction stage of all lithic artifacts lends to the initial interpretation of the site as a short-term campsite where tool maintenance activities took place. However, due to limitations on timing and demands of the 2002 field season, efforts to evaluate the site and determine sub-surface extent have been inadequate to date. A formal determination of eligibility will be conducted at site FAI-1556 in the 2003 field season.

Further systematic survey will be undertaken in the area surrounding the lakes in efforts to conduct future Section 110 (NHPA) inventory research, as this area has not been previously investigated and represents a high probability for containing additional archaeological sites.

Table 2. Totals for recovered cultural material at FAI-1556.

Unit	Level	Bone fragments	Lithics
Unit A	5-10 cm	3	4
Unit B	0 -5 cm	0	14
	5 - 10 cm	19	42
	10 - 15 cm	60	19
Totals		82	79

Table 3. Totals of lithic material recovered at FAI-1556.

Unit	Level	Chert	Basalt	Totals
Unit A	5-10 cm	2	2	4
Unit B	0 -5 cm	10	4	14
	5 - 10 cm	30	12	45
	10 - 15 cm	11	8	19
Totals		60	27	87

Summary

One site was identified on the periphery of Horseshoe Lake, during the course of a Section 110 inventory survey, and evaluation of the site was initiated. A formal determination of eligibility will be conducted and completed in the 2003 field season.

3.1.5 Johnson Road, Skyline Drive upgrade improvements, Yukon Training Area

U.S. Army Alaska proposed an upgrade and vegetation removal project along the Johnson Road corridor and Skyline Drive in Fort Wainwright's Yukon Training Area (figure 16). The project would remove brush and vegetation to within 4" of the ground surface along road corridors. The length of Johnson Road would also be repaired and upgraded to improve drainage conditions, as the road is frequently inundated with heavy precipitation/snow melt. The Johnson Road leg of this project would begin where state maintenance ends, continuing to the intersection of Johnson and Brigadier Roads. The Skyline Drive section would include all sections of Skyline Drive lying outside the Stuart Creek Impact Area. Work would take place within a 20' wide strip on both sides of the road surface.

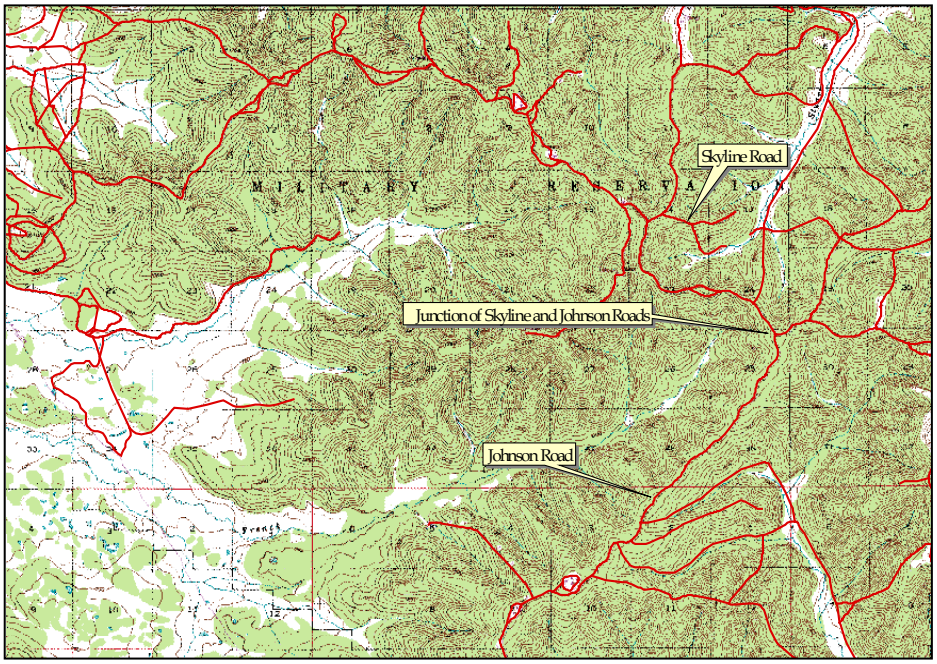


Figure 16. Location of proposed Johnson Road /Skyline Drive road upgrade.

No archaeological sites have been previously recorded within the proposed road corridor project areas.

Survey and Field Methods

In July 2002, an archaeological survey crew comprised of four archaeologists employed by the Center for Environmental Management of Military Lands (CEMML), Colorado State University, conducted a pedestrian survey of the proposed road upgrade projects. Parallel pedestrian transects spaced less than 10m were walked in all areas that were not deemed too wet or too steep (>40°) to contain cultural material.

Figure 17. View of Skyline Drive road corridor.

The length of Johnson Road was examined and seven locations were selected for intensive surface survey and shovel testing, based on known factors contributing to high

probability for site location (including lake margins and ridges or areas of higher elevation than that of the immediately surrounding terrain). The Skyline Drive section of the survey included the intensive testing of nine locations that were determined to be of high probability for containing archaeological sites. Shovel tests were approximately 50 x 50cm, and all soil recovered was screened through ¼" hardware cloth. No cultural material was identified during field investigations.

Findings/Summary

Survey and sub-surface testing failed to identify any cultural resources within the boundaries of the proposed project's area of potential effect. It is important to note that both of these roadway corridors have been extensively impacted through years of periodic maintenance. Additionally most of the locations of high archeological potential within the area of potential effect (APE) (i.e., ridgelines, hilltops, bluff edges) have suffered from heavy disturbance, having been leveled, used as landing zones, observation points, firing points or removed as road building material. The project area has thus been heavily disturbed and represents an extremely low probability for containing intact archaeological sites.

3.1.6 Manchu Road Maneuver Corridor upgrade, Yukon Training Area

U.S. Army Alaska proposed to construct erosion control measures on the Manchu Road Maneuver Corridor, immediately west of the Manchu Road/Quarry Road intersection in Fort Wainwright's Yukon Training Area (figure 18). Existing conditions on Manchu Road Maneuver corridor are poor, due to erosion caused by annual flooding. The proposed project, which would begin 500m west of the intersection of Quarry and Manchu Road, would involve raising the existing level of the road and installing culverts to allow water run-off and prevent further erosion and washout conditions. Water-bars, diversion ditches, and vegetation may also be used to reduce water run-off speed and direction.

The project is anticipated to address over 500m of roadway, extending west from the Manchu Road Maneuver-Quarry Road intersection. The initial phase of work would involve grading and crowning for the length of the project. The roadway would be leveled, filled, with washouts and ruts compacted. Drainage ditches may also be included in site preparation. Following this initial phase, culverts will be installed. Seeding of high-probability erosion sections will be conducted after all other work is completed.

No previously recorded sites exist within the proposed project's area of potential effect.

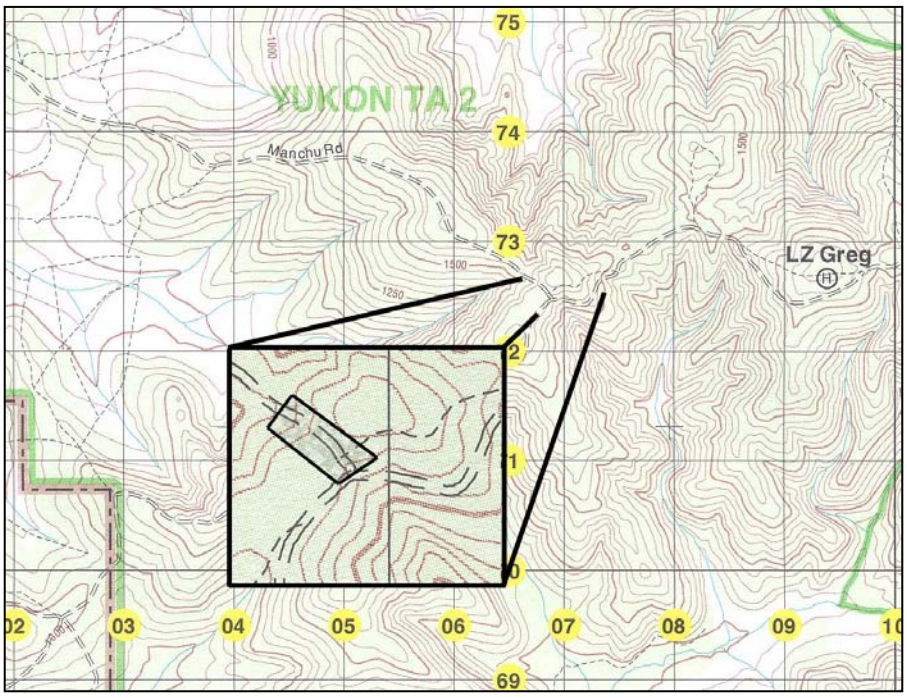


Figure 18. Location of Manchu Road corridor improvements (from USGS Big Delta quad).

Survey and Field Methods

In June 2002 an archaeological survey crew, comprised of four archaeologists employed by the Center for Environmental Management of Military Lands (CEMML), Colorado State University, conducted a pedestrian survey of the proposed road upgrade project. The area of potential effect (APE) covered the immediate road corridor and a 20m corridor on either side of the existing road, in order to ensure coverage of areas that may incur secondary impacts during project construction.

Parallel pedestrian transects spaced at 10m were walked in all areas that were not deemed too wet or too steep (>40°) to contain cultural material. Systematic sub-surface testing was undertaken in areas considered to be high probability (e.g., lake margins, ridges, benches adjacent to steeper slopes) during initial review of the proposed project area, and as determined by the supervising archaeologist and field crew leader based on survey findings. Shovel tests were approximately 50 x 50cm, and all soil recovered was screened through ¼" hardware cloth. No cultural material was identified during field investigations.

Findings/Summary

Survey and sub-surface testing failed to identify any cultural resources within the boundaries of the proposed project's area of potential effect. The project as proposed will have no effect to identified archaeological resources.

3.1.7 River Road upgrade improvements, Yukon Training Area

U.S. Army Alaska has proposed to address erosion control and improve access at River Road Pond, located in Yukon Training Area, Fort Wainwright. River Road Pond is stocked annually by U.S. Fish and Game, and is a popular recreation location with both the public and military personnel. Erosion has increasingly become an issue at the site, caused by a combination of vehicular use, off-road vehicle (ORV) use, and pedestrian traffic. Silt run-off from the access road has increased water turbidity in this formerly clear pond, and is affecting fish populations and recreational access to fishing at the site.

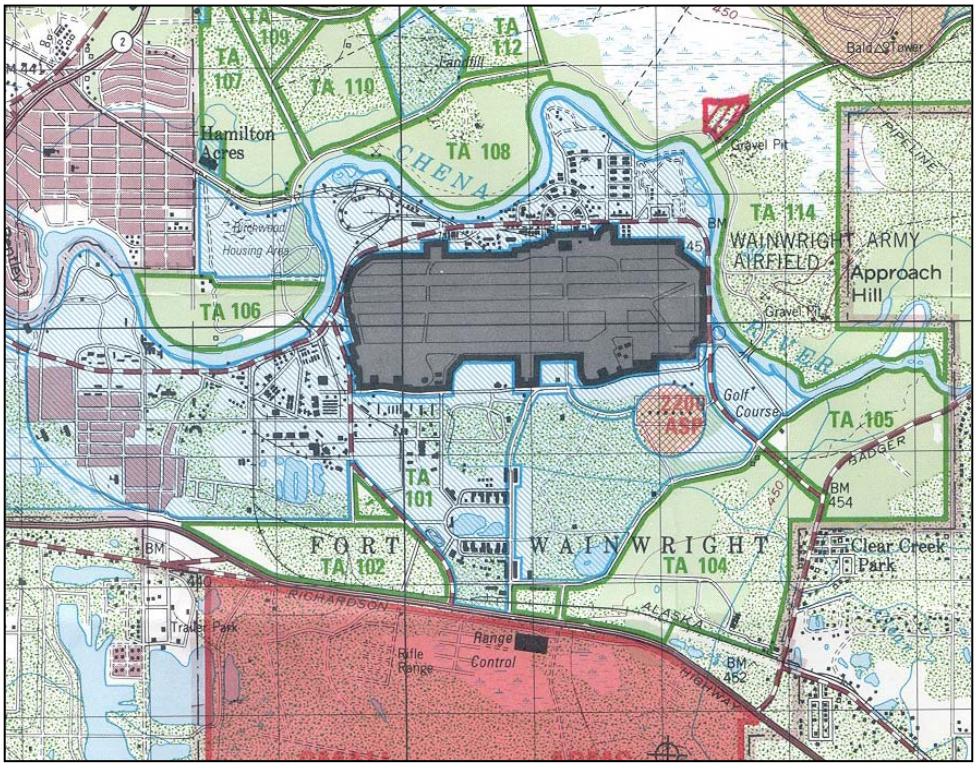


Figure 19. Location of proposed River Road upgrade project.

The proposed project would reduce soil erosion by stabilizing existing access road banks, hardening parking areas and pedestrian trails, and limiting ORV access. Erosion control measures would include construction of ditches, water dams, sediment catchments, re-vegetation, hardening, and installation of a formal viewing / fishing platform. The project would correct soil erosion in 2 phases: phase 1 would harden the access road(s), parking area(s) (both handicapped and non-handicapped), pedestrian trails and fishing areas; phase 2 would include the installation of a raised wooden walkway, and a designated viewing/fishing area or platform.

Figure 20. View of River Road Pond.

FAI-509

One site has been recorded within the proposed project's area of potential effect: site FAI-509 is located directly adjacent to River Road. The site is recorded as consisting of a three flakes eroding out of a hillside (AHRS 1999). A re-visit and survey of the site's recorded location did not identify any cultural

material; the site area has been heavily disturbed by previous road activity, and has most likely been destroyed by ground disturbance.

Survey and Field Methods

On 21 May 2002, an archaeological survey crew, comprised of four archeologists employed by the Center for Environmental Management of Military Lands (CEMML), Colorado State University, conducted a pedestrian survey of the River Road Pond and access roads/trails on Fort Wainwright. The project's area of potential effect (APE) was determined to be broader than the proposed construction/upgrade footprint, in order to ensure coverage of areas that may incur secondary impacts during construction activity. The APE thus extended 150m to the north of the River Road Pond, and to the south of the pond to Sage Hill road (see figure 19). Parallel pedestrian transects spaced at 10m were walked in all areas that were not deemed too wet or too steep (>40°) to contain cultural material. No cultural material was identified during field investigations.

Findings/Summary

Field survey revealed that the entire survey area has been heavily impacted by gravel removal and recreational use of the pond/gravel pit area. Impacts include two parking areas, one on both the north and south sides of the pond, and a 15m wide off-road vehicle trail that fully encircles the pond. Further disturbance is evident in a berm that has been constructed around the pond, at a distance of approximately 20m from the water's edge. The berm width extends to a distance of approximately 100m from the pond edge.

Figure 21. View of River Road corridor and surrounding vegetation.

No cultural resources were identified during survey. It is unlikely that any archaeological sites that may have been located in the immediate area would have remained undisturbed by previous construction and recreational activity.

3.1.8 Russian Trench Live-Fire Facility, Access Road Upgrade, Yukon Training Area

U.S. Army Alaska proposed a range maintenance project within Fort Wainwright's Yukon Training Area in 2002. The project would involve re-vegetation and upgrade at the access road to the Russian Trench Facility (figure 22). The Russian trench is a live-fire facility, situated on the edge of the Stuart Creek Impact Area. Access to the facility is an unimproved trail, extending from the Impact Area access road to the Trench facility. It has become largely inaccessible to military vehicles due to large erosional features (e.g., ruts, gullies, and mud holes). In addition, the area around the facility is currently devoid of vegetation as a result of previous construction in the area, and is contributing to poor erosion conditions.

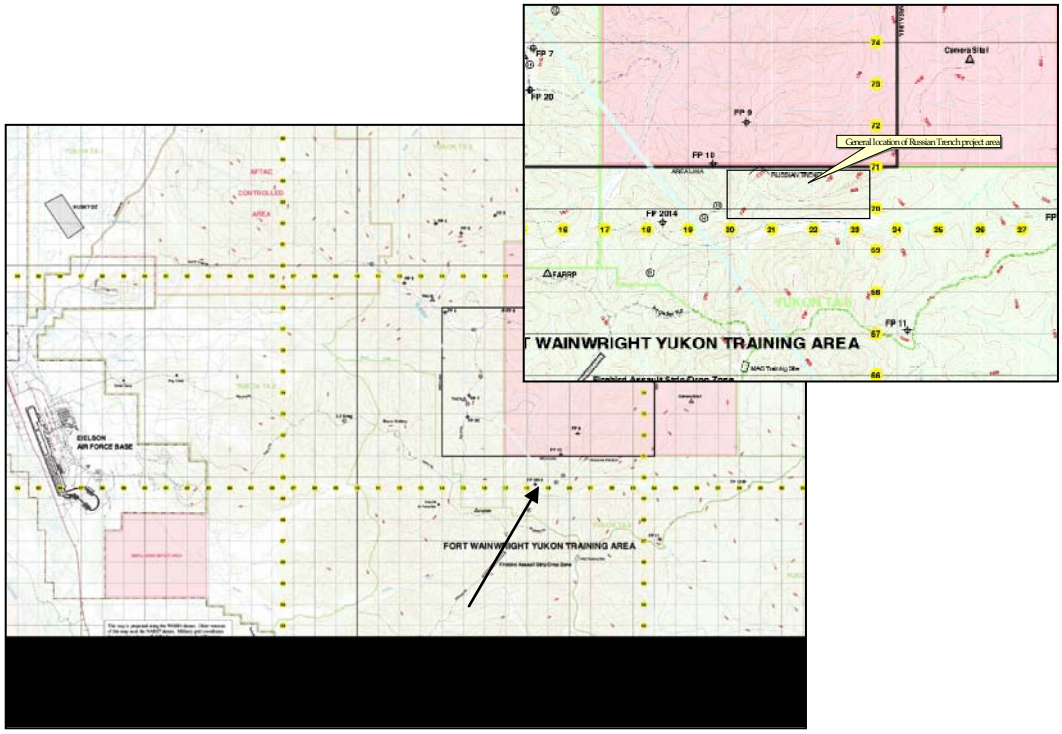


Figure 22. Location of access road to Russian Trench live-fire facility.

The proposed project would repair access to the facility for military training, improving eroded sections of the road, and re-vegetating a bare 5 acre area surrounding the facility to prevent additional erosion. Improvements would also entail construction of a grade and crown encompassing 167m of existing trail, and improvements to road ditches and cutouts to channel water away from the road. Additionally, geo-textile material would be installed and the road surface would be hardened using pit-run gravel, 3-4 inches in diameter. The non-vegetated areas surrounding the Trench would be reseeded, using an approved seed mixture with no noxious weed species.

Survey and Field Methods

Several known prehistoric archaeological sites are located in the vicinity of the proposed project's area of potential effect (APE): FAI-157, XBD-093, XBD-094, XBD-095, XBD-103, XBD-104, XBD-105, 111, and XBD-162. XBD-162 is located directly adjacent to the APE of the proposed project.

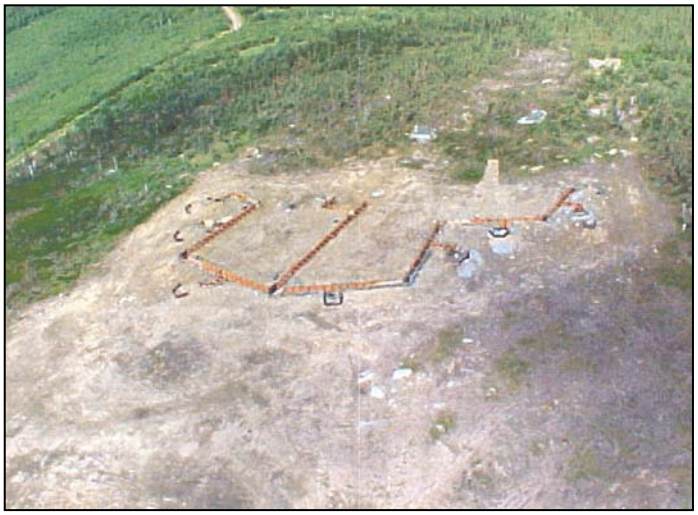


Figure 23. View of Russian Trench live-fire facility.

XBD-162

Site XBD-162 is recorded as consisting of a single black chert flake located on the hilltop directly north of the Russian Trench facility. The site description notes that the area has been extensively disturbed by military activity.

In June and July 2002, an archaeological survey crew, comprised of four archaeologists employed by the Center for Environmental Management of Military Lands (CEMML), Colorado State University, conducted a pedestrian survey of the proposed Russian Trench facility project area. The project's area of potential effect (APE) is limited to approximately 167m of access road and a 5 acre cleared area fronting the trench. Parallel pedestrian transects spaced at 20m were walked in all areas that were not considered too wet or too steep (>40°) to contain cultural material. Several shovel tests were undertaken on the gentle slope fronting the trench. Shovel tests were approximately 50 x 50cm, and all soil recovered was screened through ¼" hardware cloth. No cultural materials were identified or recovered during the field inventory.

The proposed project area has been heavily used for live-fire training and there is extensive evidence of bulldozer work. As the single recorded site in the vicinity (XBD-162) is located within a live-fire impact area just north of the APE, unexploded ordnance issues precluded any attempt to relocate this site.

Findings/Summary

Survey and sub-surface testing failed to identify any cultural resources within the boundaries of the proposed project's area of potential effect. The project area represents a low probability for containing intact archaeological sites, due to substantial disturbance from previous military training and vehicular access.

3.2 Donnelly Training Area (Formerly within boundaries of Fort Greely)

Introduction

U.S. Army Alaska (USARAK) has proposed three range development projects and improvements to one road on lands at Ft. Wainwright's Donnelly Training Area, proposed to begin construction in 2003. This work would involve the construction of a Combined Training Range (CTR), a Battle Area Complex (BAX), Combined Arms Collective Training Facility (CACTF), and improvements along 33-Mile Loop Road. An archaeological survey of the proposed training range areas and road improvement was conducted in June, July and August of 2002. A total of 108 archaeological sites were identified and recorded in the areas surveyed during the 2002 summer field season. Nineteen of these sites fell within the proposed range and/or road upgrade construction footprints, and were subsequently evaluated for eligibility to the National Register of Historic Places, pursuant to 36 CFR 800.

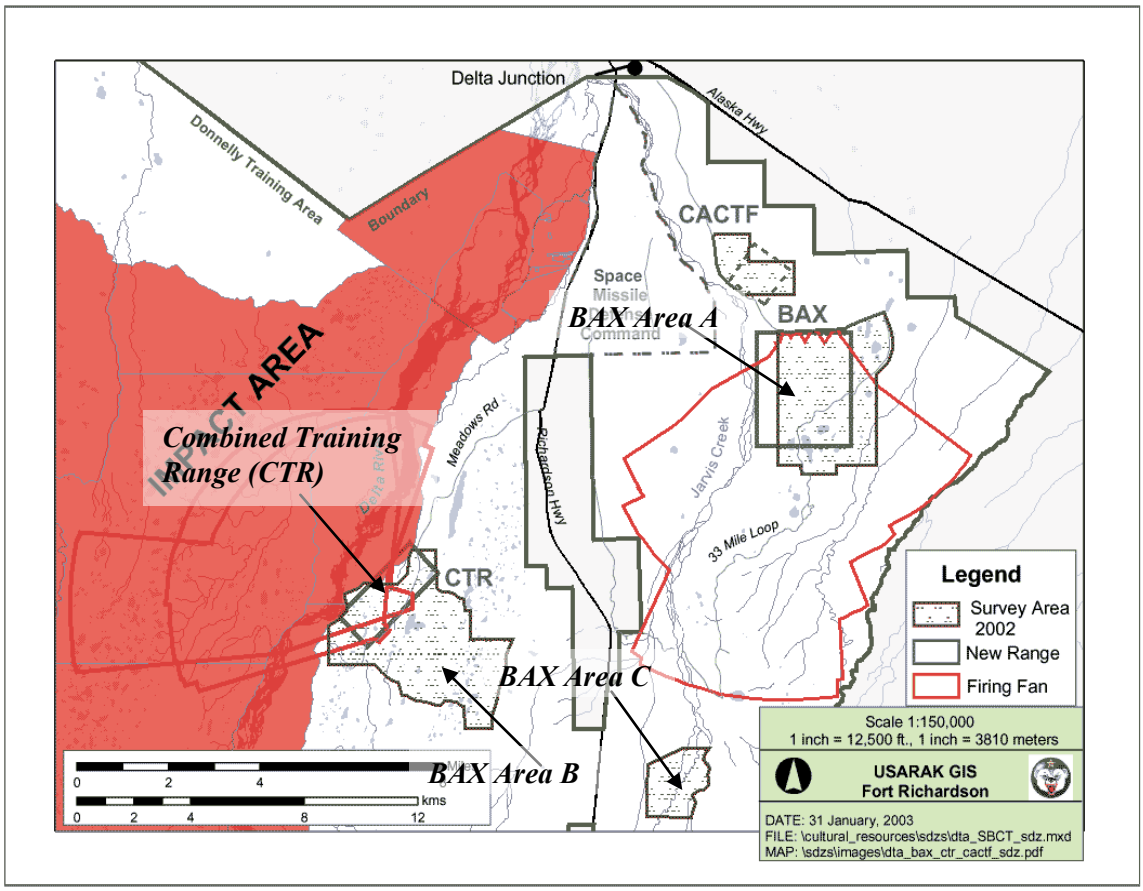


Figure 24. Map of Donnelly Training Area, with proposed range construction areas identified.

The proposed construction of the Battle Area Complex encompassed three different locations, referenced here as BAX Area A, BAX Area B and BAX Area C (see figure 24). After the course of design planning, BAX Area A became the preferred alternative for locating the Battle Area Complex (BAX) and Combined Arms Collective Training Facility (CACTF) training ranges.

BAX Area A is located on the east side of Jarvis Creek, in the vicinity of Eddy Drop Zone and the northern half of 33-Mile Loop Road (discussed below). Forty new archaeological sites were located in the BAX Area A during the 2002 field season. Four of these sites (XMH-873, XMH-874, XMH-875 and XMH-877) were located directly within the proposed construction footprint of both the proposed BAX Area A footprint, as well as within the area of potential effect for proposed upgrades to 33-Mile Loop

Road, and were subsequently evaluated for eligibility to the National Register of Historic Places. All other sites were recorded, but will be avoided by proposed construction of the BAX range. In addition to the 40 new archaeological sites recorded in the BAX Area A, three previously recorded sites (XMH-278, XMH-290 and XMH-291) were relocated.

BAX Area B is located between the Old Richardson Highway and the Delta River, and north of Windy Ridge Road. This area was subsequently chosen as the proposed location for a Combined Training Range (CTR). Fifty-one new archaeological sites were located in BAX Area B during the course of survey in 2002. One site was located directly within the proposed Combined Training Range construction footprint, and was subsequently evaluated for eligibility for listing in the National Register of Historic Places, based on criteria outlined in 36 CFR 60.4. All remaining sites identified in the BAX Area B were recorded but left unevaluated, as these sites will be avoided by proposed project activity. In addition to the 51 new archaeological sites recorded, three previously recorded sites (XMH-265, XMH-266 and XMH-286) were relocated during the course of survey in 2002.

BAX Area C is located in Donnelly Training Area East, between the Richardson Highway and Jarvis Creek. Approximately four square kilometers encompassed the area of potential effect for the proposed ranges construction project, and was subsequently surveyed during the 2002 summer field season. No cultural resources were identified during the course of the 2002 survey. A description of each survey and evaluations, as appropriate, follow:

3.2.1 Combined Arms Collective Training Facility (CACTF) Range Construction, North Jarvis Training Area, Donnelly Training Area East

In 2002, U.S. Army Alaska proposed a range development project within Ft. Wainwright's Donnelly Training Area, involving the construction of a Combined Arms Collective Training Facility (CACTF). The CACTF is proposed in Jarvis North Training Area, approximately six kilometers southeast of Delta Junction, and five kilometers east of the Richardson Highway.

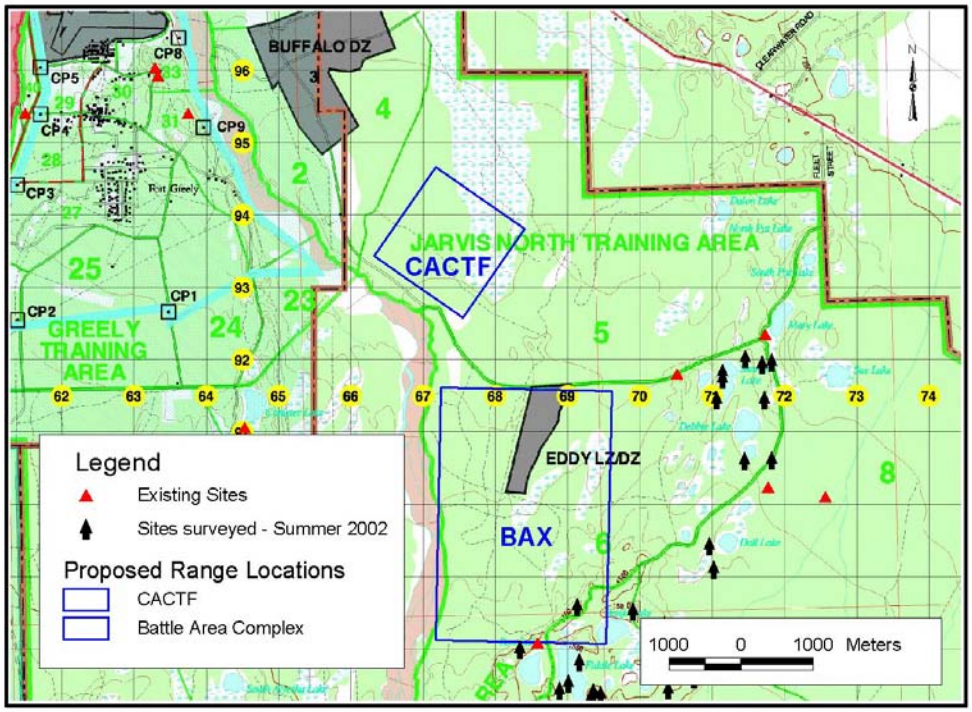


Figure 25. Location of proposed CACTF and BAX (Area A alternative) training ranges, Donnelly Training Area East.

The 24-structure CACTF is designed to bring USARAK urban combat training facilities up to current Army standards. The facility would include a Military Operations in Urban Terrain (MOUT) Range Support facility, control tower, ammunition breakdown facility, electric service, arctic latrines, general site improvements, and data information system installation. The range would use non-dudded ammunition (i.e., blank small arms, wax bullets and other short-range training ammunition). The range would be laid out on a 1500 x 1500m configuration.

Survey and Field Methods

There are numerous known archeological sites within 10 kilometers of the proposed range projects' area of potential effect (APE). The closest recorded archaeological sites to the project area are located to the southeast, on hilltop locations along 33-Mile Loop Trail, and to the west on hilltops adjacent to the west of Jarvis Creek. Unlike these areas, the terrain within the area of potential effect (APE) of the proposed CACTF range construction project is devoid of any hills, overlooks, or bodies of water—three characteristics that are frequently associated with archeological site location in Donnelly Training Area.

In July 2002, an archaeological survey crew, comprised of four archaeologists employed by the Center for Environmental Management of Military Lands (CEMML), Colorado State University, conducted a pedestrian survey of the proposed CACTF range construction area. The project's area of potential effect (APE) encompassed an area of approximately 2 square kilometers. The survey area purposely encompassed a broader area than the proposed range construction footprint, in order to ensure coverage of areas that may incur secondary impacts during construction or use.

Parallel pedestrian transects spaced at 20m were walked in all areas that were not deemed too wet or too steep (>40°) to contain cultural material. Transect survey units were partitioned according to existing roads and trails where possible. When existing roads did not provide for practical unit boundaries, a one square kilometer work unit was defined.

Systematic sub-surface testing was not undertaken in the proposed project APE, as it lacked any terrain associations indicating moderate potential for containing archaeological sites. The proposed project area is dominated by a relatively flat expanses of black spruce forest, with a low rise in the northern section of the APE. No archaeological sites were identified during survey investigations.

Findings/Summary

Pedestrian survey failed to identify any cultural resources within the boundaries of the proposed project's area of potential effect. Given the flat terrain and lack of features typically associated with known high probability areas, the proposed project area represents a very low probability for containing archaeological resources.

Figure 26. General view of terrain and vegetation at proposed CACTF training range.

3.2.2 Battle Area Complex (BAX) Area A, Combined Training Range (CTR)/Battle Area Complex (BAX) Area B Training Ranges, Donnelly Training Area East

U.S. Army Alaska (USARAK) proposed two range development projects on lands at Ft. Wainwright's Donnelly Training Area, involving the construction of a Combined Training Complex (CTR) and a Battle Area Complex (BAX) training range (BAX Areas A and B).

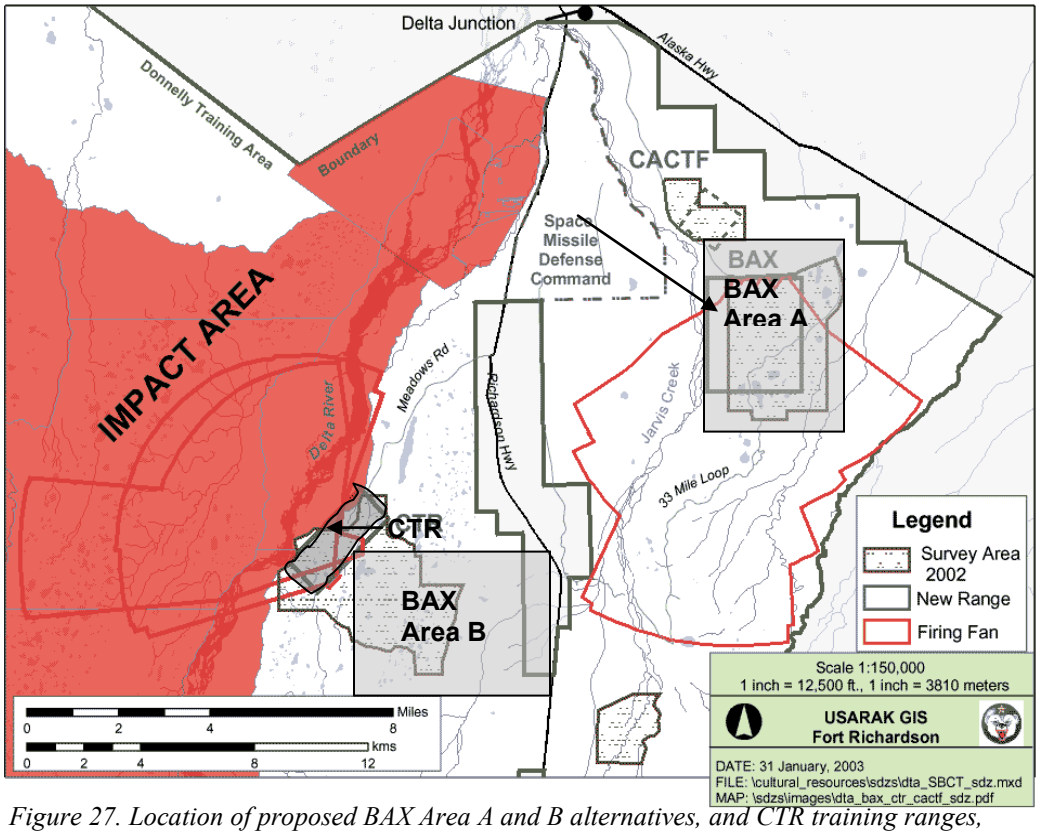


Figure 27. Location of proposed BAX Area A and B alternatives, and CTR training ranges, Donnelly Training Area East.

Both the Battle Area Complex and Combined Training Range (CTR) are designed for gunnery training, and would meet qualification requirements of crew-served, vehicle-mounted weapon systems. The BAX range would also support a dismounted infantry platoon tactical live-fire operations, either independently of or simultaneous with supporting vehicles. Units would acquire skills needed to detect, identify, engage and defeat stationary and moving targets in a tactical array. Primary features of the BAX include course roads with crossover capability, stationary armor targets, moving armor targets, stationary infantry targets, moving infantry targets, machine gun bunkers, and breaching obstacles. All targets would be fully automated, and the event-specific target scenario would be computer-driven and scored from the control facility. The range operating system would be fully capable of providing instrumented after-action reviews. In addition to the range, the BAX would include an after-action review facility, ammunition breakdown building, ammunition loading dock, operations/ storage building, arctic latrines, bleacher enclosure, bivouac and unit staging area, covered mess area, building information systems, electric service, water and septic system, storm drainage, and general site improvements. The mounted weapons portion of the CTR would normally support weapons up to the .50 caliber machine gun, but larger caliber weapons (e.g., 105 mm artillery) could also be direct-fired into the impact area from the range. The range could also be used for sub-caliber and/or laser training.

As discussed in the introduction to chapter 3.2, three alternative locations were originally proposed for the BAX training ranges, portions of which were initially surveyed during the beginning of the 2002 field season. Although the preferred alternative for the BAX training range is BAX Area A, the Combined Training Range (CTR) has been proposed to be located within the BAX Area B alternative.

Survey and Field Methods

During the summer of 2002, an archaeological survey crew of sixteen archaeologists employed by the Center for Environmental Management of Military Lands (CEMML), Colorado State University, conducted a survey of the two proposed range construction areas. The survey areas included approximately 20 square kilometers near Eddy Drop Zone and 20 square kilometers north of Windy Ridge Road (see figure 27). Standard pedestrian survey methods were employed, with parallel transects spaced at a maximum of 20m in all areas that were considered not too wet or too steep (>40°) to contain cultural material. Transect survey units were partitioned according to existing roads and trails where possible. When existing roads did not provide for practical unit boundaries, a one square kilometer work unit was defined.

Systematic sub-surface shovel testing was undertaken in areas considered to have high probability for containing archaeological sites. Areas that were shovel tested included but were not limited to: landforms affording a view of surrounding terrain; lake margins; ridgelines; terrace edges; hilltops; benches adjacent to steeper slopes; and bluffs above the Delta River. Shovel tests were typically 30cm in diameter and excavated into glacial till or consolidated outwash. All soil removed was screened through ¼" hardware cloth. A description of sites identified and evaluated for each proposed range construction locality follow.

Battle Area Complex (BAX) Area A Survey:

Surveys conducted at the proposed Battle Area Complex Area A alternative resulted in the identification of a total of 40 archaeological sites. Four of these sites were located directly within the proposed BAX construction Area A (XMH-873, 874, 875, and 877), and were subsequently evaluated (listed below).

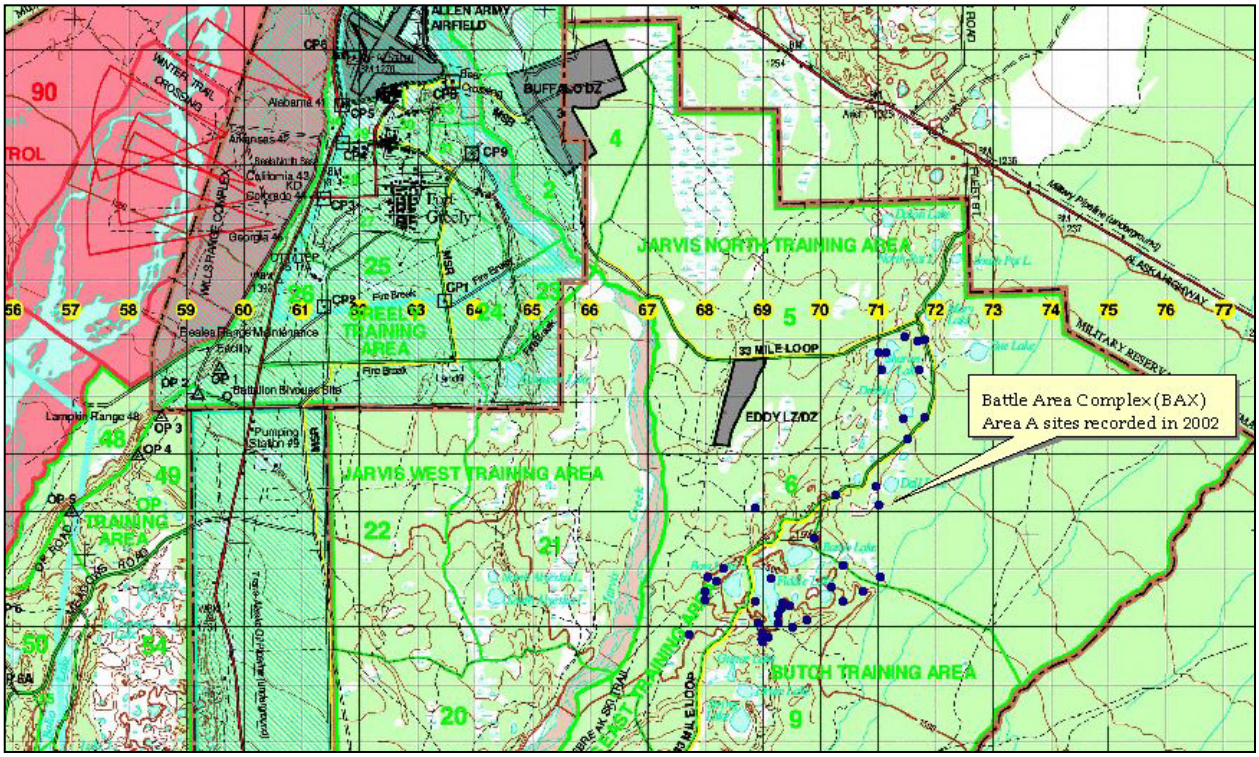


Figure 28. General location of proposed BAX Area A alternative, with sites recorded in 2002 field season illustrated.

XMH-873

Latitude: [redacted]
Longitude: [redacted]
Determination: Not Eligible

Site XMH-873 was identified on 07/01/02 during pedestrian survey. Two artifacts were observed on the surface of the site during survey: one gray chert biface and one fragment of chert shatter. The hilltop is 30m north-south by 20m east-west, and approximately 2m above surrounding flat terrain. Small scrub vegetation, moss and lichen are present on the hilltop, with a minimal amount of surface visibility. Immediately down slope from the hilltop, however, ground surface visibility is severely limited by moss, small shrubs, and large trees. The hilltop has been scoured by wind, water erosion and is devoid of large trees. UTM coordinates for the site are: [redacted].

XMH-874

Latitude: [redacted]
Longitude: [redacted]
Determination: Eligible

Site XMH-874 was identified during pedestrian survey. The site is situated on a southwest-northeast trending hilltop, 200m north of Banjo Lake. Initial investigations of the site revealed 10 flakes and one chert biface on the ground surface. UTM coordinates: [redacted].

XMH-875
Latitude: [redacted]
Longitude: [redacted]
Determination: Not Eligible

Site XMH- 875 was identified during pedestrian survey. The site is located on a small hilltop, 100m northwest of Bow Lake. Initial investigations revealed 5 fragments of flaked stone on the site surface. No surface features were identified. UTM coordinates for the site are: [redacted]

XMH-877
Latitude: [redacted]
Longitude: [redacted]
Determination: Not Eligible

Site XMH-877 was identified during pedestrian survey. A shovel test conducted during the initial survey recovered 2 flakes of a grayish-tan medium to coarse-grained material that appears to be siltstone or argillite. The artifacts were recovered from approximately 15-20cm below the surface, and just above glacial till. All areas exhibiting surface exposure throughout the general locale were intensively examined for artifacts, however no further additional cultural material was observed. XMH-877 is located on an elevated terrace-edge overlooking a wetland environment of muskeg and immature spruce to the north, west, and southwest. The terrace, located approximately 500m north of Fiddle Lake gradually slopes to a relatively level terrain to the east. The terrace-edge is well defined by a gradient dropping approximately 2.4m in elevation, in roughly 10m of distance on the north and northwest sides. Several small lakes are located within a few kilometers of the site. UTM coordinates for the site are: [redacted]

XMH-878
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-878 consists of eight flakes observed on the surface. Site is located on same ridge as site XMH-907 and XMH-908. Ridge top provides an excellent view of surrounding area looking west. UTM coordinates for the site are: [redacted].

XMH-892
Latitude: [redacted]
Longitude: [redacted]
Determination: Not Eligible

Site XMH-892 is located on 33-Mile Loop Trail, and is discussed in detail in chapter 3.2.3 (see below). A total of 2 artifacts were found at the site, all of which were found on the disturbed surface and were collected. These artifacts consist of two fragments of flaked stone, which appear to come from the same flake. The fragments fit together and are nearly 10cm in length as one piece. UTM coordinates for the site are: [redacted]

XMH-895
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-895 consists of one large (7 x 4cm) gray chert flake, unifacially worked on three edges, observed on the surface of a graded road. This artifact was collected due to the fact that it was located next to an active road. It was apparently brought to the surface as a result of hydro-axing and blading of the vegetation next to the road. A total of 12 30 x 30cm shovel test pits were explored, yielding no additional artifacts. UTM coordinates for the site are: [redacted]

XMH-896
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-896 consists primarily of lithic debitage, with two formalized tools observed at the site. The tool fragments are comprised of a light gray and dark gray chert biface fragment. The site location provides a panoramic view of the surrounding area, situated atop a north-south trending ridge. Kettle lakes surround the site (Mary Lake [north] Sharon Lake [northwest], Sue Lake [east/northeast], and Debbie Lake [southwest]), all within approximately one mile of the site. Glacial activities have formed the surrounding areas. UTM coordinates for the site are: [redacted].

XMH-897
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-897 consists of several chert flakes observed on the surface. The site location provides a panoramic view of the surrounding area, situates atop the same north-south trending ridge as XMH-896. Kettle lakes surround the site (Mary Lake [north] Sharon Lake [northwest], Sue Lake [east/northeast], and Debbie Lake [southwest]), all of which are within one mile of the site. Glacial activities have formed the surrounding areas. Subsurface examinations have yet to be conducted. UTM coordinates for the site are: [redacted]

XMH-898
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-898 consists of one bifacially retouched light gray chert flake, recovered from a 30 x 30cm shovel test, at an approximate depth of 15 cmbs. The site is located on the crest of a ridge line and was identified during systematic shovel testing using four transects spaced 10m apart, with shovel test units spaced at 10m intervals. Only one shovel test produced cultural material; this artifact was collected. UTM coordinates for the site are: [redacted]

XMH-899
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-899 consists of a lanceolate bifacial (5.5 x 2cm) fragment, recovered at 20 cmbs in a 30 x 30cm shovel test on the crest of a prominent glacial ridge. The area has a commanding view of Lake Sharon. The positive shovel test revealed a stratigraphy of an O-OA horizon of 15 - 20 cmbs, with a gradual transition to a brown silt. From 15-22 and 28-32 cmbs, a reddish soil mottled with possible charcoal layers was encountered. The artifact was recovered from approximately 20 cmbs, in the uppermost burned layer. Systematic shovel testing was conducted on a 5m grid. No determination of eligibility was conducted. UTM coordinates for the site are: [redacted]

XMH-901
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-901 consists of three flakes: one flake of light gray chert recovered from a random shovel test on a southeast slope (20cmbs); 2 other flakes (one of dark gray chert and one of quartz) found on the surface, 5m to the northwest of the positive shovel test. All three artifacts were collected. Site is located on a ridge top, sloping to the southeast at 22°. The ridge provides a commanding view of Sharon Lake and other nearby ridge tops to the east. Glacial activity is apparent and vegetation includes mixed spruce/birch forest. UTM coordinates for the site are: [redacted].

XMH-902
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-902 consists of one gray-green chert utilized flake recovered from a shovel test at approximately 15-20cmbs. The site is located upon a small glacial moraine, with the positive shovel test located on the south-facing slope. The moraine is located within mixed spruce/birch forest along the edge of an unnamed kettle lake. UTM coordinates for the site are: [redacted]

XMH-903
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-903 consists of one gray chert flake, recovered in a shovel test 10m south of the highest point on the ridge surveyed. No surface artifacts were observed. Shovel tests were excavated on 5m transect intervals, placed every 10m. The site is located on a glacial moraine, east of an unnamed lake. UTM coordinates for the site are: [redacted]

XMH-904
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-904 is a lithic scatter of varying material. A large flake with cortex, bulb and platform, along with other various lithic flakes and debitage, were observed on the surface. Possible quartz artifacts were also observed. UTM coordinates for the site are: [redacted]

XMH-905
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-899 consists of several artifacts (2 quartz flakes, 3 gray chert flakes, 1 quartz core, and 1 red/gray rhyolite flake) observed on a ground surface exposure of a southeast-facing slope on a small hilltop. Surrounding terrain consists of small rolling hills, though generally flat with mixed forest dominated by spruce and poplar. No artifacts were collected and no subsurface investigations were conducted at the time of survey. UTM coordinates for the site are: [redacted]

XMH-906
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-906 is a small lithic scatter, situated on the top of a small hilltop or knoll. The site is surrounded by a dense lowland forest of spruce and birch. Fiddle Lake is located just a few hundred meters to the east, and Bow lake is approximately 300m to the northwest. The site area has a great view of the Alaska Range as well. UTM coordinates for the site are: [redacted]

XMH-907
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-907 consists of one light brown chert flake and one gray chert hammerstone on the surface. The ridge top provides an excellent view of the surrounding area looking west-southwest. Ridge is elevated approximately 100m above surrounding terrain. XMH-908 and XMH-878 are located on the same ridge, and may be associated. UTM coordinates for the site are: [redacted]

XMH-908
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-908 consists of one large flake, with apparent use-wear on one edge, observed on the existing ground surface. It was observed approximately 200m away from site XMH-878. No other artifacts were observed in the immediate area. Surface visibility at this location is very poor, due to dense vegetative cover. In addition, site XMH-907 is also situated on the same ridge and may be associated. UTM coordinates for the site are: [redacted]

XMH-909
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-909 consists of one modified flake (possibly a side scraper) of banded chert. The site was discovered on the eastern (southeast) margin of Fiddle Lake. No subsurface investigations were conducted at the time of survey. UTM coordinates for the site are: [redacted]

XMH-910
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-910 consists of 2 chert flakes observed on the existing ground surface. The site is located on the top of a small hilltop, exhibiting signs of extensive disturbance. Site XMH-911 is located approximately 75-80m to the north, and is most likely associated with the observed surface material. UTM coordinates for the site are: [redacted].

XMH-911
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-911 consists of an extensive lithic scatter, extending along a ridge top for approximately 70m. A varying amount of material and flake debitage was observed on the existing ground surface. Over 18 fragments of flaked stone were observed; the possibility of identifying additional flake fragments appears high. Site XMH-910 is located approximately 75-80m south, and is most likely associated. UTM coordinates for the site are: [redacted]

XMH-912
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-912 consists of a lithic scatter of chert debitage, including a core and scraper. UTM coordinates for the site are: [redacted].

XMH-913
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-913 consists of a single quartz flake, recovered from a shovel test along the lake margin during survey. UTM coordinates for the site are: [redacted]

XMH-914
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-914 consists of six chert flakes, observed on the southeast slope of a small hill that faces Fiddle Lake. UTM coordinates for the site are: [redacted]

XMH-915
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-915 consists of 2 fragments of chert which fit together, although observed 20m apart. The site has a prominent view of the surrounding area (i.e. Granite Mountain and Donnelly Dome). The potential to yield further cultural material at this location is considered to be high. UTM coordinates for the site are: [redacted]

XMH-916
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-916 consists of debitage fragments that were recovered in a shovel test on a prominent knoll during survey. UTM coordinates for the site are: [redacted]

XMH-917
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-917 consists of artifacts observed on the surface within areas naturally devoid of vegetation, on a small hilltop with little slope and heavy surrounding ground cover. UTM coordinates for the site are: [redacted]

XMH-918
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-918 consists of one stone flake observed on the surface. Another flake was collected from a shovel test. UTM coordinates for the site are: [redacted]

XMH-919
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-919 consists of two rhyolite flakes and one chert flake, observed on the southeast facing slope of a small hilltop. UTM coordinates for the site are: [redacted]

XMH-920
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-920 consists of a unifacially worked piece of chert that may be a scraper or a core. A late-stage reduction flake of basalt, and a few pieces of chert and rhyolite shatter were also observed in a surface exposure on the edge of a terrace overlooking lowlands towards Jarvis Creek. UTM coordinates for the site are: [redacted]

XMH-921
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-921 consists of five gray chert late-stage reduction flakes, observed on the surface at the terminal end of a well-defined glacial moraine ridge. Fiddle Lake is in view to the north-northeast. UTM coordinates for the site are: [redacted]

XMH-922
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-922 consists of approximately 10 fragments of late-stage reduction debitage, observed on the surface of a small two-track, south of Fiddle Lake. The debitage fragments were manufactured from red, gray, and green chert. Site XMH-923 lies approximately 100m west and may be associated. XMH-922 is situated on the crest of a relatively narrow east-west trending glacial moraine ridge. UTM coordinates for the site are: [redacted]

XMH-923
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-923 consists of two late-stage reduction flakes, manufactured from a gray and green banded chert. Similar to XMH-922, the flakes were observed on the surface of a small two-track running along the crest of a narrow east-west trending glacial moraine ridge. UTM coordinates for the site are: [redacted].

XMH-924
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-924 consists of a light lithic scatter in a two-track road, consisting of a chert, possibly notched tool, and one gray chert reduction flake. Like XMH-922 and XMH-923, the site is located on the crest of an east-west trending ridge, south of Fiddle Lake. UTMs coordinates for the site are: [redacted]

XMH-925
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-925 consists of one dark gray chert flake, and one fine-grained black basalt flake observed on a wind-eroded, southeast facing hilltop. UTM coordinates for the site are: [redacted]

XMH-926
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-926 consists of a surface lithic scatter of basalt and chert flaked stone, and one retouched chert flake. The scatter extends approximately 30 x 40m on the south-east facing slope of a low hill. UTM coordinates for the site are: [redacted]

XMH-927
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-927 consists of a lithic scatter, observed on a southeast facing slope of a small knoll on a long ridge. Artifacts observed include one light gray chert flake and one dark gray chert flake. UTM coordinates for the site are: [redacted]

XMH-945
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-945 consists of a high density, lithic concentration situated on top of a southeast-sloping ridge, 250m to the west of Bow Lake. Various stages of lithic reduction are represented, along with various materials. The ridge is elevated approximately 15-20m above the surface of Bow Lake. UTM coordinates for the site are: [redacted]

XMH-980
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-980 consists of single large (5 x 5 cm) primary flake, manufactured from a river cobble (prominent platform and bulb of percussion). Damage is evident along one of the lateral edges and may be evidence of use-wear (step-fracturing). The flake is located on the southeast slope of a prominent glacial ridge UTM coordinates for the site are: [redacted]

In addition to those sites newly recorded, three previously recorded sites are located within the proposed Battle Area Complex A, and were relocated during survey:

XMH-265
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-265 was recorded in 1979 by C.E. Holmes during a survey conducted in the Big Lake area. It is described as consisting of three chert flakes identified on the surface "of a foot trail crossing a glacial moraine knoll at the southwest edge of Big Lake. One of the flakes was unifacially retouched and may have served as an end scraper." The site was relocated during the 2002 CEMML/USARAK field season during pedestrian survey of the west side of Big Lake. An area of exposure in the vicinity of the glacial moraine knoll was intensively examined for artifacts and several items of debitage were observed at that time. In addition, 12 30 x30cm shovel tests were excavated along the crest of the moraine knoll. Two of these shovel tests produced cultural material (Shovel Tests 1, and 12). Shovel Test (ST) 1 is located at the southern end of the moraine. At this test, one finishing flake was found between 0-5 cmbs. ST 12 is situated at the northern end of the knoll, with 11 artifacts recovered: 10 late-stage reduction flakes manufactured from tan and gray chert, and one gray chert bifacial thinning flake that is retouched along one lateral margin. No determination on eligibility was made at the time of relocation. UTM coordinates for the site are: [redacted]

XMH-266
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-266 was recorded in the late 1970's as a result of a survey of the Big Lake area by C.E. Holmes. The site was first identified when "Fire broken rocks, indicating a hearth, and butchered animal bones were observed in a test pit on a glacial moraine ridge at the south edge of Big Lake." The site was relocated during the USARAK/CEMML 2002 field season during shovel testing procedures on the south side of Big Lake. A 30 x 30cm shovel test in the immediate vicinity of the previously recorded location produced a late-stage reduction flake of dark gray chert at approximately 8-15 cm below surface. No surface artifacts were observed during the 2002 field season. No determination of eligibility was made at the time of relocation. UTM coordinates for the site are: [redacted]

XMH-286
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-286 consists of one large broken, light gray chert reduction flake found on the top of a small glacial moraine, overlooking J-Lake to the west. This landform is located on a peninsula extending into the southern portion of J-Lake trending to the northwest, sloping down as it gets closer to the lake. The flake was observed on a small bench (10 x 20 m) next to a historic fire ring where the soil has eroded down to glacial till. The surrounding area to the south and east is vegetated and sloping; to the west is J-Lake. To the north is another larger bench that has been impacted by a vehicle turn-around and parking area, suggesting that most of the archaeological material at this site has been disturbed. UTM coordinates for the site are: [redacted]

XMH-323
Latitude: [redacted]
Longitude: [redacted]
Determination: Evaluated

Site XMH-323 is located on 33-Mile Loop Trail, and is discussed in detail below (evaluations for 33-Mile Loop Road). A total of 6 artifacts were found at the site, all of which were observed on the disturbed surface; none were collected. The artifacts consist of three fragments of chert, one each of dark gray, light gray, and brown, and three fragments of gray quartzite. The dark gray chert flake has had some retouch to one of the sides. UTM coordinates for the site are: [redacted]

Battle Area Complex (BAX) Area A Site Evaluations: XMH-873, 874, 875 and 877

Evaluation Methodology

Given the small size and non-renewable nature of these cultural resources located within the proposed construction footprint, evaluation procedures proceeded, with an overall goal of minimal site disturbance. The objectives of the evaluation process were to determine eligibility for listing in the National Register of Historic Places (NRHP), based on criteria defined in 36 CFR 60.4. Following extensive literature research and discussion, a number of research questions were identified that could potentially be answered by sites in the middle and upper Tanana Basin. These questions include: interpretation of microblade use; possible connections between landform type and lithic assemblages; prehistoric land-use and subsistence patterns; and the role of small, low density lithic scatters in the interpretation of regional prehistory. These topics were all raised with the understanding that many of the sites in the survey area were small and typically lacked datable material and adequate soil stratigraphy to support accurate radiometric dating of assemblages. It is hoped, however, that analysis of these small, special-use locations will further contribute to understanding possible connections between landscape, subsistence and lithic tool-kit composition in the study area.

Evaluation methodology was focused on defining aerial extent, vertical extent, assessing site integrity, and recording a representative sample of artifacts. Artifacts deemed "diagnostic" regardless of context. included any formal tool, any blade or microblade, any blade or flake core, and any exotic material, such as obsidian. These types of artifacts were systematically collected. All other artifacts, unless removed during initial survey and/or shovel test, were left *in situ*. A general understanding of the soil stratigraphy/matrix is also considered critical to understanding site formation processes, relative age, and site integrity (i.e., the extent of disturbance by recent human activity or natural forces, and how much of the site remains in tact). A combination of shovel testing, soil probing, test excavation, site mapping and profile drawing was implemented to provide and record this data.

Field procedures involved the designation of a site datum for general site mapping, and establishing vertical and horizontal control of site testing procedures. Permanent site datums consisted of a 14" or 18" length of 5/8" or ½" rebar, topped with an aluminum cap indicating Alaska Heritage Resource Survey (AHRS) number. A thorough surface examination of the site area and mapping of any surface artifacts or features was conducted. The site was then systematically shovel-tested on a grid. Shovel test intervals of 2.5, 5, 10 and 20m was used flexibly to determine site boundaries. Determinations of site boundaries were based on shovel testing and surface examination. If shovel testing indicated that a site had the potential to contain a significant amount of sub-surface cultural material, a 1x1m test unit was excavated, in order to better understand the information potential of a site. The test unit's location was based on estimates of artifact densities and site boundaries, to provide for the most effective sampling of cultural material, datable material, and to obtain a better understanding of artifact densities on the vertical axis. Test units were excavated in 5cm levels, with all recovered soil screened through ¼" hardware cloth. Test unit excavation was carefully recorded on level report forms. Each test level was photographed with color print film, and a plan drawing was made. A profile drawing was completed of a selected wall of the unit. Artifacts were removed for laboratory analysis, cataloging and eventual curation at the University of Alaska (Fairbanks) Museum.

XMH-873
Latitude: [redacted]
Longitude: [redacted]
Determination: Not Eligible

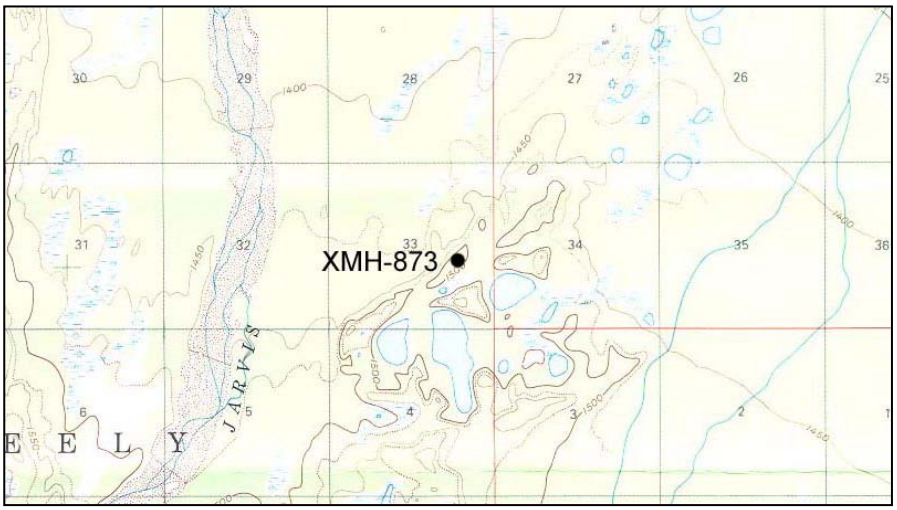


Figure 29. Location of site XMH-873 (from USGS Big Delta quad).

Site XMH-873 was identified on 07/01/02 during pedestrian survey, located 100m west of 33-Mile Loop Road, and approximately 8 kilometers south of Fleet Street (figure 29). Two artifacts were observed on the surface of the site during survey: one gray chert biface and one piece of chert shatter. The hilltop is 30m north-south by 20m east-west, and approximately 2m above the surrounding flat terrain (see e.g., figure 30). Small scrub vegetation, moss and lichen are present on the hilltop, with a minimal amount of surface visibility. Immediately down slope from the hilltop, however, ground surface visibility is severely limited by moss, small shrubs, and large trees. The hilltop has been scoured by wind, water erosion and is devoid of large trees.

Figure 30. General view of site XMH-873, heading north..

The two surface artifacts identified during survey were collected and mapped prior to excavating 37 shovel tests. Tests were excavated into glacial till, and all shovel tests were negative. A single 1x1m test unit was excavated near the crest of the hill in an attempt to broaden the sub-surface investigation. The test unit similarly produced no artifacts or indications of a feature.

Deposition at the site varied between the crest of the hilltop and the area immediately down slope. Soil accumulation on the hilltop was minimal due to erosion, with tests on the crest revealing an average soil depth of 22cm. Tests at the north and south end of the site (i.e., down slope of the hill), revealed up to 50cm thickness of soil. Soil consists of dark brown, loosely compacted, organically rich silt, with a low density of gravels. Additionally, some cobbles were present immediately beneath the organic mat. Glacial till, comprised of loosely compacted, silty light brown soil with a high density of cobbles and gravels, lies below deposited soil. All excavation was terminated upon encountering glacial till.

Findings

Only two surface artifacts were observed at XMH-873. This finding suggests that the site is the result of a single event or short-term occupation. Due to the minimal material recovered at the site, it is clear that XMH-873 does not meet eligibility criteria outlined in 36 CFR 60.4, based on a lack of information potential. No further work at the site is recommended.

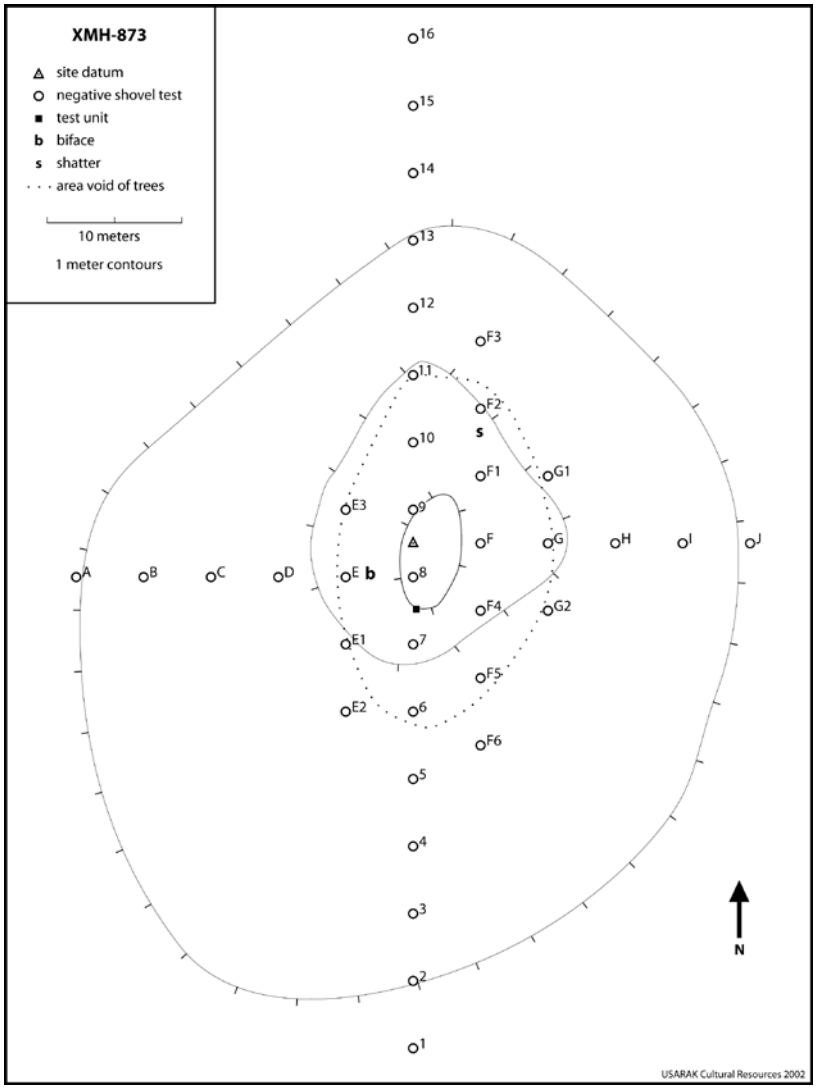


Figure 31. Site map of testing at XMH-873.

XMH-874
Latitude: [redacted]
Longitude: [redacted]
Determination: Eligible

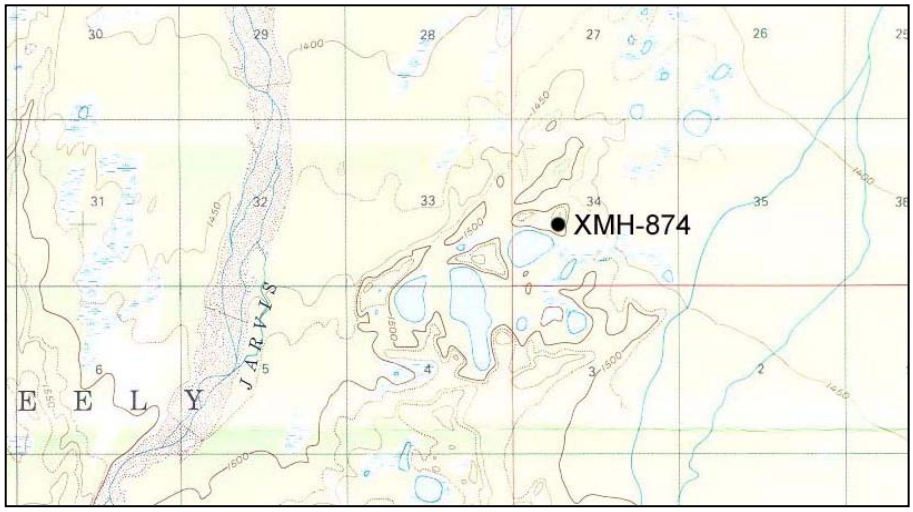


Figure 32. Location of site XMH-874 (from USGS Big Delta quad).

Site XMH-874 was identified during pedestrian survey on 06/04/02. The site is located 350m south of 33-Mile Loop Road, and is accessed by traveling south on 33-Mile Loop Road approximately 6.5 kilometers from its intersection with Fleet Street (figure 32). The site is situated on a southwest-northeast trending hilltop, 200m north of Banjo Lake. Initial investigations of the site revealed 10 flakes and one chert biface on the ground surface.

The site is located on a hilltop that is 70 x 20m. It rises 30m above surrounding terrain to the south and east, and 20m above terrain to the north and west. The descending slope is relatively steep to the south and west, and gradually sloping to the north and east. The terrain then flattens to the south and east, and is continuously hilly to the north and west.

The hilltop crest has been eroded by wind and is devoid of large trees; smaller spruce and aspen are present, but vegetation consists mainly of small shrubs, moss and lichen. A small portion of the surface is exposed immediately south of the crest, due to erosion and wildlife traffic. However, overall surface visibility is minimal throughout most of the site area. There is evidence that the hilltop has been the focus of past military training activity; numerous ammunition boxes, spent cartridges, and modern tin cans were observed on the surface, however no subsurface disturbances appear to have occurred.

Figure 33. View of site XMH-874, heading south.

An intensive surface examination of the site revealed an additional 11 artifacts. All surface artifacts were mapped and collected prior to excavation. Shovel tests were systematically placed throughout the site area in intervals of 2.5m at the hill's crest, and 5-10m down slope, away from the site's center where surface artifacts were originally identified. A total of 157 shovel tests were excavated. Depth of shovel tests varied, but in all cases were excavated to glacial till. A total of 44 shovel tests were positive, each containing one or more artifacts. Subsurface artifacts were found typically 15-25cm below the surface, and no more than 40cm below the

surface. Based on the results of the survey and testing results, the site area is estimated at approximately 55 x 25m.

Two 1x1m test units were excavated at XMH-874. One unit was placed on the crest of the hill near the center of the site, where positive shovel tests were concentrated (figure 32). The second test unit was placed on a level bench east of the site's center, where shovel tests were generally negative, for contrast. The units were excavated in 5cm levels until reaching glacial till. Test unit 1 contained artifacts to a depth of 20cm, the majority of which were found within levels 2 and 3, with only one recovered from level 4. Test unit 2 produced artifacts to a depth of 25cm, the majority of which (6 of 7) were found in level 3, with only one found in level 5 (see table 3). No subsurface features were identified at the site.

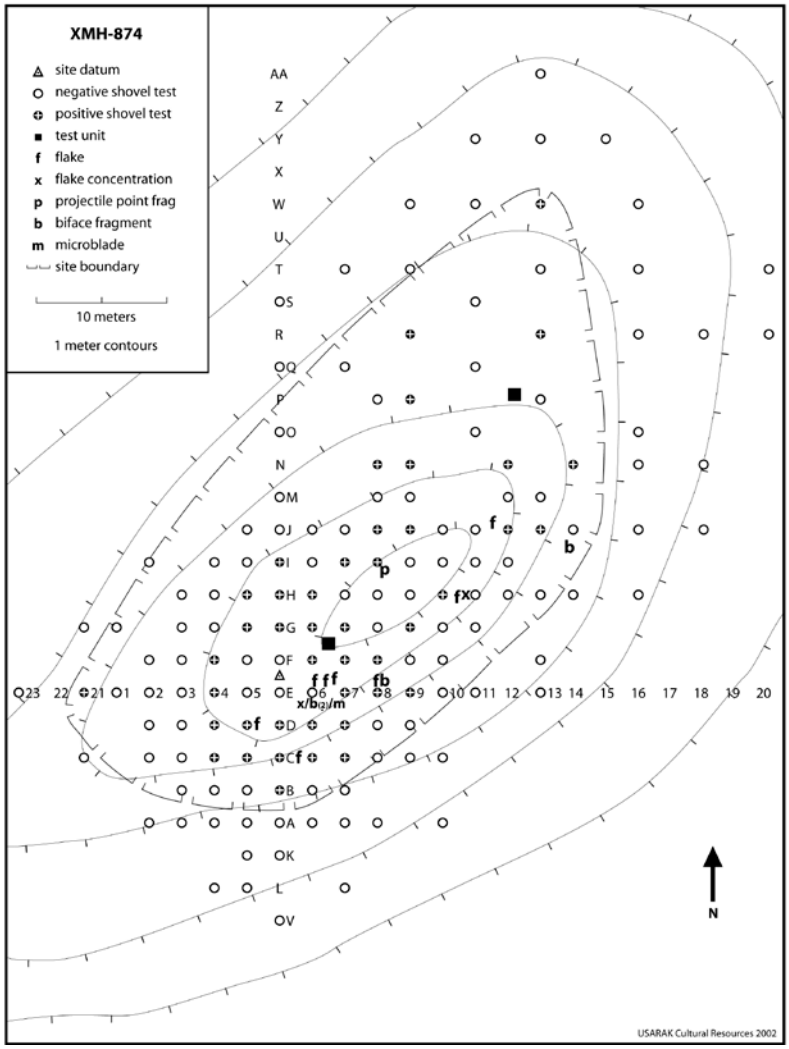


Figure 34. Site map of evaluations at XMH-874.

Soil thickness varied between 5—70cm. The crest of the hill has experienced considerable wind erosion, and thus soil deposition at the crest averaged only 15cm. Soil in the site area consists of loosely compacted, dark brown, organically rich silt that is present to 5cm below the surface. Below this organic horizon, the soil consists of moderately compacted brown silt with a low density of gravels and cobbles. Color changes resulting from undulating organic material from roots or mixing above from the surface were widely noted. Glacial till is encountered below this silt deposition, consisting of a very loosely compacted silty sandy soil, with a high density of gravels and cobbles. Down slope of the hill's crest, soil deposition averaged 60cm. Soil in this area consists of a loosely compacted dark brown organically rich silt, that is present up to 10cm below the surface. Below this organic horizon the soil consists of brown to dark brown soil. Glacial till is encountered below soil in the down slope area, corresponding to glacial till on the hill's crest. Soil deposition in the remaining southeast portion of the hill was similar to the site's center at both the hill's crest and down slope.

Findings

Pedestrian survey, 157 shovel tests and two test units produced a total of 281 artifacts at XMH-874: 22 identified on the surface, and 259 recovered from below the surface. A total of 7 tool fragments were found including: one chert projectile point fragment, one quartz projectile point fragment, and three chert biface fragments. The remaining finds are lithic debitage, predominantly of quartz and chert.

With the combination of tool fragments and presumably, associated lithic debitage scatters, XMH-874 contains a significant amount of buried cultural material, including diagnostic artifacts. Artifact densities and soil stratigraphy indicate that if datable material were collected it may be used to date human use of the site and diagnostic artifacts, potentially contributing to a broader regional context. XMH-874 is thus

an intact archaeological site of exceptional integrity, with little evidence of human impact or natural destruction of the site. Based on these findings the site is considered eligible for inclusion in the National Register, falling under criterion D (has 'yielded, or may be likely to yield, information important in prehistory or history').

Table 4. Lithic debitage counts from test units 1 and 2, XMH-874

Test Unit	Level 1 (0-5cm)	Level 2 (5 - 10cm)	Level 3 (10-15cm)	Level 4 (15-20cm)	Level 5 (20-25cm)
1	0	36	5	1	---
2	0	0	6	1	1
Total	0	36	11	2	1

XMH-875
Latitude: [redacted]
Longitude: [redacted]
Determination: Not Eligible

Site XMH- 875 was identified during pedestrian survey on 06/28/02. The site is located 350m west of 33-Mile Loop Road, and can be accessed by traveling 8km south of its intersection with Fleet Street. The site is on a small hilltop, 100m northwest of Bow Lake (figure 35). Initial investigations found 5 fragments of flaked stone on the site surface. No surface features were identified.

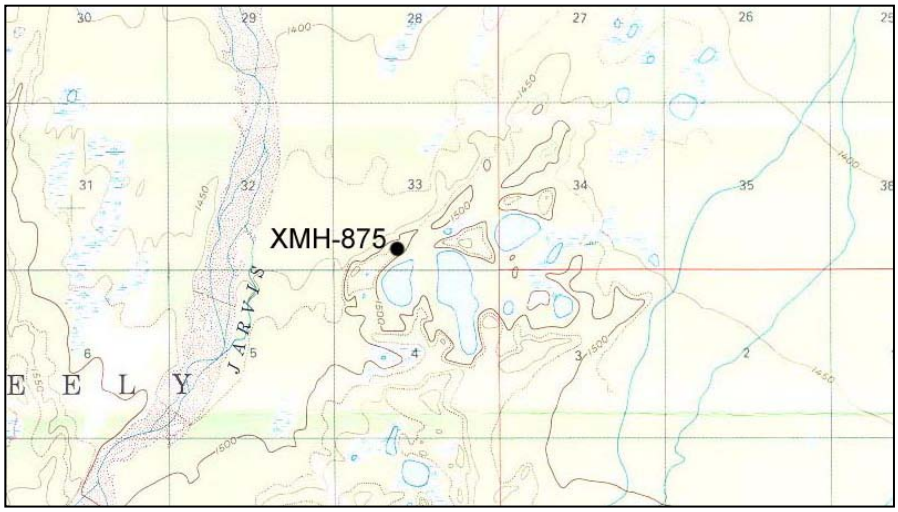


Figure 35. Location of site XMH-875 (from USGS Mt. Hayes (D-4) quad).

The site is situated on a hill that is 45 x 15m, rising approximately 50m above surrounding terrain to the southeast, and 10m above terrain to the northwest. The descending slope is relatively steep to the southwest, gradually sloping to the northeast. The terrain then flattens to southeast and is continuously hilly to the northwest.

Figure 36. General view of site XMH-875, heading southwest.

The site area has been heavily eroded by wind on the crest of the hill. One tall spruce is on the southern edge of the crest, as are a few small aspens, but most of the vegetation consists of

small shrubs, mosses, and lichen. A small amount of the surface is exposed immediately south of the hill crest, due to erosion and wildlife traffic. Overall surface visibility is minimal throughout the site area. There are at least 6 locations in the site area where 30-40cm diameter holes have been excavated and back filled. These holes appear to have been dug at least a year ago, judging by the compaction of the soil in the filled holes. It appears the holes were dug to test the soil, however, for what reason remains unknown. It is possible that previous archaeological excavations were conducted here. Site XMH-842, a previously recorded site, is listed at approximately 200m to the east.

An intensive surface examination located an additional fragment of flaked stone on the site surface. All artifacts were collected and mapped prior to excavation. A total of 46 shovel tests were excavated at the site, placed across the hilltop in 5m intervals (figure 37). The depth of the shovel tests varied, but in all cases shovel tests were excavated to glacial till. A total of 3 shovel tests were positive, revealing one or more artifacts. Subsurface artifacts were found at an average depth of 20cm below the surface and no greater than 25cm below the surface. Based on the results of testing and surface collection, XMH-875 is estimated to be 30 x 15m wide

A single 1x1m test unit was excavated at the site, located near the crest of the hill. The unit was excavated in 5cm levels until glacial till was reached. Photographs were taken of the surface of the unit prior to excavation and at the bottom of the final level. The test unit revealed artifacts to a depth of 20cm below the surface. Levels 1,2 and 4 each produced 1-2 artifacts, whereas level 3 produced 7.

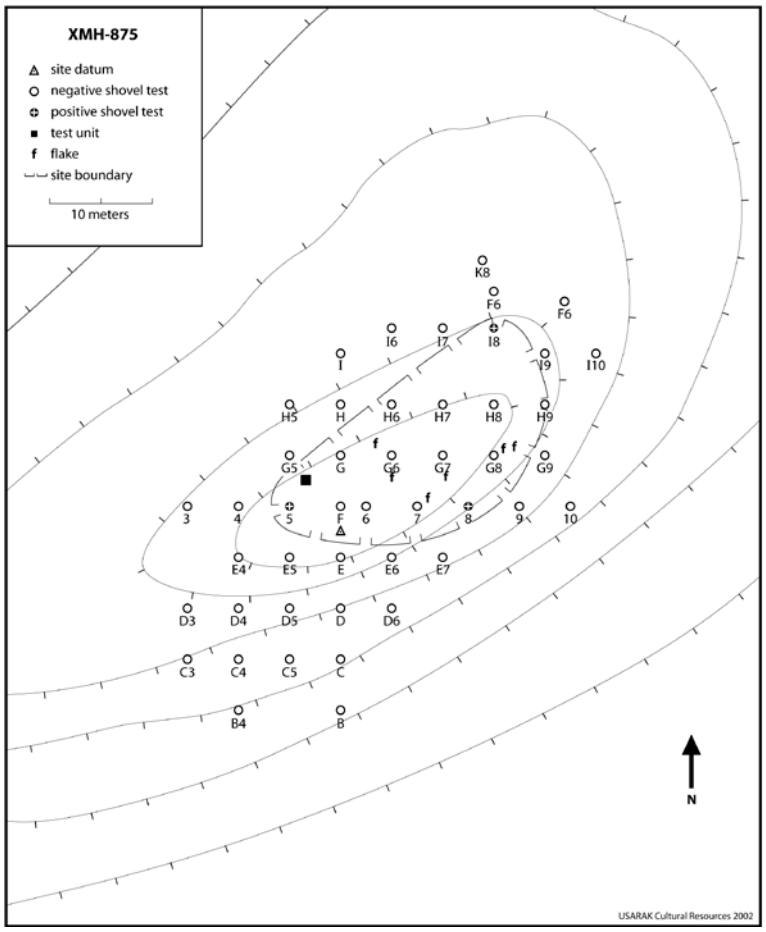


Figure 37. Site map of testing at XMH-875.

While soil thickness at the crest of the hill averaged 20cm, it varies across the site from 15-40cm. Soil on the hill's crest consists of loosely compacted dark brown organically rich silt that is present immediately below the moss mat. Beneath this organic level, the soil is moderately compacted brown silt with a low density of gravels and cobbles, down to glacial till. Down slope of the hill's crest, soil deposition averaged 50cm below the surface.

Findings

A total of 24 fragments of lithic debitage was recovered from XMH-875: 6 identified on the surface and 18 recovered from below the surface. Raw material identified included basalt, gray chert, and siltstone or argillite. Based on evaluation findings, the site did not reveal a significant density of artifacts, and it appears unlikely that any datable material exists at the site. For these reasons the site does not satisfy National Register criteria for eligibility, and is not eligible for inclusion in the NRHP.

XMH-877
Latitude: [redacted]
Longitude: [redacted]
Determination: Not Eligible

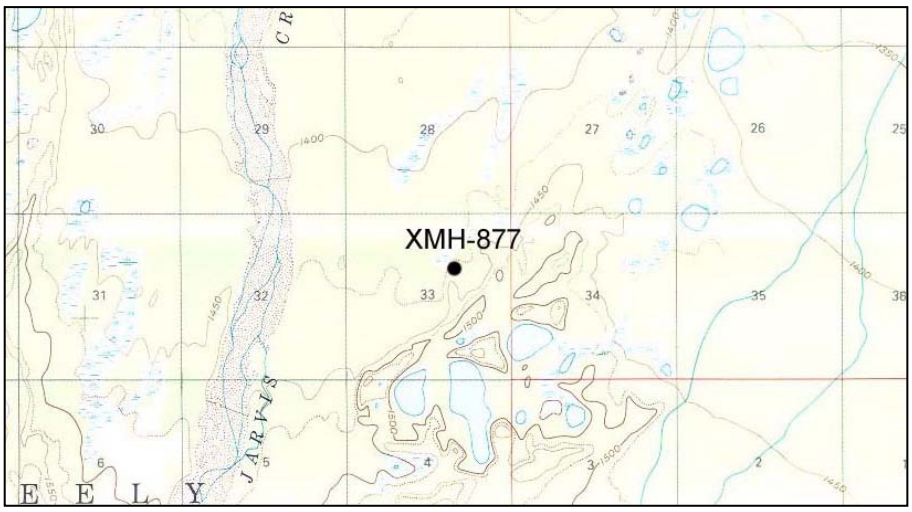


Figure 38. Location of site XMH-877 (from USGS Mt. Hayes (D-4) quad).

Site XMH-877 was identified during pedestrian survey on 7/8/02. A shovel test conducted during the initial survey recovered 2 flakes of a grayish-tan medium to coarse-grained material that appears to be siltstone or argillite. The artifacts were recovered from approximately 15-20cm below the surface, and just above glacial till. All areas exhibiting surface exposure throughout the general locale were intensively examined for artifacts, however no further additional cultural material was observed.

XMH-877 is located on an elevated terrace-edge overlooking a wetland environment of muskeg and immature spruce to the north, west, and southwest. The terrace, located approximately 500m north of Fiddle Lake (figure 38) gradually slopes to a relatively level terrain to the east. The terrace-edge is well defined by a gradient dropping approximately 2.4m in elevation, in roughly 10m of distance on the north and northwest sides. Several small lakes are located within a few kilometers of the site.

Vegetation around XMH-877 can be characterized as Lowland Spruce-Hardwood Forest (e.g. see figure 39). It consists of an overstory dominated by white and black spruce, aspen, birch, and tamarack. Understory vegetation includes Sitka alder, bunchberry dogwood, bearberry, lowbush cranberry, and dwarf birch. The ground cover is dense in areas not exhibiting erosional exposures, consisting primarily of moss, lichen, ferns, and a variety of grasses. The overstory is moderately dense on portions of the general site area and fairly open in surrounding locales. Wind and water erosion is observable along the terrace-edge. This has resulted in general deflation of existent soil horizons, exposing glacial till. Military activities have impacted the general area, evident in tracked-vehicle disturbances on the southern end of the site and miscellaneous debris (i.e. spent ammunition, meal packaging, etc.) scattered across the terrace-edge. Most of these impacts appear to be limited to surface impacts.

Figure 39. General view of site XMH-877, heading north..

48 shovel tests were excavated at intervals of 5-10m; all but one was negative. A single 1x1m test

unit was excavated adjacent to the single positive survey shovel test (figure 40). The test unit produced a total of 13 late-stage reduction flakes and one shatter fragment. Level 5 (20-25 cmbs) was a high-density matrix, with a total of 6 flakes recovered. Level 6 (25-30 cmbs) was sterile. Level 7 (30-35 cmbs) yielded a single flake with 90% cortex along its dorsal surface. Despite the presence of cortex, at 10mm in length, this fragment is most likely a late-stage reduction flake. Level 8 (35-40 cmbs) produced the shatter fragment and levels 9 (40-45 cmbs) and 10 (45-50 cmbs) failed to produce any additional cultural material. The test unit stratigraphy is characterized as follows: rootmat (0-5 cmbs); approximately 20cm of brown loess; 20cm of dense glacial till mixed with loess, with a slightly lighter soil matrix making an appearance near the bottom of the unit, but still within a matrix of glacial till.

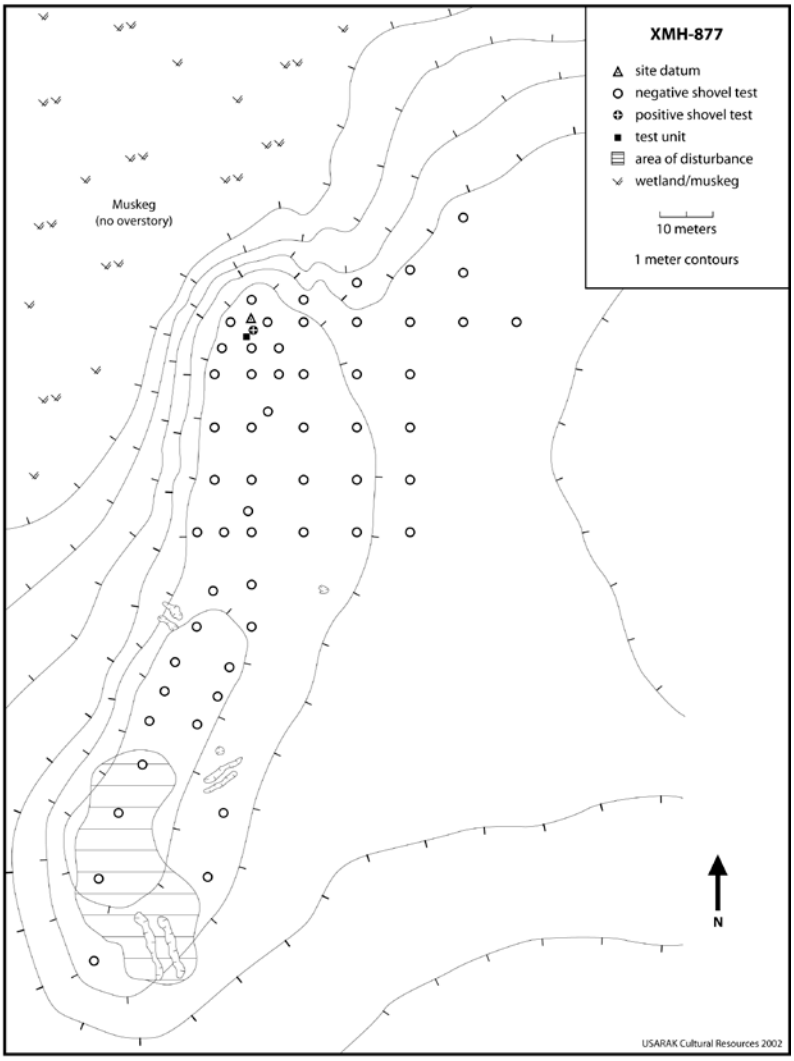


Figure 40. Site map of testing at XMH-877.

Findings

Results of the site evaluation indicated a site area encompassing less than 5 square meters. Thorough testing revealed only 15 late stage flakes and no diagnostic artifacts. The artifacts recovered appear to have been manufactured from the same material type, either siltstone or argillite. The artifact recovery zone is dispersed approximately 5-35cm below the surface. These findings suggest that XMH-877 is likely the result of several short-term occupations. Based on the sparse and thinly distributed cultural material that was recovered during testing, and the evidence of previous disturbance at the location, it is not likely that any additional artifacts or datable material are present at the site. Subsequently, the site does not satisfy eligibility criteria for listing in the National Register of Historic Places.

Battle Area Complex (BAX) Area B/Combined Training Range (CTR) Survey

Surveys conducted at the proposed Battle Area Complex Area B and subsequent location of the proposed Combined Training Range (CTR) project area resulted in the identification 51 archaeological sites, with a single prehistoric site falling directly within the proposed Combined Training Range (CTR) construction footprint (i.e., XMH-876), which was subsequently also evaluated.

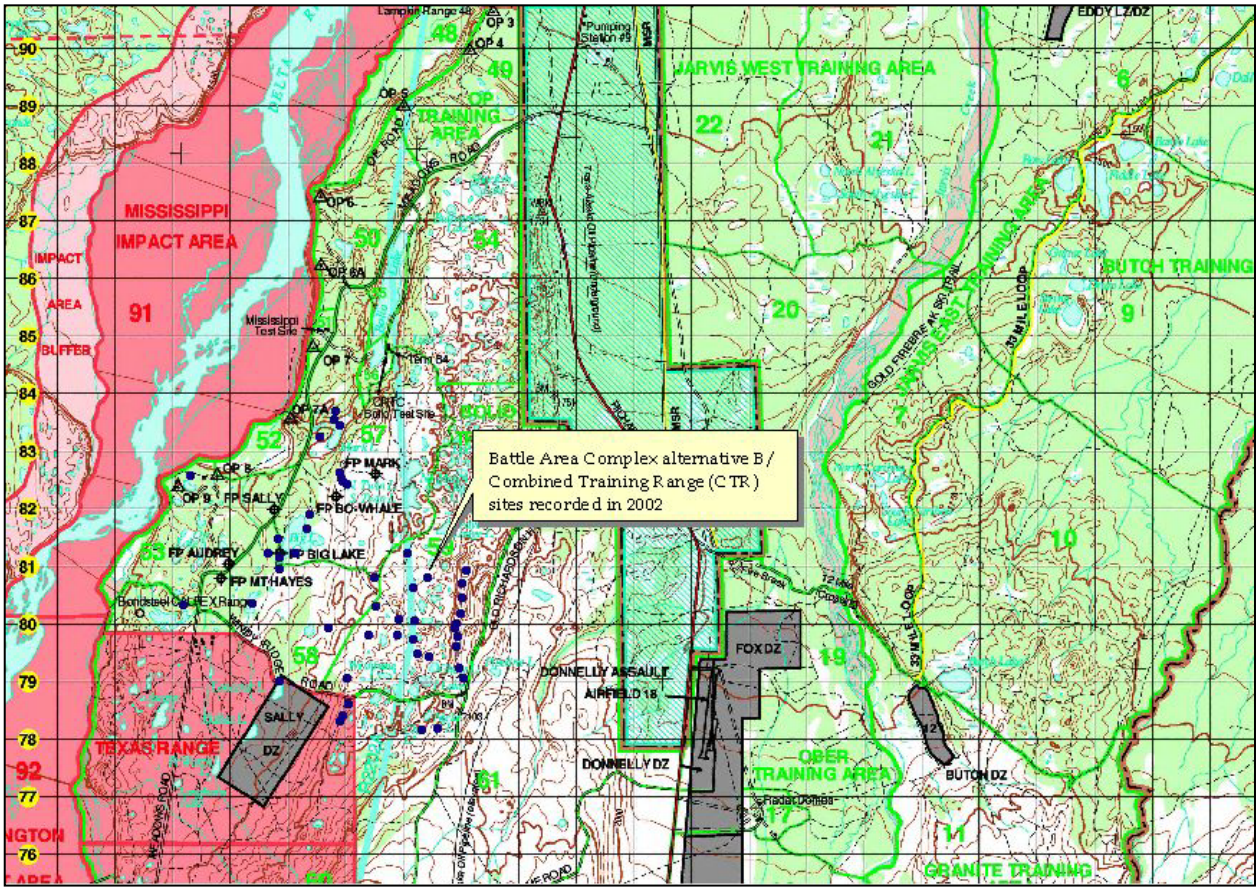


Figure 41. General location of proposed BAX Area B alternative/Combined Training Range project, with sites recorded in 2002 field season illustrated.

XMH-930
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-930 is a small lithic scatter located along the north shore of Mark Lake, containing one large chert utilized flake, and one unifacially worked flake tool. A large mammal long bone with possible spiral fracture was also fond at the site, however its association with the lithic artifacts is unlikely. Heavy vehicle traffic and modern use is obvious along the lakeshore. One flake was broken into three pieces by vehicle traffic. Lithic artifacts were collected to prevent loss or further damage. UTM coordinates for the site are: [redacted]

XMH-931
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-931 consists of a single chert flake (possibly a microblade fragment) found in an exposure from a road cut. Resting on top of the berm, it could be a secondary deposit from the grader, but is likely eroded from the intact loess soil to the north of the road. UTM coordinates for the site are: [redacted]

XMH-932
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-932 consists of two flakes on the highest landform north of Mark Lake. They were located on the exposed surface of a south-facing slope. Atop this ridge, one finds a commanding view of Mark Lake and the surrounding area. UTM coordinates for the site are: [redacted]

XMH-933
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-899 consists of two chert flakes in a tree fall on a small ridge north of, and overlooking, Mark Lake. Flakes were observed after four negative shovel tests were completed. UTM coordinates for the site are: [redacted]

XMH-934
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-934 consists of three flakes of varying lithic material observed on the ground surface in an exposed gravel outcrop along a low gradual ridge. Intact subsurface finds may be identified through future investigative efforts. UTM coordinates for the site are: [redacted]

XMH-935
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-935 consists of one chert microblade, observed and collected from an eroded spot on the side of a long, north-south trending finger ridge. The ridge extends in the area between Mark Lake and Big Lake. UTM coordinates for the site are: [redacted]

XMH-936
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-936 consists of three small dark gray chert flakes, observed on the ground surface in an eroded spot on the northeast slope of a long finger ridge. The north-south trending ridge extends in the area between Mark Lake and Big Lake. UTM coordinates for the site are: [redacted]

XMH-937
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-937 consists of five chert flakes observed on the ground surface in an eroded spot on the northeast slope of a long finger ridge. The north-south trending ridge extends in the area between Mark Lake and Big Lake. UTM coordinates for the site are: [redacted]

XMH-938
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-938 consists of one quartz, one gray chert and two red chert flakes, observed on the ground surface along an elevated portion of a glacial moraine. The site is situated above a small pond at the southwestern edge of Big Lake. Several shovel tests were excavated in the immediate vicinity, but only one red chert primary flake was recovered and collected. UTM coordinates for the site are: [redacted]

XMH-939
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-939 consists of four concentrations of surface artifacts on a landform on the west side of Big Lake. The concentrations include quartzite late-stage reduction flakes, a cobble of green chert, and chert flakes. One shovel test produced two flakes. An improved surface road has impacted the site. UTM coordinates for the site are: [redacted]

XMH-940
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-940 consists of half of a projectile point manufactured from black chert. It appears as though the point was broken from an impact fracture, leaving part of the base and one of its lateral edges. The site is situated above a dry stream channel on the west side of Big Lake. UTM coordinates for the site are: [redacted]

XMH-941
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-943 consists of a uniface tool, located on a peninsula at the north end of Big Lake. This peninsula is the terminal end of a large ridge that is perpendicular to the lake. The site was located during systematic shovel testing of the landform, through which the uniface tool was recovered. Two rows of 4 shovel tests each were excavated in an east west direction across the landform. UTM coordinates for the site are: [redacted]

XMH-942
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-942 consists of one dark gray chert finishing flake and one obsidian biface thinning flake fragment. The site is located along the western edge of a broad ridge, overlooking the north end of Big Lake and the surrounding meadow that makes up the Big Lake basin. The site was located during systematic shovel testing of the land form during survey. Two shovel tests yielded cultural debris, and both artifacts were collected. UTM coordinates for the site are: [redacted]

XMH-943
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-943 consists of four flakes recovered in two shovel tests. The site was first discovered while conducting shovel testing procedures as part of survey efforts around Big Lake. Two 30 x 30cm shovel tests revealed subsurface cultural materials. One of the shovel tests produced a quartz flake at 10-15 cm below the surface, while one late-stage reduction (pressure flake) fragment of light gray chert, one light gray chert cortical flake, and a light gray edge-modified chert flake were recovered in the second shovel test. The artifacts were recovered from 15-30 cm below the surface, before encountering glacial till. UTM coordinates for the site are: [redacted]

XMH-944
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-944 consists of a dark gray chert reduction flake, observed on a surface exposed by wind erosion along the edge of a ridge. Big Lake can be seen in the distance. UTM coordinates for the site are: [redacted]

XMH-946
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-946 consists of a light gray chert pressure flake recovered in a shovel test pit on a high ridge, just south of a 4-wheel drive access road. The ridge drops sharply to the south. UTM coordinates for the site are: [redacted]

XMH-947
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-947 consists of a dark gray chert flake retouched along one edge, recovered in a shovel test on a ridge. The ridge drops off to a small kettle lake to the north and another to the south. UTM coordinates for the site are: [redacted]

XMH-948
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-948 consists of a sparse lithic scatter of chert flakes. The site is located on the crest and slope juncture of a glacial moraine to the southwest of Big Lake, just to the northeast intersection of several unnamed 4-wheel drive access roads, one of which skirts the south edge of Big Lake. Several shovel tests excavated along the crest failed to produce any subsurface finds. UTM coordinates for the site are: [redacted]

XMH-949
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-949 consists of a small obsidian uniface, commonly referred to as a "thumbnail scraper." The site is located on a small hilltop that is part of a narrow northwest-southeast trending ridge. The site area has sparse vegetation with eroded areas exposing glacial till. The obsidian thumbnail scraper was found on the eroded south-facing slope. UTM coordinates for the site are: [redacted]

XMH-950
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-950 consists of quartz flakes, a core and possible tool; one chert flake; and a burned, side-notched, broken projectile point observed during survey. The projectile point was collected from an all-terrain vehicle (ATV) trail to prevent loss or further damage. The site consists of rolling upland—tops of hills are exposed with shrubby trees in saddles between exposures. Four loci were flagged. A distance of approximately 230m separates the outermost loci. An ATV trail transects part of the site, roughly east-west. UTM coordinates for the site are: [redacted]

XMH-951
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-951 consists of two quartz flakes (with pressure flaking scars and ridges) and one possibly burinated dark gray chert flake observed on the surface of a small north-south trending ridge with a steep west face. Military activities have caused great disturbance in the area, evident in numerous foxholes. UTM coordinates for the site are: [redacted]

XMH-952
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-952 consists of a tested quartz cobble and one gray chert reduction flake identified on a circular ridge. UTM coordinates for the site are: [redacted]

XMH-953
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-953 consists of six gray chert reduction flakes observed within a 1m area, approximately in the middle of a saddle that is part of a narrow east-west trending ridge. The ridge divides two kettle lakes to the north and south. UTM coordinates for the site are: [redacted]

XMH-954
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-954 consists of a single basalt flake, observed in an eroded area just off the crest on the south slope of a large hill. The flake has a rust-colored patina, which can be observed on non-cultural stones within the site area as well. The site is mostly eroded down to glacial till, with a few small patches of vegetation, and is a part of a meandering north-east, south-west trending ridge. UTM coordinates for the site are: [redacted]

XMH-955
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-955 consists of a scatter of approximately 12 light gray chert flakes, observed in a bare eroded area surrounded by brush at the southern end of Windy Ridge, west of the road that follows the crest. At the road edge, a thick chert scraper was found and collected to prevent loss or further damage. UTM coordinate for the site are: [redacted]

XMH-956
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-956 consists of five flakes observed on the top of a small glacial moraine that overlooks Nickel Lake to the north. This landform is paralleled by an ephemeral drainage on the west and higher ridges to the east. The seasonal drainage links Nickel Lake to a smaller lake to the south. The immediate location of cultural material (10 x 20m) is eroded down to glacial till. The surrounding area is vegetated, suggesting that there may be minimal shallow loess deposits. [redacted]

XMH-957
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-948 consists of one banded gray chert flake tool. The site is located on the highest point of Windy Ridge. Along the western edge of the ridge crest is a narrow band of loess deposits that represent a high probability for containing cultural deposits. The single artifact observed on the surface is a banded gray chert flake tool. One margin is unifacially retouched to the ventral surface, the other has been utilized, modified, and bifacially retouched. UTM coordinate for the site are: [redacted]

XMH-958
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-958 consists of a broken white quartz flake with a bifacially retouched margin, and a light gray chert reduction flake. Both artifacts were observed within a 1 x 1m blowout on a relatively flat portion of Windy Ridge. This part of the ridge has other eroded areas, but is mostly covered with patches of aspen, birch and alder. UTM coordinates for the site are: [redacted].

XMH-959
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-959 consists of a single gray chert flake (which resembles a chip or spall from a hammerstone), observed in a small blowout on the top of a knoll. It is located just south of a prominent saddle on Windy Ridge. Aside from blowouts, the knoll is littered with lichen-covered cobbles and boulders. Aspen, alder and birch populate the slopes. UTM coordinates for the site are: [redacted]

XMH-960
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-960 consists of two flake scatters located along the edge of Windy Ridge. A burnt red chert flake was observed in a game trail along the northwest edge, and along the southwest edge, 12 flakes were observed scattered in a 3m eroded cut. These artifacts include large green basalt flakes, green basalt shatter, and gray chert flakes. Deposition varies. Large boulders are scattered along the edge of the ridge, the largest being on the southern end of the micro-topography. On the east side of this boulder is a contemporary campfire ring overgrown by an alder bush. [redacted]

XMH-961
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-961 consists of two quartz artifacts found in an eroded area on the south facing slope of an isolated hill. The hill is located on the south end of a glacial moraine. The moraine is an isolated feature on the landscape in a low land between two ridges. UTM coordinate for the site are: [redacted]

XMH-963
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-963 consists of one gray chert flake tool. The tool was found in a south-facing, eroded area just off the crest of a small hill. The site area is a mosaic of eroded and vegetated areas. The eroded areas have exposed glacial till, which is made up of angular and sub-angular gravel mixed with light brown loess. The vegetated areas have retained very little soil, approximately 2 -5cm of brown loess. UTM coordinates for the site are: Zone 6, easting 0556404, northing 7079790.

XMH-964
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-964 consists of cultural debris that has eroded from a blowout in a small saddle, on a small east-west trending hill, north of a kettle lake. Large cobbles, small boulders and lichen dominate the top slopes of the hill. Five banded gray chert flakes within a 1 x 1m area are located on the eastern end of the hill. Within the blowout, survey located two utilized and retouched gray quartzite flake tools, one large basalt flake tool, and one large basalt reduction fragment. UTM coordinate for the site are: [redacted]

XMH-965
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-965 consists of two fragments of battered white quartzite cobble, observed on an eroded south-facing slope of a large ridge. The pieces were 20cm apart, one downhill from the other. A large flake removed from one of the fragments suggests that there could be more of the cobble scattered on the slope. Both pieces can be refit. One end of the cobble may have been used as a hammer stone; the opposite side is the side from which the flake was removed. UTM coordinates for the site are: [redacted]

XMH-966
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-966 consists of a light gray chert scraper recovered in a shovel test 5-15cm below the existing ground surface. The site is located on a low bench overlooking a kettle lake. The artifact was collected. UTM coordinate for the site are: [redacted]

XMH-967
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-967 consists of two gray chert bifacial thinning flakes, observed at the south end and at the base of a small knoll on a north-south trending ridge. This low ridge has a mosaic of eroded and vegetated areas. The eroded areas are littered with small rounded cobbles and gravels. Approximately 120m to the north, and on the same ridge, is site XMH-980. Also 140m to the south is site XMH-961. UTM coordinate for the site are: [redacted].

XMH-(NUMBER TO BE ASSIGNED)

Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

Site consists of a single gray chert flake, observed on the east side and just below the crest of an isolated hill above a kettle lake. The flake has two old flake scars and a pot lid spall. It is uncertain whether the spall is a natural flaw or caused by thermal modification. The west and north portions of the hill are vegetated with low, heavily-browsed brush, while the east and south are a mosaic of low-growing shrub and eroded areas. Four shovel tests were excavated north of the flake amongst the vegetation, but no cultural material was recovered. UTM coordinates for the site are: [redacted]

XMH-968

Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-968 consists of a tested quartz cobble, observed and collected from the crest of a north-east south-west trending ridge in a heavily eroded area. The ridge separates Ghost Lake to the southeast, from a large flat bench to the northwest. Several reduction flakes have been removed from one face of the softball-sized cobble. UTM coordinates for the site are: [redacted]

XMH-969

Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-969 consists of a banded, light gray chert biface fragment (a short segment of a lateral margin), observed and collected just off the crest of the western edge of Windy Ridge to its southern end, at the base of a climb in elevation to the north. The ridge is fairly wide and flat, largely deflated down to a pavement of cobbles and boulders. An army base camp is located 30m to the east, where there may be some deposition containing additional cultural material. UTM coordinates for the site are: [redacted]

XMH-970

Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-970 consists of two lithic tools observed on the surface of Windy Ridge. A dark gray, chert biface fragment was observed and collected from the eastern end of the site amongst cobbles and boulders lower on the slope. The military was setting up a base camp here a few days after the site was identified. The crest of Windy Ridge is topped by a 4-wheel drive, two-track access road; a uniface was collected from the west side of the road to prevent loss or further damage. A light scatter of flakes was found in and around a foxhole that has been created next to a large boulder. It includes one flake of obsidian.
Windy ridge has two major saddles; this site is located at the highest point south of the southernmost saddle. The east slope is severely eroded with a slope of 30-40%, while the west-facing slope has perhaps 20cm of loess deposits, and a slope of 60-70%. UTM coordinates for the site are: [redacted]

XMH-971
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-971 consists of one, coarse-grained, dark gray chert flake, observed on the surface of a narrow, descending ridge's crest. The site is situated next to a two-track road on the crest. This part of the ridge is above the southern end of a broad saddle in the middle of Windy Ridge. While the crest is littered with cobbles, boulders and some eroded areas, the eastern slope is encroached upon by aspen, alder and birch. UTM coordinates for the site are: [redacted]

XMH-972
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-972 consists of one light gray chert flake, recovered in a shovel test in a saddle between two high ridges atop Windy Ridge. The saddle is at the end of the 4-wheel drive, two-track road that runs along the crest. UTM coordinates for the site are: [redacted]

XMH-973
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-973 consists of three concentrations of small flakes observed on a narrow section of Windy Ridge, along both the east and west sides of a 4-wheel drive road at the crest. Approximately 100m separates the northernmost concentration from the southernmost. The flakes are one gray chert micro flake, three dark gray chert flakes, and two light gray chert flakes. Site XMH-970 is approximately .15 kilometers to the north, while site XMH-969 is approximately .4 kilometers to the south. UTM coordinates for the site are: [redacted]

XMH-974
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-974 consists of several quartz and chert flakes, and a blade. The site occupies a ridge, which descends to the south to a kettle lake named Lonestar Lake. It is bisected by Windy Ridge Road, and covers approximately 50m from its southern point to its northern point. A variety of cultural materials was observed on the ground surface, including a thermal feature, 2 quartz flakes, several dark gray chert flakes, and a blade south of the road. Across the road to the north, a diorite hammerstone spall was observed. The blade was collected to prevent loss or damage. UTM coordinates for the site are: [redacted]

XMH-975
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-975 consists of one gray chert pressure flake and one quartz flake, observed on a hilltop overlooking a pond to the northeast. The hill is part of a north-south trending ridge system. Site XMH-

976 is approximately .1 kilometer to the northeast, overlooking the same pond. UTM coordinates for the site are: [redacted]

XMH-976

Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-976 consists of one broken red chert thinning flake, one large quartz flake, and one large piece of quartz shatter, observed in a saddle at the base of a hill overlooking a pond to the east. The hill is part of a north-south trending ridge system. The saddle is characterized by a large area of erosion down to glacial till, and boulders and cobbles cover the east side of the terrain, which slopes down to the pond. Site XMH-975 is approximately .1 kilometer to the southwest, overlooking the same pond. UTM coordinates for the site are: [redacted]

XMH-977

Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-977 consists of artifacts found at two locations, representing two different elevations. An obsidian flake tool was collected from the top of a large hill in an off-road parking area. The artifact was at the edge of the disturbance, which may have been used as an observation point or landing pad. The remainder of the site is located immediately north on a smaller hill below. The top and southeast slope are eroded, exposing glacial till. Two large chert flakes were observed in a slight swale between the two hills. UTM coordinates for the site are: [redacted]

XMH-978

Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-978 consists of a single flake tool identified on the south-facing slope of a hill. The hill is part of a north-south trending ridge system. The tool is made of a low-quality gray chert, unifacially flaked on all margins of the dorsal surface. UTM coordinates for the site are: [redacted]

XMH-979

Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-979 consists of two basalt flakes recovered in a shovel test. The site is .5 kilometers southeast of J Lake, situated atop a prominent ridge immediately west of the northern end of Nickel Lake. UTM coordinates for the site are: [redacted]

XMH-982

Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-982 consists of one quartz biface, recovered in a shovel test located on a narrow moraine. One positive and three negative shovel tests were excavated along the crest and near the southern end of the

moraine. This landform has a steep east-facing slope, which drops down into a broad flat meadow. This same meadow wraps around the southern end, and slopes down to the Big Lake basin. The west side of the moraine has a gradual slope that had been truncated by a road, which is now overgrown with brush. Beyond this is a broad flat ridge, which contains three other recorded archaeological sites. The closest of these is XMH-937, 70m to the northwest. UTM coordinates for the site are: [redacted]

Combined Training Range (CTR) Site Evaluations: XMH-876

Although the proposed alternative described here as Battle Area Complex (BAX) Area B is not the preferred location for the BAX range, it was proposed to construct the Combined Training Range (CTR) range within the same general area. This prompted an evaluation of site XMH-876, the one site recorded during survey which falls directly within the proposed construction footprint of the CTR.

Evaluation Methodology

Much like the evaluation methodology described above in the evaluation of sites within the proposed Battle Area Complex (BAX) Area A, evaluation of XMH-876 followed similar guidelines and research questions:

Given the small size and non-renewable nature of these important cultural resources it was determined that evaluation procedures should proceed, with an overall goal of minimal site disturbance. The objectives of the evaluation process were to determine eligibility for listing in the National Register of Historic Places (NRHP), based on criteria defined in 36 CFR 60.4. Following extensive literature research and discussion, a number of research questions were identified that could potentially be answered by sites in the middle and upper Tanana Basin. These questions include: interpretation of microblade use; possible connections between landform type and lithic assemblages; prehistoric land-use and subsistence patterns; and the role of small, low density lithic scatters in the interpretation of regional prehistory. These topics were all raised with the understanding that many of the sites in the survey area were small and typically lacked datable material and adequate soil stratigraphy to support accurate radiometric dating of assemblages. It is hoped, however, that analysis of these small, special-use locations will further contribute to understanding possible connections between landscape, subsistence and lithic tool-kit composition in the study area.

Evaluation methodology was focused on defining aerial extent, vertical extent, assess site integrity, and record a representative sample of artifacts. Artifacts deemed "diagnostic" regardless of context. included any formal or expedient tool, any blade or microblade, any blade or flake core, and any exotic material, such as obsidian. These types of artifacts were systematically collected. All other artifacts, unless removed during initial survey and/or shovel test, were left *in situ*. A general understanding of the soil stratigraphy/matrix is also considered critical to understanding site formation processes, relative age, and site integrity (i.e., the extent of disturbance by recent human activity or natural forces, and how much of the site remains in tact). A combination of shovel testing, soil probing, test excavation, site mapping and profile drawing was implemented to provide and record this data.

Field procedures involved the designation of a site datum for general site mapping, and establishing vertical and horizontal control of site testing procedures. Permanent site datums consisted of a 14" or 18" length of 5/8" or ½" rebar, topped with an aluminum cap indicating Alaska Heritage Resource Survey (AHRS) number. A thorough surface examination of the site area and mapping of any surface artifacts or features was conducted. The site was then systematically shovel-tested on a grid. Shovel test intervals of 2.5, 5, 10 and 20m was used flexibly to determine site boundaries. Determinations of site boundaries were based on shovel testing and surface examination. If shovel testing indicated that a site had the potential to contain a significant amount of sub-surface cultural material, a 1x1m test unit was excavated, in order to better understand the information potential of a site. The test unit's location was based on estimates of artifact densities and site boundaries, to provide for the most effective sampling of cultural material, datable material, and to obtain a better understanding of artifact densities on the vertical axis. Test units were excavated in 5 cm levels , with all recovered soil screened through ¼" hardware cloth. Test unit excavation was carefully recorded on level report forms. Each test level was photographed with color print film, and a plan drawing was made. A profile drawing was completed of a selected wall of the unit. Artifacts were removed for laboratory analysis, cataloging and eventual curation at the University of Alaska (Fairbanks) Museum.

XMH-876
Latitude: [redacted]
Longitude: [redacted]
Determination: Not Eligible

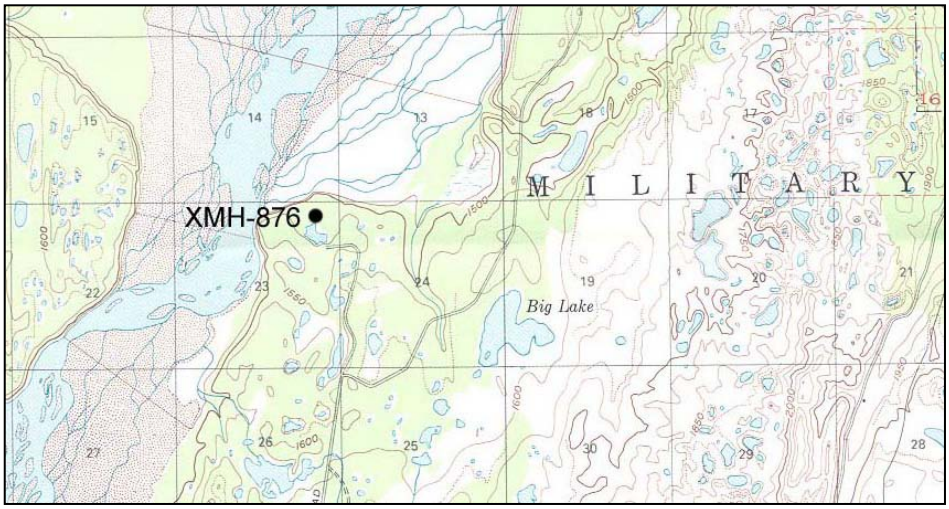


Figure 42. Location of site XMH-876 (from USGS Mt. Hayes (D-4) quad).

Site XMH-876 was identified during pedestrian survey on 7/30/02. The site is located near a small lake located between Meadows Road and the Delta River (figure 42). Artifacts observed during survey include: 2 possible fragments of fire-cracked rock (FCR); 1 fire-affected mudstone late-stage reduction flake; 1 large quartz flake, 1 gray chert flake; 1 very small flake of gray basalt; and 1 possible tested cobble of siltstone or argillite.

Vegetation at the site is characterized as a Lowland Spruce-Hardwood Forest. Overstory vegetation is dominated by white and black spruce, aspen, birch, and tamarack, while understory vegetation includes Sitka alder, bunchberry dogwood, bearberry, lowbush cranberry, and dwarf birch. Ground cover is dominated by cottongrass, horsetails, moss, lichens, ferns, and a variety of grasses.

Figure 43. View of site XMH-87 to the north-northeast.

The surrounding terrain exhibits a substantial amount of undulation, with small depressed areas surrounded by small knolls or slightly higher elevations. It appears this is primarily due to disturbances associated with military activities conducted throughout the last fifty or sixty years, rather than natural occurrences. Disturbances of this kind are also evident in the immediate vicinity of the site. Soil thickness at the site averages approximately 15cm. Intensive examination of the site area prior to evaluation revealed one additional flake. A total of 36 shovel tests was conducted over the site area at intervals of 5, 10 and 20m. All shovel tests were negative, producing no subsurface artifacts (figure 44). Shovel testing revealed that there is little soil deposition left at XMH-876. A typical shovel test consisted of 5cm of O Horizon, with 10cm of yellowish-brown loess over glacial till. In the immediate location of the surface artifacts, glacial till was just below a thin layer of moss and lichen. Further upslope the soil deposition increases to between 20 and 30cm.

Findings

Despite subsurface testing, only 5 surface artifacts were recovered at the site. These findings suggest that the artifacts may be the result of a single event or short-term occupations. Given the level of disturbance evident in the surrounding area, and sparse distribution of cultural material on the surface, it is not likely that a significant number of artifacts or datable material remains at the site. Subsequently, the site was determined not eligible for inclusion in the National Register of Historic Places.

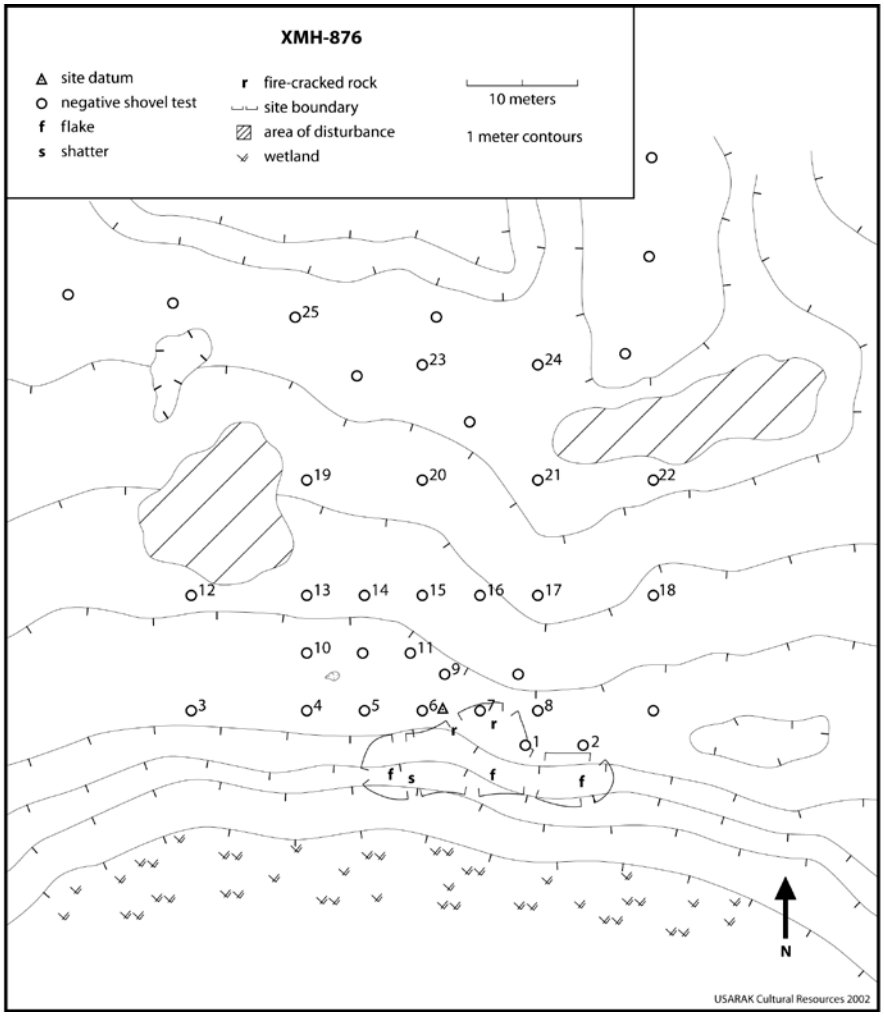


Figure 44. Site map of evaluations at XMH-876.

Battle Area Complex (BAX) Area C

A third alternative was proposed for the location of the Battle Area Complex (BAX) range (BAX Area C), located in Donnelly Training Area East between the Richardson Highway and Jarvis Creek (figure 24). Roughly four square kilometers encompassing the proposed range's area of potential effect (APE) was surveyed during the 2002 summer field season. No cultural resources were identified during the course of survey.

Summary

A total of 40 new archaeological sites were recorded within the proposed Battle Area Complex (BAX) Area A, with 51 new archaeological sites recorded within the proposed BAX Area B alternative/Combined Training Range construction footprints. No archaeological sites were identified during pedestrian survey of the proposed BAX Area C.

A single site within the Area of Potential Effect (APE) of the proposed Combined Training Range (CTR) and four sites within the APE of the proposed Battle Area Complex (BAX) alternative Area A were evaluated for eligibility to the National Register. Only one site, XMH-874, located within the BAX Area A proposed construction footprint, has been determined eligible for inclusion in the National Register of Historic Places. This site has exceptional integrity and contains a significant amount of buried cultural material, and thus may contribute additional information in understanding the prehistory of the Alaskan interior and the Tanana River Valley.

XMH-874 is representative of many archaeological sites of the glacial recession terrain immediately north of the Alaska Range. These sites are typically small, located on south facing hilltop or lakeside locations with less than 50cm of soil. Although artifact densities can be relatively low at these apparent short-term camps and hunting lookouts, they have significant research potential. Further, as the integrity of many of the sites in the vicinity of Donnelly Training Area East have been diminished by intensive military training activity, this site is particularly important for interpreting the prehistory of this training area. All efforts will be made to avoid impacts to XMH-874; however, if avoidance by design modification is not feasible, mitigation strategies will be pursued, in consultation with the State Historic Preservation Office and interested Tribal governments, in order to fully document and preserve information from the site prior to any construction.

3.2.3 33-Mile Loop Road Upgrade and Rehabilitation Project, Donnelly Training Area East

The United States Army Alaska (USARAK) has proposed improvements along 33-Mile Loop Road at Ft. Wainwright's Donnelly Training Area East. An archaeological survey of the road was conducted in August of 2002. Seventeen newly recorded archaeological sites were identified during the course of survey, and one previously recorded site was re-located within the proposed project's boundaries. 15 of the 18 sites fall directly within the project's area of potential effect (APE). Evaluation of these sites was subsequently undertaken to determine eligibility to the National Register of Historic Places (NRHP), and results are presented below. Based on the results of the evaluation, seven of the 15 sites within the project APE have been determined eligible for inclusion in the NRHP.

Setting

The proposed 33-Mile Loop Road upgrade project is located in Donnelly Training Area, approximately 110 miles southeast of Fairbanks, Alaska. Donnelly Training Area consists of two large training areas, Donnelly Training Area West (approximately 531,000 acres) and Donnelly Training Area East (approximately 93,000 acres), and three outlying sites, Gerstle River Training Area (20,580 acres), Black Rapids Training Site (4,112 acres), and Whistler Creek Rock Climbing Area (542 acres).

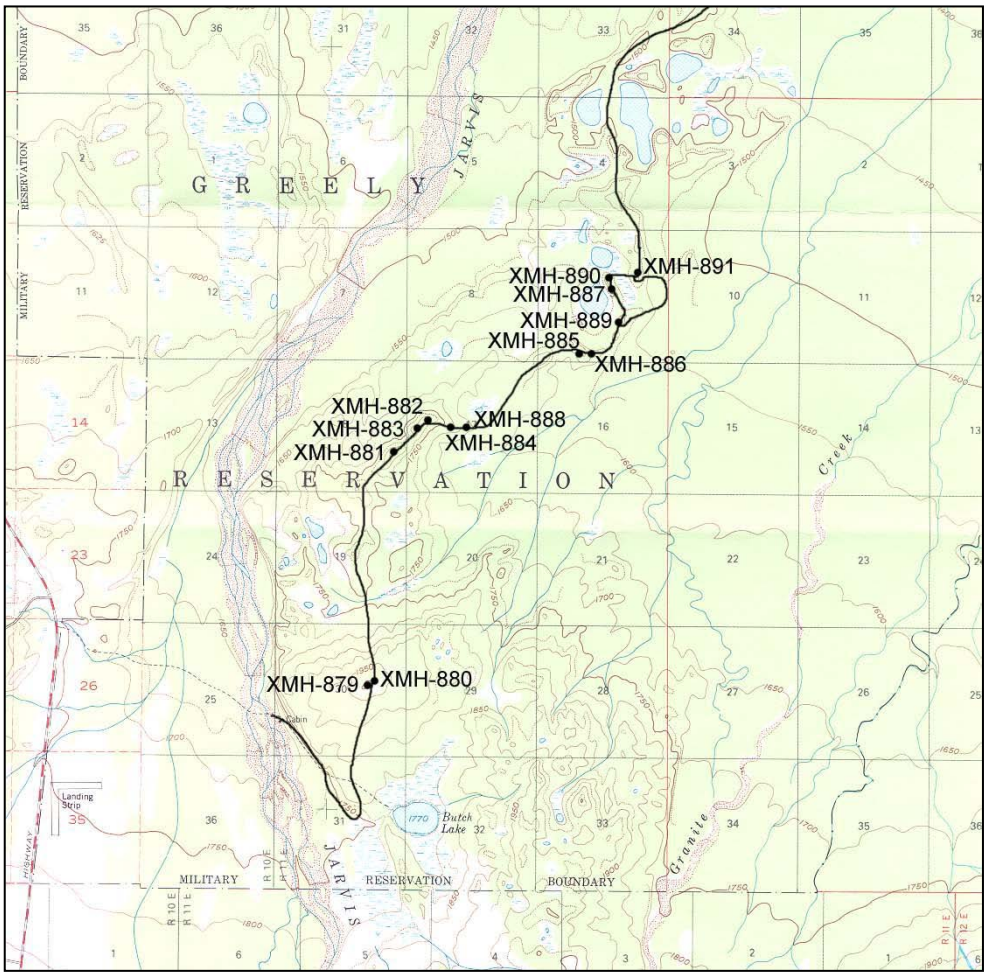


Figure 45. Location of 33-Mile Loop road, with evaluated sites identified (from USGS Mt. Hayes (D-4) quad).

33-Mile Loop Road is an unimproved road extending in a wide loop across East Range from Buffalo Drop Zone, across Jarvis Creek (winter trail) to an intersection with the Richardson Highway (see figure 45). The road is a key training asset, providing access to Training Area(s) 5-11 and 19-20. It has become largely inaccessible to military vehicles due to large erosional features (*e.g.*, ruts, gullies, and mud holes). The objective of the 33-Mile Loop Road project is to open the road for year-round military training by repairing and improving eroded sections. The proposed project would clear roadside vegetation, widen, grade and crown, and install culverts and cutouts as necessary. This will re-establish the road and make it viable for training use.

Survey and Field Methods

During August of 2002, an archaeological survey crew comprised of four archaeologists employed by the Center for Environmental Management of Military Lands (CEMML), Colorado State University, conducted a survey of the southern half of 33-Mile Loop Road, within Donnelly Training Area East. Survey proceeded south from a point approximately 10 kilometers south of the Alaska Highway (7 kilometers south of Fleet Street) to its intersection with Jarvis Creek (Twelve Mile Crossing), a distance of approximately 10 kilometers. Standard pedestrian survey methods were employed within a 30m wide survey corridor centered on the existing trail. The narrow width of the survey corridor allowed for intensive survey methods; transect intervals averaged 5m or less in most areas. Survey coverage extended to all areas that were considered not too wet or too steep (>40°) to contain cultural material. Systematic sub-surface shovel testing was undertaken in areas determined to have high probability for containing archaeological sites. Areas that were shovel tested included but were not limited to: any landform that afforded a view, lake margins, ridgelines, terrace edges, hilltops, and benches adjacent to steeper slopes. Shovel tests were typically 30cm in diameter, and were excavated into glacial till or consolidated outwash. All soil removed was screened through ¼" hardware cloth.

33-Mile Loop Road Upgrade Survey:

Surveys conducted for the proposed upgrade of 33-Mile Loop road resulted in the identification of 17 newly recorded archaeological sites within the survey corridor, while an additional previously recorded site was relocated:

XMH-879
Latitude: [redacted]
Longitude: [redacted]
Determination: Eligible

The site is located on 33-Mile Loop Road and can be accessed by traveling on 33-Mile Loop Road approximately 17 kilometers south from the intersection of 33-Mile Loop Road and Fleet Street (figure 45). The site is located on a large hilltop, 1.5 kilometers north of Butch Lake. Initial investigations of the site revealed 3 chert flakes, 3 nodules of chert, and a possible core fragment on the ground surface. One flake was found on the trail surface and collected. UTM coordinates for the site are: [redacted]

XMH-880
Latitude: [redacted]
Longitude: [redacted]
Determination: Not Eligible

The site is located on 33-Mile Loop Road and is accessed by traveling on 33-Mile Loop Road approximately 17 kilometers south of the intersection with Fleet Street (figure 45). The site is situated on a large hilltop, 1.5 kilometers north of Butch Lake. Initial investigations of the site revealed one gray chert flake (black band) on the present ground surface. UTM coordinates are: [redacted]

XMH-881
Latitude: [redacted]
Longitude: [redacted]
Determination: Eligible

The site is located on 33-Mile Loop Road and is accessed by traveling south on 33-Mile Loop Road, approximately 14 kilometers south of its intersection with Fleet Street. Initial investigations of the site revealed 3 fragments of flaked stone on the present ground surface. UTM coordinates for the site are: [redacted]

XMH-882
Latitude: [redacted]
Longitude: [redacted]
Determination: Eligible

The site is located on 33-Mile Loop Road and is accessed by traveling south on the 33-Mile Loop road, approximately 13.5 kilometers south of its intersection with Fleet Street. Initial investigations of the site revealed one flake, recovered from a shovel test during survey. UTM coordinates for the site are: [redacted]

XMH-883
Latitude: [redacted]
Longitude: [redacted]
Determination: Evaluated

The site is located on 33-Mile Loop Road and can be accessed by traveling south on the road approximately 13.5 kilometers south of the intersection with Fleet Street. Initial investigations of the site revealed 3 fragments of flaked stone on the present ground surface. The hilltop where the site is located is part of a larger hill or ridge system that is nearly 2km long and 250m wide. The slope is steep on all sides at a grade of 15 - 20%. The surrounding terrain in the immediate area is generally flat with the exception of the continuation of the ridge as it extends to the southwest. The hilltop provides good views looking east and south. UTM coordinates for the site are: [redacted]

XMH-884
Latitude: [redacted]
Longitude: [redacted]
Determination: Not Eligible

The site is located on 33-Mile Loop Road and is accessed by traveling south on the road approximately 13.5 kilometers south of its intersection with Fleet Street. Initial investigations of the site revealed one fragment of flaked stone, recovered below the ground surface in a shovel test. UTM coordinates for the site are: [redacted]

XMH-885
Latitude: [redacted]
Longitude: [redacted]
Determination: Not Eligible

The site is located on 33-Mile Loop Road and is accessed by traveling south on the road approximately 10.5 kilometers south of its intersection with Fleet Street. Initial investigations of the site revealed two fragments of flaked stone, recovered from a shovel test. Site XMH-886 is located 60m to the northeast, on the same hilltop. UTM coordinates for the site are: [redacted]

XMH-886
Latitude: [redacted]
Longitude: [redacted]
Determination: Eligible

The site is located on 33-Mile Loop Road and is accessed by traveling south on the road approximately 10.5 kilometers south of its intersection with Fleet Street. Initial investigations of the site revealed 6 fragments of flaked stone and one projectile point, recovered from two different shovel tests. Site XMH-885 is located 60m to the southwest, on the same hill. UTM coordinates for the site are: [redacted]

XMH-887
Latitude: [redacted]
Longitude: [redacted]
Determination: Eligible

The site is located on 33-Mile Loop Road and is accessed by traveling south on the road approximately 10 kilometers south of its intersection with Fleet Street. Initial investigations at the site revealed 7 fragments of flaked stone found on the exposed road surface. UTM coordinates for the site are: [redacted]

XMH-888
Latitude: [redacted]
Longitude: [redacted]
Determination: Not Eligible

The site is located on 33-Mile Loop Road and is accessed by traveling south on the road, approximately 12.5 kilometers south of its intersection with Fleet Street. Initial investigations of the site revealed one fragment of flaked chert, recovered from a shovel test. UTM coordinates for the site are: [redacted]

XMH-889
Latitude: [redacted]
Longitude: [redacted]
Determination: Not Eligible

The site is located on 33-Mile Loop Road and is accessed by traveling south on the road, approximately 10 kilometers south of its intersection with Fleet Street. Initial investigations of the site revealed 4 fragments of flaked chert on the exposed surface of the road. UTM coordinates for the site are: [redacted]

XMH-890
Latitude: [redacted]
Longitude: [redacted]
Determination: Eligible

The site is located on 33-Mile Loop Road and is accessed by traveling south on the road, approximately 10 kilometers south of its intersection with Fleet Street. Initial investigations of the site revealed a moderate density concentration of artifacts found on the surface adjacent to the road. UTM coordinates for the site are: [redacted]

XMH-891
Latitude: [redacted]
Longitude: [redacted]
Determination: Eligible

The site is located on 33-Mile Loop Road, and can be accessed by traveling south on the road to approximately 9 kilometers south of its intersection with Fleet Street. Initial investigations at the site revealed two fragments of flaked stone on the existing ground surface. UTM coordinates for the site are: [redacted]

XMH-892
Latitude: [redacted]
Longitude: [redacted]
Determination: Not Eligible

The site is located on 33-Mile Loop Road, and is accessed by traveling south on the road to approximately 4 kilometers south of its intersection with Fleet Street. Initial investigations of the site revealed two fragments of flaked chert on the existing ground surface. UTM coordinates for the site are: [redacted]

XMH-894
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-894 consists of a surface lithic scatter, comprised of two flakes of dark gray chert and two fragments of dark gray chert shatter on a high point on the ridgeline. UTM coordinates for the site are: [redacted]

XMH-928
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-928 consists of twelve flakes of chert and basalt, observed on the surface of a southeast facing slope of a steep hill. UTM coordinates for the site are: [redacted]

XMH-929
Latitude: [redacted]
Longitude: [redacted]
Determination: Not evaluated

XMH-929 consists of two chert flakes, observed on the ground surface of a small hilltop with a good view of Spring Lake. UTM coordinates for the site are: [redacted]

In addition to those sites newly recorded, one previously recorded site located within the proposed 33-Mile Loop Road project area was relocated, and evaluated (see below):

XMH-323
Latitude: [redacted]
Longitude: [redacted]
Determination: Evaluated

Site XMH-323 is located on 33-Mile Loop Trail, and is discussed in detail below (evaluations for 33-Mile Loop Road). A total of 6 artifacts was observed at the site, all of which were located on the disturbed surface; none were collected. The artifacts consist of three fragments of chert, one each of dark gray, light gray, and brown, and three fragments of gray quartzite. The dark gray chert flake has had some retouch to one of the sides. UTM coordinates for the site are: [redacted]

33-Mile Loop Road Site Evaluations

In refining the proposed plans for the upgrade and rehabilitation of 33-mile Loop Road, it was determined that 15 of the 18 sites identified fall directly within the area of potential effect of the construction footprint. These sites were subsequently evaluated for eligibility to the National Register of Historic Places.

Evaluation Methodology

Literature research and discussion prior to conducting evaluations revealed a number of significant research questions that might be answered by eligible sites in the middle and upper Tanana Basin. Similar to those questions identified in the evaluation of five sites associated with the proposed BAX and CTR training ranges, questions focus on: interpreting the presence of microblades, the connection between landform type and lithic assemblage, prehistoric land use and subsistence patterns, and the role of small low density lithic scatters in the interpretation of regional prehistory. These topics were all raised with the understanding that many of the sites in the survey area were small and typically lacked datable material and adequate soil stratigraphy to support accurate radiometric dating of assemblages.

Given the small size and non-renewable nature of these important cultural resources it was decided that evaluation procedures must proceed with an overall goal of minimal site disturbance. The objectives of the evaluation process were to define the aerial extent of the site, the vertical extent of the site, judge the site integrity, and to record a representative sample of artifacts. Artifacts deemed "diagnostic" regardless of context, included any formal or expedient tool, any blade or microblade, any blade or flake core, and any exotic item such as obsidian. These types of artifacts were systematically collected. All other artifacts, unless they were removed from a shovel test, test unit, roadway or trail surface, were typically left *in situ*. A general understanding of the soil stratigraphy/matrix is also considered critical to understanding site formation processes, relative age, and site integrity (i.e., the extent of disturbance by recent human activity or natural forces, and how much of the site remains in tact). A combination of shovel testing, soil probing, test excavation, site mapping and profile drawing was implemented to provide and record this data.

Field procedures involved the designation of a site datum for general site mapping and vertical and horizontal control of site testing procedures. Permanent site datums consisted of a 14" or 18" length of 5/8" or ½" rebar topped with an aluminum cap imprinted with an Alaska Heritage Resource Survey number. A thorough surface examination of the site area and mapping of any surface artifacts or features was conducted prior to excavation. The site was then systematically shovel-tested on a grid. Shovel test intervals of 2.5, 5, 10 and 20m were used flexibly to determine site boundaries. If shovel testing indicated that a site had the potential to contain a significant amount of sub-surface cultural material, a test unit was excavated to better understand the information potential of a site. The test unit's location was based on estimates of artifact densities and site boundaries, to provide for the most effective sampling of cultural materials, datable material, and to obtain a better understanding of artifact densities on the vertical axis. Test units were excavated in 5cm levels and all removed soil was screened through ¼" hardware cloth. Test unit excavation was carefully recorded on level report forms. Each test level was photographed with color print film, and a plan drawing was made. A profile drawing was completed of a selected wall of the unit. Artifacts were removed for laboratory analysis, cataloging and eventual storage at the University of Alaska Museum in Fairbanks.

XMH-879
Latitude: [redacted]
Longitude: [redacted]
Determination: Eligible

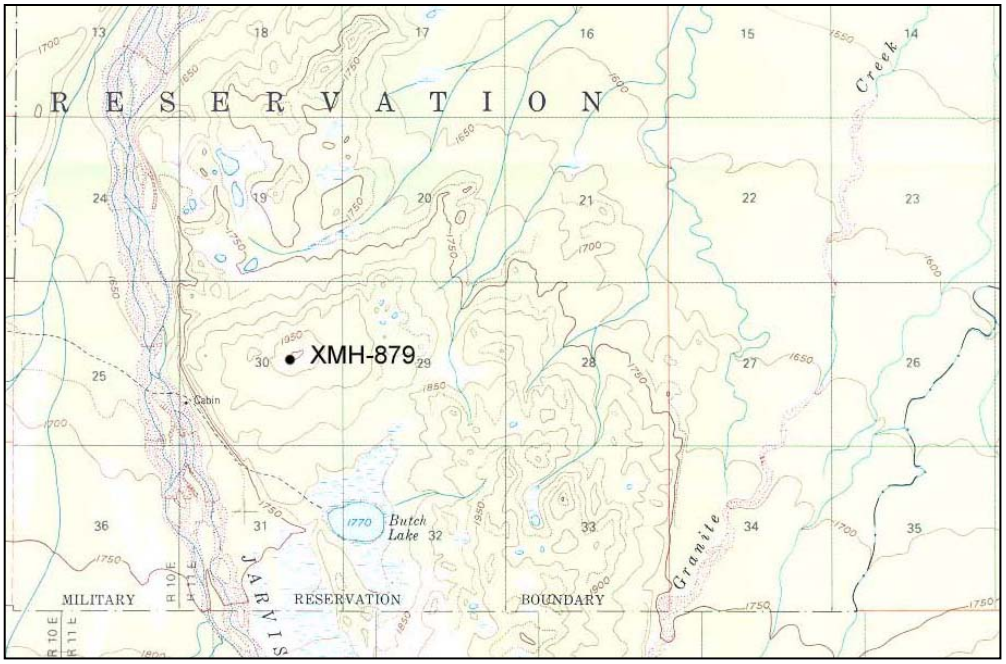


Figure 46. Location of XMH-879 (from USGS Mt. Hayes (D-4) quad.

The site is located on 33-Mile Loop Road and can be accessed by traveling on 33-Mile Loop Road approximately 17 kilometers south from the intersection of 33-Mile Loop Road and Fleet Street (figure 46). The site is located on a large hilltop, 1.5 kilometers north of Butch Lake. The UTM coordinates for the site are: [redacted]

Initial investigations of the site revealed 3 chert flakes, 3 nodules of chert, and a possible core fragment on the ground surface. One flake was found on the trail surface and was collected.

Figure 47. View of XMH-879, view to the south.

XMH-879 is located on a hilltop measuring approximately 150m NE-SW and 50m NW-SE, rising approximately 80m above surrounding terrain. The slope is steep on all sides, at a grade of 15 to 20%. The surrounding terrain is generally flat to the southwest and is continuously hilly to the northeast. As the hill is an isolated rise above surrounding terrain it provides good views in all directions. The site is located at the southern end of the hilltop. At the northern end, another site was identified that may be associated with this site. The site at the northern end of the hill is XMH-880, located 135m to the north (see below).

The site area exhibits the effects of both natural erosion and modern use. It has been heavily eroded from wind on the south and east sides, where it is mostly devoid of any ground vegetation. No large trees are present in the area, presumably due to the hill's elevation and proximity to the foothills of the Alaska Range, located just a few miles to the south. This location provides for almost constant breezes and frequent strong winds. Minimal ground cover exists, consisting of small shrubs, moss, and lichens, and thus overall surface visibility is good. 33-Mile Loop Road crosses through the site, extending across the entire hilltop; numerous vehicle tracks are present along the roadside. There is a recent fire ring adjacent to the road, and numerous spent shells and other pieces of modern trash resulting from military and recreational activities. A survey monument has been installed on a small rise at the north end of the site.

Prior to any sub-surface testing, an intensive surface examination was conducted revealing a moderate density artifact scatter and two additional artifacts on a small rise at the northern end of the site. The artifacts on the small rise were located 50m north of the artifact concentration, and were thus isolated from the southern end of the site, where the majority of the artifacts were initially located. All artifacts were mapped as to their location on the surface, prior to any excavation. Shovel tests were randomly placed throughout the hilltop at intervals of 5-10m, depending on terrain and vegetation. A total of 71 shovel tests was excavated on the hilltop. Shovel tests were typically 30cm in diameter and excavated into glacial till, frequently less than 60cm. A total of 2 shovel tests was positive, producing one or more artifacts. Subsurface artifacts were found at a maximum depth of 5cm below the ground surface. The entire hilltop was thoroughly shovel tested on a grid, with additional test units placed adjacent to the two positive shovel-tests. The location of surface and sub-surface artifacts indicate a site measuring 65m in length along the north-south axis, and 25m in width along the east-west axis.

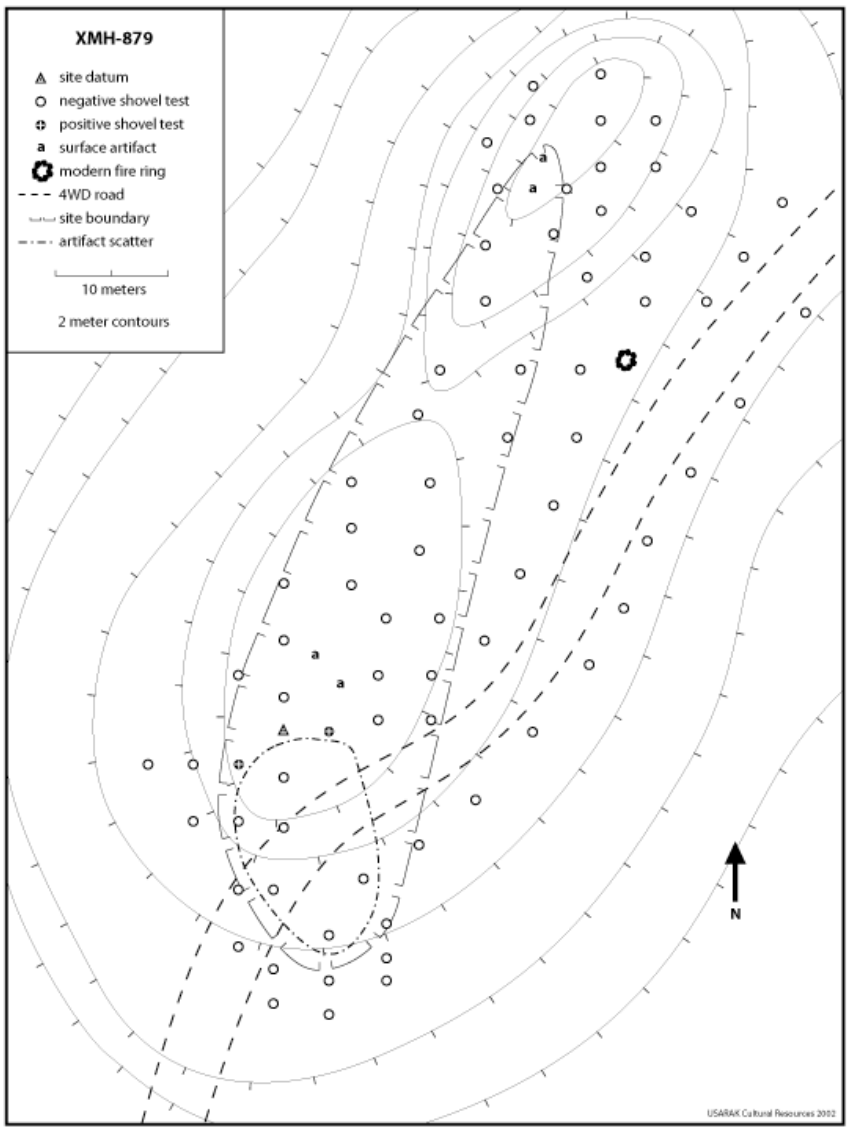


Figure 48. Site map of evaluations at XMH-879.

Findings

Evaluation revealed soil deposition at the site varying between 5-40cm below present ground surface. The southern slope and the crest immediately above have experienced the most wind erosion, and thus soil deposition in this area averaged only 7cm. Naturally deposited soil consists of loosely compacted brown silt with a high density of gravels and cobbles. Glacial till is encountered below naturally deposited soil, consisting of a silty sandy soil with a very high density of gravels and cobbles. Soil deposition was greater north of this area, where fairly level ground is encountered. Naturally deposited soil to the immediate north consists of a dark brown silty soil with little to no gravel or cobbles, to an average depth of 38cm below the ground surface. On the small rise at the north end of the site, wind erosion has exposed much of the surface, and soil deposition was similar to the southern slope and crest.

A total of 53 fragments of flaked stone was observed at the site: 50 on the surface and 3 below the surface. Within the main artifact concentration, 46 artifacts were counted; 13 of these were located in the road and were collected. Various types of chert were recovered including brown, red, gray, white and

gray banded. 5 fragments of obsidian were also found on the road and were collected.

XMH-879 is a small low-density site situated on a hilltop. Unlike many sites of this type in the area, XMH-879 is almost completely intact. Natural forces and prehistoric human activity are the principle agents of the site formation process. For these reasons XMH-879 has the potential to contribute to a number of important research questions and has been determined eligible for inclusion in the National Register of Historic Places. Information from XMH-879 could offer insight into questions that focus on interpreting the presence or absence of microblades, the connection between landform type and lithic assemblage, the nature of prehistoric land use and subsistence patterns, and the role of small low density lithic scatters in the interpretation of regional prehistory.

Table 5. XMH-879, general attributes.

Area (m²)	Intact (%)	Shovel Tests	Artifacts (total #)	Surface Artifacts	Sub-Surface	Max. Depth	Diagnos.
1525	90	71	53	50	3	5 cm	8

Table 6. XMH-879, artifacts collected.

Artifact	Material Type	Quantity	% of Total
Uniface "Thumbnail Scraper"	Gray Chert	1	6%
Blade, proximal end	Gray Chert	1	6%
Core, small flake core	Gray Chert	1	6%
Flakes	Obsidian	5	27%
Flakes	Lt. Gray Chert	5	27%
Flakes	Drk. Gray Chert	4	22%
Flakes	Red Chert	1	6%
Total		18	100%

XMH-880

Latitude: [redacted]
Longitude: [redacted]

Determination: Not Eligible

The site is located on 33-Mile Loop Road and is accessed by traveling on 33-Mile Loop Road approximately 17 kilometers south of the intersection with Fleet Street (figure 49). The site is situated on a large hilltop, 1.5 kilometers north of Butch Lake. UTM coordinates are: [redacted]

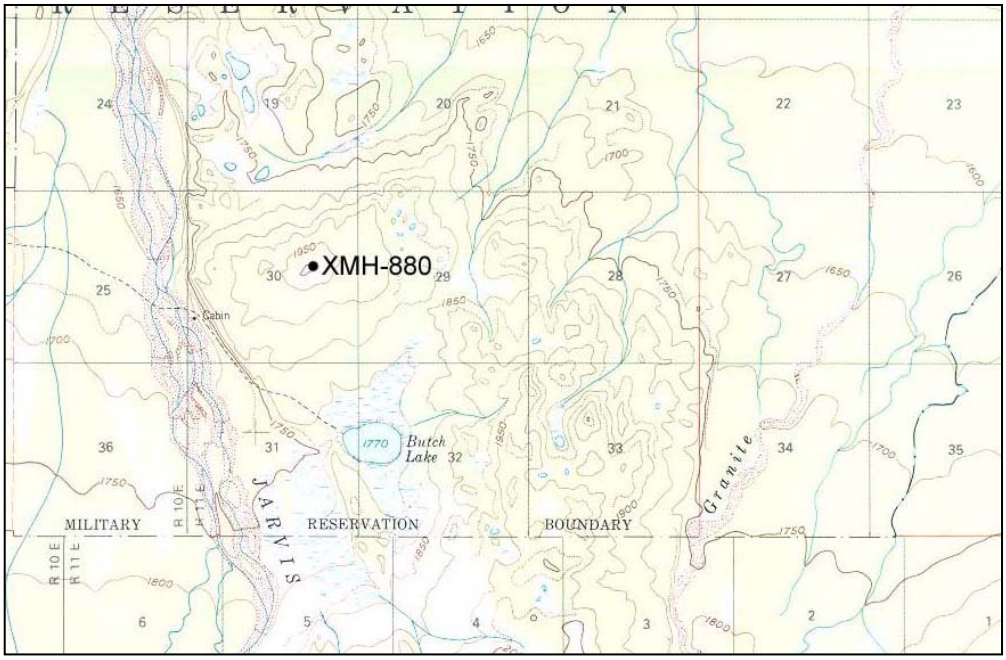


Figure 49. Location of site XMH-880 (from USGS Mt. Hayes (D-4) quad).

Initial investigations of the site revealed one gray chert flake (black band) on the present ground surface.

The site is located on a hilltop 150m in length along the northeast-southwest axis, and 50m in width along the northwest-southeast axis. The hilltop is elevated approximately 80m above surrounding terrain. The slope is steep on all sides at a grade of 15 to 20%. The surrounding terrain is generally flat to the southwest, and continuously hilly to the northeast. The hill, most likely an esker or drumlin, is an isolated rise that provides an unobstructed, 360 degree view of surrounding terrain. The site is located at the northern end of the hill, approximately 135m to the north of site XMH-879, located on the same landform.

Figure 50. View of site XMH-880, heading west.

The site area exhibits the effects of both natural erosion and modern use. It has been only slightly affected by wind erosion in the immediate area. No large trees are present on the hilltop, probably due to the hill's elevation and proximity to the foothills of the Alaska Range, located just a few miles to the south. This location provides for almost constant breezes and frequent strong winds in the area of the site. Ground cover consists of small scrub, moss, and lichens, with moss and lichen density heaviest in the vicinity of the site, keeping surface visibility to a minimum. 33-Mile Loop Road crosses through the site area as it follows the crest of hilltop and numerous vehicle tracks are present along the roadside. There is a recent fire ring adjacent to the road, and numerous spent shells and other pieces of recent trash from military and recreational use of the area.

Prior to any sub-surface testing, an intensive surface examination was conducted, revealing an additional 4 fragments of flaked stone on the present ground surface, and one chert scraper, all of which were located on the road surface and collected. All surface artifacts were mapped as to their location prior to any excavation. Shovel tests were randomly placed throughout the hilltop in intervals of 5-10m, depending on terrain and vegetation. A total of 37 shovel tests was excavated on the hilltop. Tests were typically 30cm in diameter and less than 60cm in depth. The depth of the shovel tests varied, but in all cases shovel tests were excavated below naturally deposited soil, until

Figure 51. Front and back view of scraper collected at XMH-880.

encountering glacial till. No positive shovel tests were identified on initial survey investigations or in the evaluation phase. The site was determined to encompass an area 10 x 5m, based on the location of surface artifacts.

Findings

Shovel tests revealed soil deposition at the site varying between 5-30cm in depth. The northern slope has experienced some wind erosion, with soil deposition averaging 5cm. Naturally deposited soil on the northern slope consists of a brown silty soil with a high density of gravels and cobbles. Glacial till is encountered beneath, consisting of a silty sandy soil with a high density of gravels and cobbles. Soil deposition was greater in the remaining portion of the site, consisting of dark brown silty soil with a low density of gravels and cobbles, to an average depth of 20cm.

A total of 6 artifacts were found at the site: 5 chert flakes (3 light gray and 2 dark gray), and 1 dark gray chert scraper. All artifacts were located on the road surface and were collected.

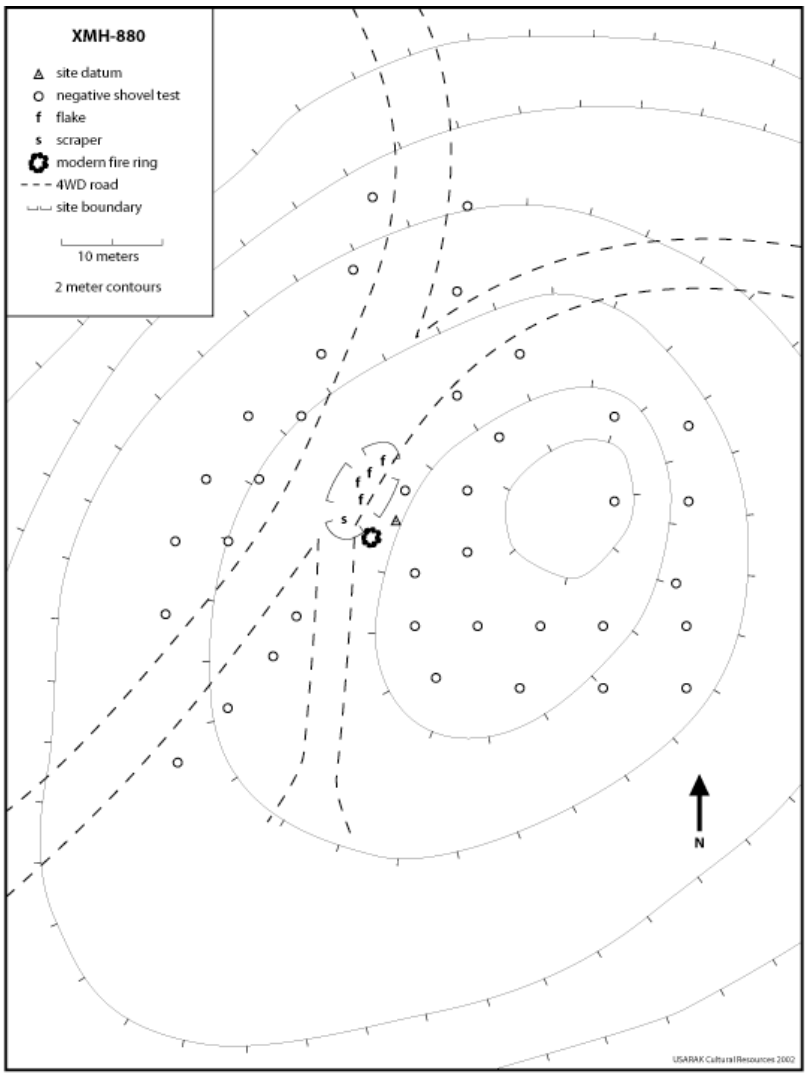


Figure 52. Site map of evaluations at XMH-880.

Table 7. XMH-880, general attributes.

Area (m²)	Intact (%)	Shovel Tests	Artifacts (total #)	Surface Artifacts	Sub-Surface	Max. Depth	Diagnos.
50	0	37	6	6	0	0 cm	1

Table 8. XMH-880, artifacts collected.

Artifact	Material Type	Quantity	% of Total
Uniface End/Side Scraper	Drk. Gray Chert	1	17%
Flakes	Lt. Gray Chert	3	50%
Flakes	Dark Gray Chert	2	33%
Total		6	100%

XMH-881
Latitude: [redacted]
Longitude: [redacted]
Determination: Eligible

The site is located on 33-Mile Loop Road and is accessed by traveling south on 33-Mile Loop Road, approximately 14 kilometers south of its intersection with Fleet Street. UTM coordinates for the site are: [redacted] Initial investigations of the site revealed 3 fragments of flaked stone on the present ground surface.

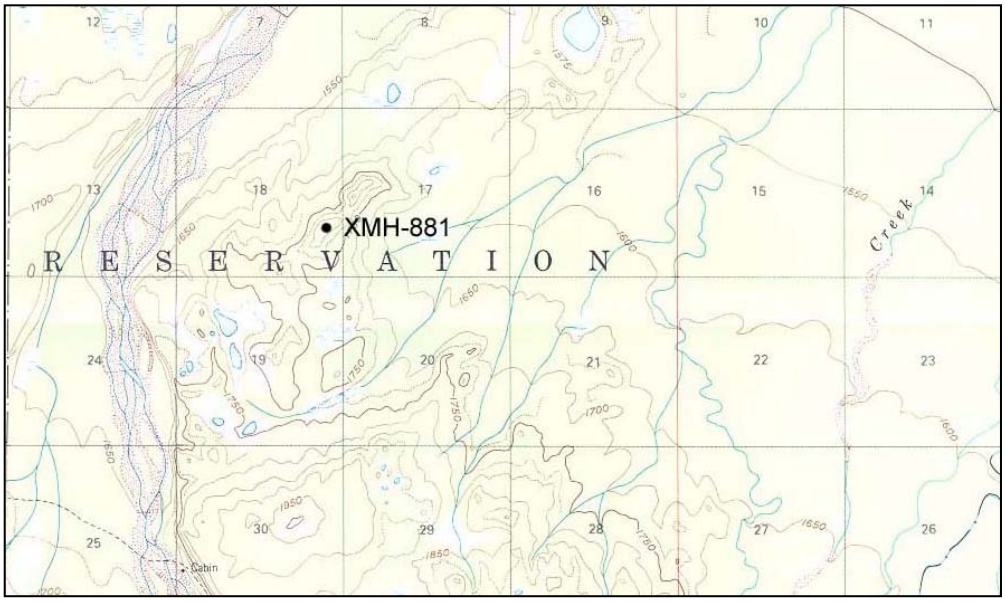


Figure 53. Location of site XMH-881 (from USGS Mt. Hayes (D-4) quad).

The site is located on a hilltop that is part of a larger hill or ridge system, most likely an esker, that is nearly 2 kilometers long and 250m wide. The slope is steep on all sides, at a grade of 15—20%. The surrounding terrain in the immediate area is generally flat, with the exception of the ridge as it extends to the southwest. The hilltop provides unobstructed views to the east and south.

The site area exhibits the effects of both natural erosion and modern use. It has experienced wind erosion on the southeastern slope where it is nearly devoid of surface vegetation. Thus, surface visibility is good in this area. 33-Mile Loop Road is located at the crest of the hill, approximately 5m from the site. Some vehicle tracks are evident adjacent to the road within the site boundaries.

Prior to excavation, an intensive surface examination was conducted, revealing a moderate density artifact scatter, with 20 fragments of flaked stone on the ground surface. Due to the density of lithic material, the artifact concentration was mapped as a unit; artifacts within the concentration were not mapped individually. Shovel tests were randomly placed throughout the hilltop in 5-10m intervals, depending on terrain and vegetation. A total of 38 shovel tests was excavated on the hilltop. Shovel tests were typically 30cm in diameter. The depth of the shovel tests varied, but in all cases shovel tests were excavated below deposited soil until encountering glacial till. Only one

Figure 54. View of site XMH-881, heading southwest.

shovel test was positive, producing one chert flake, excavated within the artifact concentration. The site was determined to be 10m in diameter, based on location of surface artifacts and the positive shovel test.

Findings

Evaluation revealed soil deposition at the site varying between 5-30cm below the present ground surface. The eastern slope and crest immediately above have experienced wind erosion, and thus soil deposition averaged only 8cm near the crest. Naturally deposited soil in this area consists of a brown silty soil with a high density of gravels and cobbles. Glacial till, characterized by a very high density of water worn cobbles, is found in a gravelly matrix of light brown sandy silt. Soil deposition was greater in the remaining area of the hilltop, where shovel tests were excavated. Naturally deposited soil in the remaining area consists of a brown to dark brown silty soil, with little to no gravel inclusions, averaging 25cm below the surface.

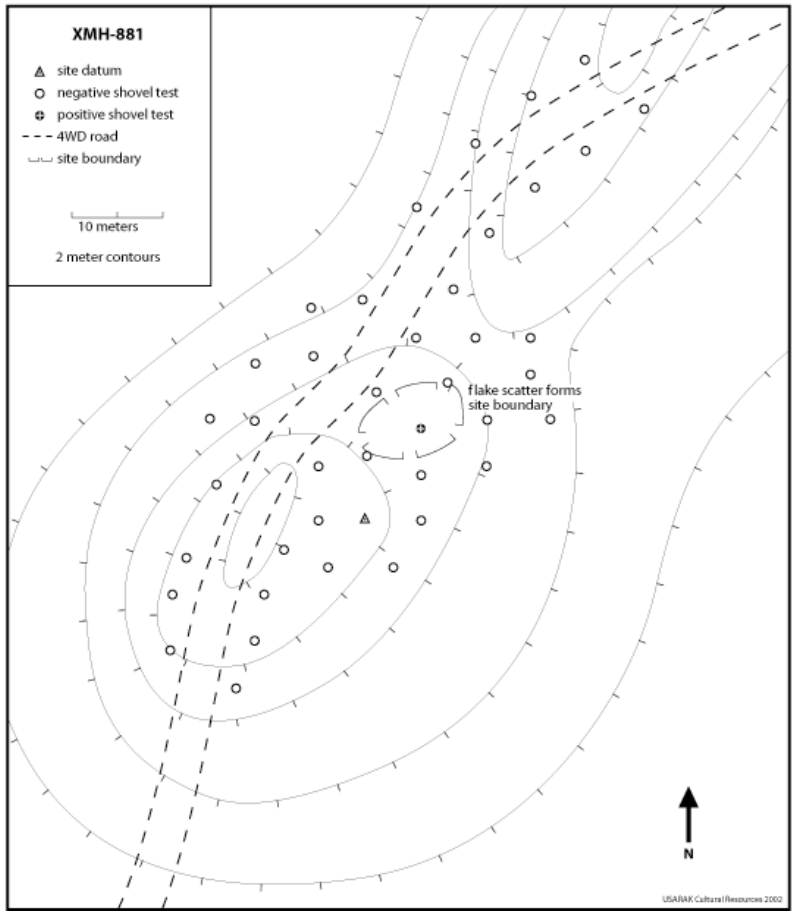


Figure 55. Site map of evaluations at XMH-881.

A total of 21 fragments of flaked stone was found at the site: 20 on the surface and 1 recovered from a shovel test. All artifacts comprised a variety of chert, including gray, light gray, and gray banded. Only the 1 subsurface artifact was collected.

Like XMH-879, XMH-881 is a small low-density site situated on a hilltop. XMH-881 is also almost completely intact. Natural forces and prehistoric human activity appear to be the principle agents of the site formation process. For these reasons XMH-881 has the potential to contribute to a number of important research questions, and subsequently has been determined eligible for inclusion in the National Register of Historic Places.

Table 9. XMH-881, general attributes.

Area (m²)	Intact (%)	Shovel Tests	Artifacts (total #)	Surface Artifacts	Sub-Surface	Max. Depth	Diagnos.
100	90	38	21	20	1	30 cm	0

Table 10. XMH-881, artifacts collected.

Artifact	Material Type	Quantity	% of Total
Flakes	Lt. Gray Chert	1	100%
Total		1	100%

XMH-882
Latitude: [redacted]
Longitude: [redacted]
Determination: Eligible

The site is located on 33-Mile Loop Road and is accessed by traveling south on the 33-Mile Loop road, approximately 13.5 kilometers south of its intersection with Fleet Street. UTM coordinates for the site are: [redacted] Initial investigations of the site revealed one flake within a shovel test.

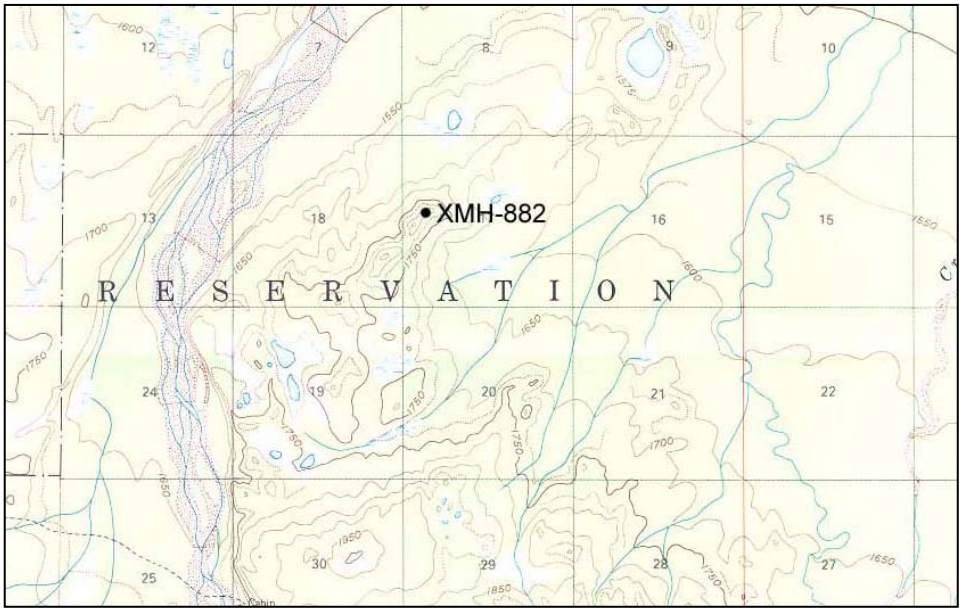


Figure 56. Location of site XMH-882 (from USGS Mt. Hayes (D-4) quad).

Similar to neighboring identified sites, XMH-882 is located on a hilltop that is part of a larger hill or ridge system, presumably an esker, that is nearly 2 kilometers long and 250m wide. The slope is steep on all sides, at a grade of 15 to 20%. The surrounding terrain in the immediate area is generally flat, with the exception of the ridge as it extends to the southwest. The hilltop provides unobstructed views to the east and south.

Figure 57. View of site XMH-882, heading north.

The site area exhibits the effects of both natural erosion and modern use. It has experienced heavy wind erosion on the southern and eastern slopes, where it is nearly devoid of surface vegetation. Ground cover consists of small scrub and moss, but is minimal on the south and east side, where ground visibility is generally good. Only a few large trees are present on the northern and western slopes adjacent to the site, most likely due to the hill's elevation and proximity to the foothills of the Alaska Range, located just a few miles to the south. This location provides for almost constant breezes and frequent strong winds at the site. 33-Mile Loop Road follows the crest of the hill, 5m from the site. Numerous vehicle tracks are adjacent to the road within site boundaries.

Artifacts were observed on the northern crest of the hill, where ground visibility was minimal.

Prior to any excavation, an intensive surface examination was conducted, revealing a moderate density artifact scatter of 25 fragments of flaked stone on the ground surface. Due to the density of the lithic scatter, the concentration was mapped as a unit; artifacts within the concentration were not mapped individually. Shovel tests were randomly placed throughout the hilltop in intervals of 5-10m, depending on terrain and vegetation. A total of 30 shovel tests was excavated at the site: 4 were excavated during the initial investigation, and 26 in the evaluation phase. Each shovel test measured approximately 30cm in diameter. The depth of the shovel tests varied, but in all cases were excavated below naturally deposited soil until encountering glacial till. Only the one shovel test that was excavated upon initial survey investigations was positive. This shovel test revealed one chert flake immediately below the root mat, which was present to 5cm below the surface. Additional shovel tests were placed throughout the hilltop during the evaluation phase, but no additional positive shovel tests were identified. The site was determined to be 10m in diameter, based on location of surface artifacts and the single positive shovel test.

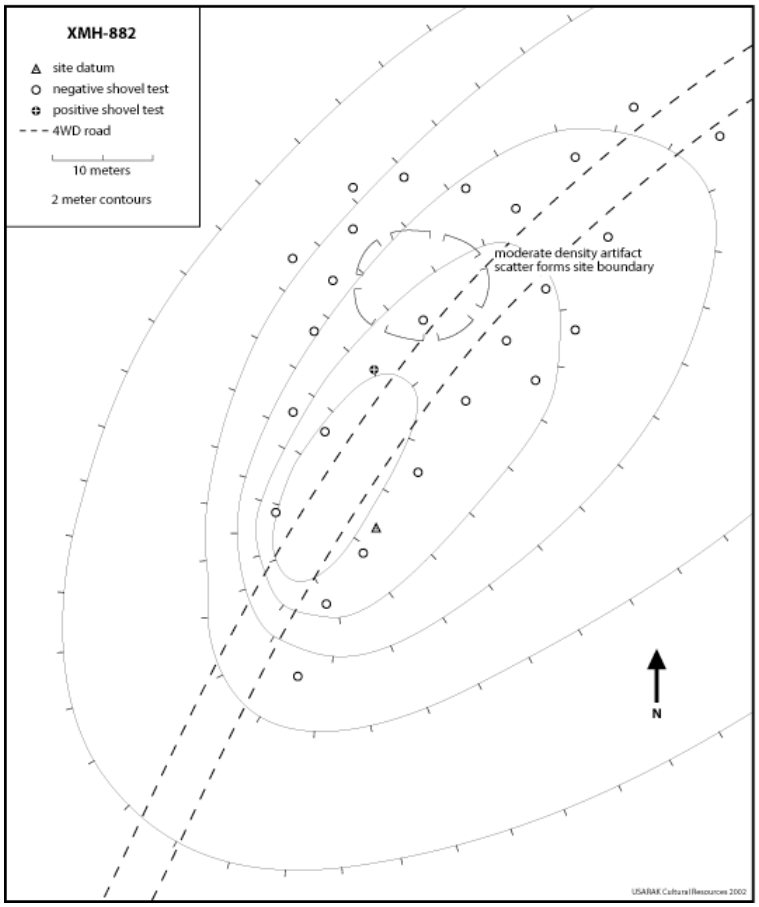


Figure 58. Site map of evaluations at XMH-882.

Findings

The shovel tests revealed soil deposition at the site varying between 5-40cm below the ground surface. The southeast side of the hill has experienced the most wind erosion, and thus soil deposition in this area averaged only 5cm. Naturally deposited soil consists of a loosely compacted brown silty soil, with a high density of gravels and cobbles. Glacial till is encountered below this naturally deposited soil, consisting of a light brown silty, sandy soil with a high density of gravels and cobbles. Soil deposition was greater on the northwest side of the hill, where wind erosion has not affected the hilltop as severely. Naturally deposited soil here consists of a dark brown silty soil, with little to no gravels, averaging 32cm below the ground surface.

A total of 26 fragments of flaked stone was found at the site: 25 on the surface and 1 within a positive shovel test. Artifacts observed on the ground surface included 12 fragments of dark gray/black chert, 10 of gray chert, and 3 of gray-banded chert. All of these may be the same local raw material referred to as gray chert. Two of these flakes were found within the road surface and were collected, including 1 dark gray chert microblade and one large (5 x 4cm) black chert flake. A single light gray chert flake was recovered from the positive shovel test, but was not collected.

Like the preceding eligible sites, XMH-882 is a small low-density site situated on a hilltop, and is almost completely intact. Natural forces and prehistoric human activity appear to be the principle agents of the site formation process. For these reasons, XMH-882 has the potential to contribute to a number of

important research questions, and has been determined eligible for inclusion in the National Register of Historic Places.

Table 11. XMH-882, general attributes.

Area (m²)	Intact (%)	Shovel Tests	Artifacts (total #)	Surface Artifacts	Sub-Surface	Max. Depth	Diagnos.
100	80	30	26	25	1	5 cm	1

Table 12. XMH-882, artifacts collected.

Artifact	Material Type	Quantity	% of Total
Microblade Fragment, proximal end	Drk. Gray Chert	1	50%
Flakes	Black Chert	1	50%
Total		2	100%

XMH-883
Latitude: [redacted]
Longitude: [redacted]
Determination: Not Eligible

The site is located on 33-Mile Loop Road and is accessed by traveling south on the road approximately 13.5 kilometers south of its intersection with Fleet Street. UTM coordinates for the site are: [redacted] Initial investigations of the site revealed 3 fragments of flaked stone on the existing ground surface.

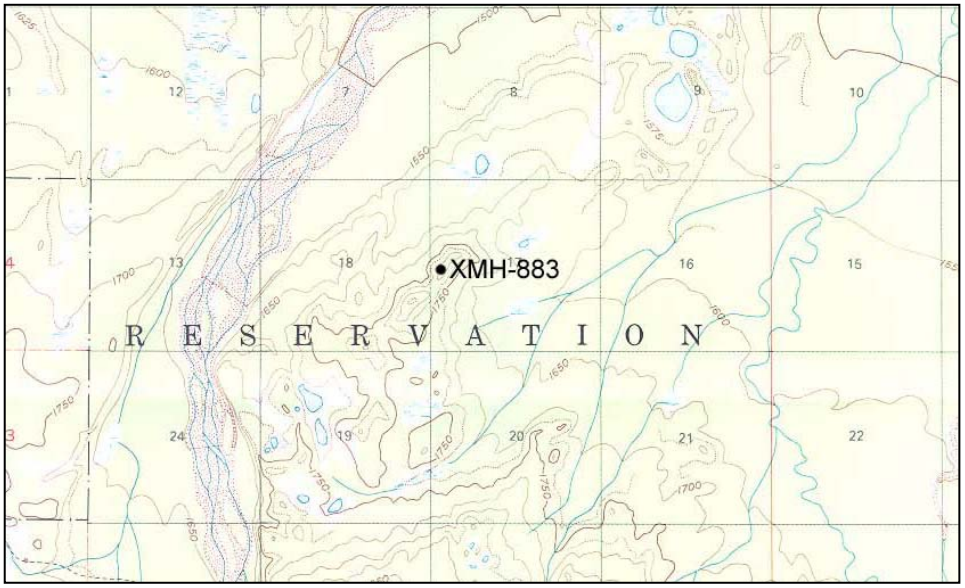


Figure 59. Location of site XMH-883 (from USGS Mt. Hayes (D-4) quad).

The site is located on a hilltop that is part of a larger hill or ridge system, possibly an esker, that is nearly 2 kilometers long and 250m wide. The slope is steep on all sides, at a grade of 15 to 20%. The surrounding terrain in the immediate area is generally flat, with the exception of the ridge as it extends to the southwest. The hilltop provides unobstructed views to the east and south.

The site area exhibits the effects of both natural erosion and modern use. It has experienced wind erosion on the south and east slopes, where it is nearly devoid of surface vegetation. Ground cover consists of small scrub and moss, but is minimal on the south and east side where ground visibility is good. Only a few large trees are present on the north and west slopes adjacent to the site, most likely due to the hill's elevation and proximity to the foothills of the Alaska Range, located just a few miles to the south. The location experiences frequent strong winds. 33-Mile Loop Road follows the crest of the hill, 5m from the site. Numerous vehicle tracks are adjacent to the road within site boundaries. 33-Mile Loop Road is adjacent to the site, and numerous vehicle tracks are present across the hilltop.

Figure 60. View of site XMH-883, heading east.

Prior to any excavation, an intensive surface examination was conducted, revealing one additional fragment of flaked stone. Shovel tests were randomly placed throughout the hilltop in intervals of 5-10m, depending on terrain and vegetation. A total of 18, 30cm diameter shovel tests was excavated at the site. None of the shovel tests produced any subsurface artifacts. Based on these findings, it was determined that the site consists only of a small lithic scatter, measuring 10 x 7m, based on location of surface artifacts.

Findings

Evaluation revealed soil deposition at the site varying between 5-40cm below the present ground surface. The southeast side of the hill has experienced the most wind erosion, and thus soil deposition in this area averages only 5cm. Naturally deposited soil here consists of a loosely compacted brown silty soil, with a high density of gravels and cobbles. Glacial till is encountered below this naturally deposited soil, consisting of a light brown silty sandy soil with a high density of gravels and cobbles. Soil deposition was greater on the northwest side of the hill, where wind erosion has not affected the hilltop as severely. Naturally deposited soil here consists of a dark brown silty

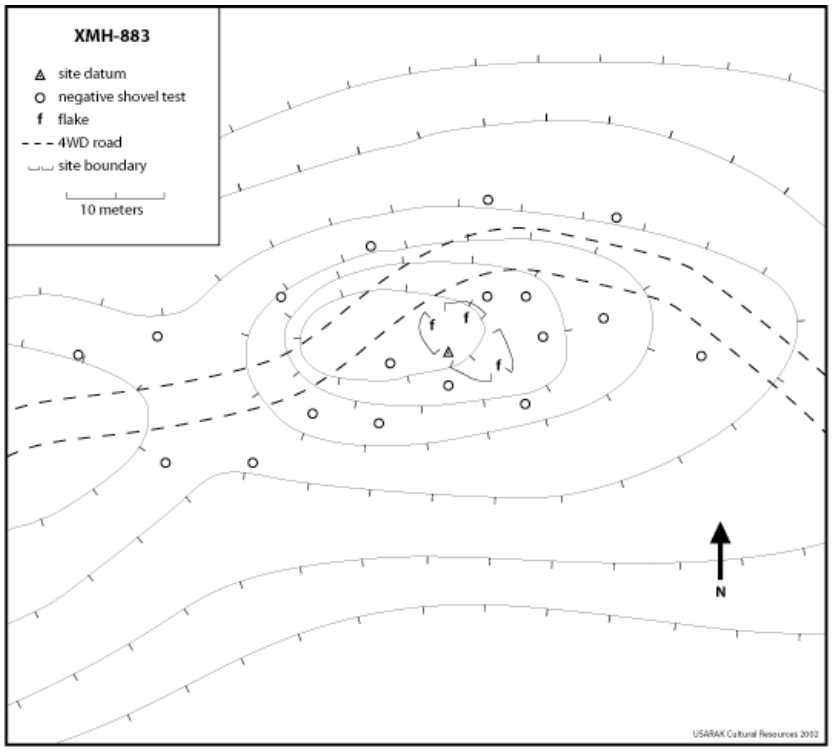


Figure 61. Site map of evaluations at XMH-883.

soil with little to no gravels, with an average depth of 32cm below the ground surface.

A total of 3 fragments of flaked stone was observed on the surface of the site, all of which can be classified as gray chert (2 dark gray, and 1 light gray fragment). Based on the lack of sub-surface material recovered from shovel testing, the site is limited to a small surface lithic scatter, and was subsequently determined not eligible for listing in the National Register of Historic Places.

Table 13. XMH-883, general attributes.

Area (m²)	Intact (%)	Shovel Tests	Artifacts (total #)	Surface Artifacts	Sub-Surface	Max. Depth	Diagnos.
70	70	18	3	3	0	0 cm	1

Table 14. XMH-883, artifacts collected.

Artifact	Material Type	Quantity	% of Total
Retouched Flake, Flake	Drk. Gray Chert	2	67%
Flake	Lt. Gray Chert	1	33%
Total		3	100%

XMH-884
Latitude: [redacted]
Longitude: [redacted]

Determination: Not Eligible

The site is located on 33-Mile Loop Road and is accessed by traveling south on the road approximately 13.5 kilometers south of its intersection with Fleet Street. UTM coordinates for the site are: [redacted] Initial investigations of the site revealed one fragment of flaked stone, found below the ground surface in a shovel test.

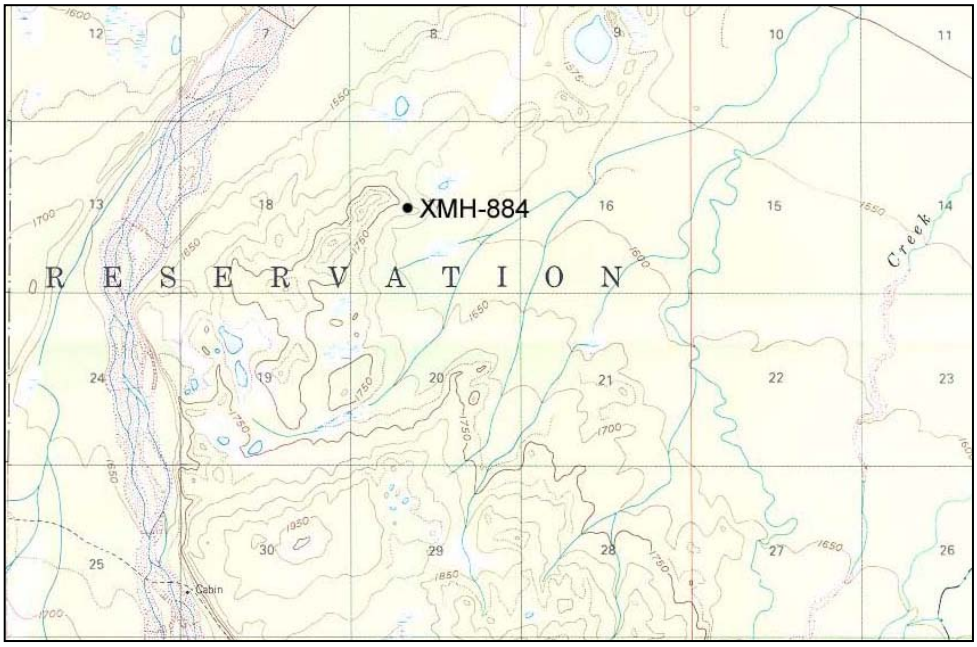


Figure 62. Location of site XMH-884 (from USGS Mt. Hayes (D-4) quad).

The site is located on a hilltop that is part of the same larger hill or ridge system that the previously discussed sites are located on. The slope is steep on all sides at a grade of 15 to 20%. The surrounding terrain in the immediate area is generally flat, with the exception of the ridge as it extends to the southwest. The hilltop provides unobstructed views to the east and south.

The site area exhibits the effects of both natural erosion and modern use. Similar to other sites identified in the area, the location has experienced wind erosion on the south and east slopes, where it is nearly devoid of surface vegetation. Ground cover consists of small scrub and moss, but is minimal on the south and east side, where ground visibility is generally good. Only a few large trees are present on the north and west slopes adjacent to the site, most likely due to the hill's elevation and proximity to the foothills of the Alaska Range, located just a few miles to the south. 33-Mile Loop Road follows the crest of the hill, approximately 5m from the site. Numerous vehicle tracks are adjacent to the road within the site boundaries. 33-Mile Loop Road is located adjacent to the site, and numerous vehicle tracks are present throughout the hilltop.

Figure 63. View of site XMH-884, heading north.

Prior to any excavation, an intensive surface examination was conducted, revealing no additional artifacts. Shovel tests were randomly placed throughout the hilltop in intervals of 5-10m, depending on terrain and vegetation. A total of 23, 30cm diameter shovel tests was excavated. None of the additional shovel tests produced subsurface artifacts.

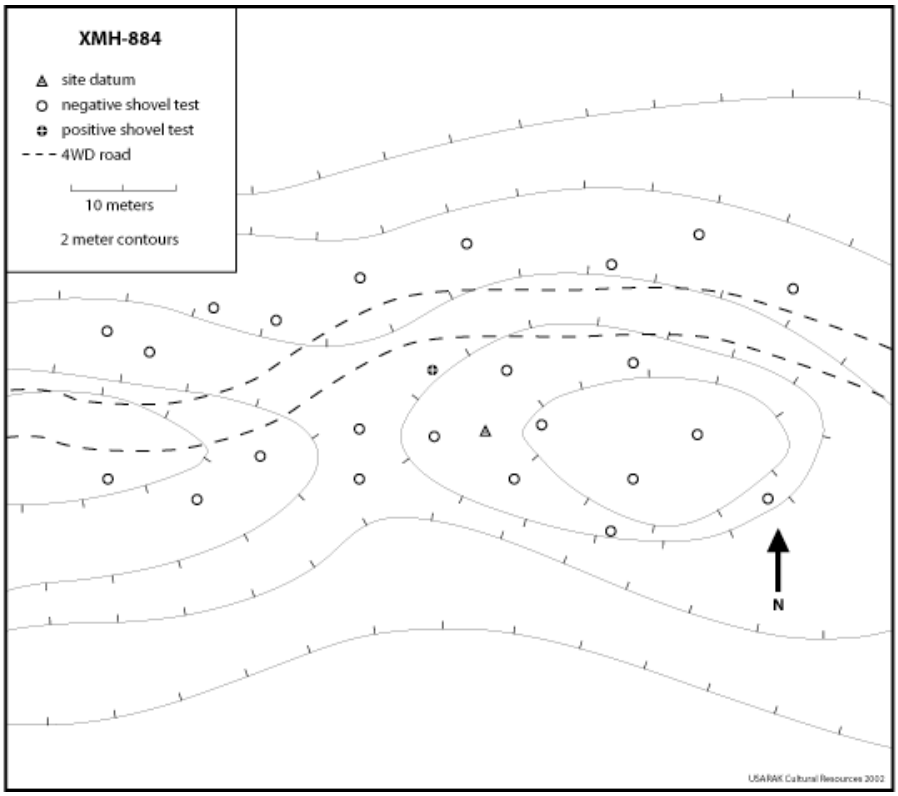


Figure 64. Site map of evaluations at XMH-884.

Findings

The shovel tests revealed soil deposition at the site that varied between 5-40cm below the present ground surface. The southeastern side of the hill has experienced the most wind \erosion, and thus soil deposition in this area averaged only 5cm. Naturally deposited soil here consists of a loosely compacted brown silty soil with a high density of gravels and cobbles. Glacial till is encountered below naturally deposited soil, consisting of a light brown silty sandy soil with a very high density of gravels and cobbles. Soil deposition was greater on the northwestern side of the hill, where wind erosion has not affected the hilltop as severely. Naturally deposited soil here consists of a dark brown silty soil with little

to no gravels, to an average depth of 32cm below the ground surface.

Only one artifact was recovered at the site: a light gray chert flake, recovered below the surface in the initial survey shovel test. Based on these findings, it appears that the recovered flake fragment is an isolate, or was produced through natural circumstances, rather than cultural. Subsequently, the site is not eligible for inclusion in the National Register of Historic Places.

Table 15. XMH-884, general attributes.

Area (m²)	Intact (%)	Shovel Tests	Artifacts (total #)	Surface Artifacts	Sub-Surface	Max. Depth	Diagnos.
NA	NA	23	1	0	1	5 cm	0

Table 16. XMH-884, artifacts collected.

Artifact	Material Type	Quantity	% of Total
Flakes	Lt. Gray Chert	1	100%
Total		1	100%

XMH-885
Latitude: [redacted]
Longitude: [redacted]
Determination: Not Eligible

The site is located on 33-Mile Loop Road and is accessed by traveling south on the road approximately 10.5 kilometers south of its intersection with Fleet Street. UTM coordinates for the site are: [redacted] Initial investigations of the site revealed two fragments of flaked stone, recovered from a shovel test. Site XMH-886 is located 60m to the northeast, on the same hilltop.

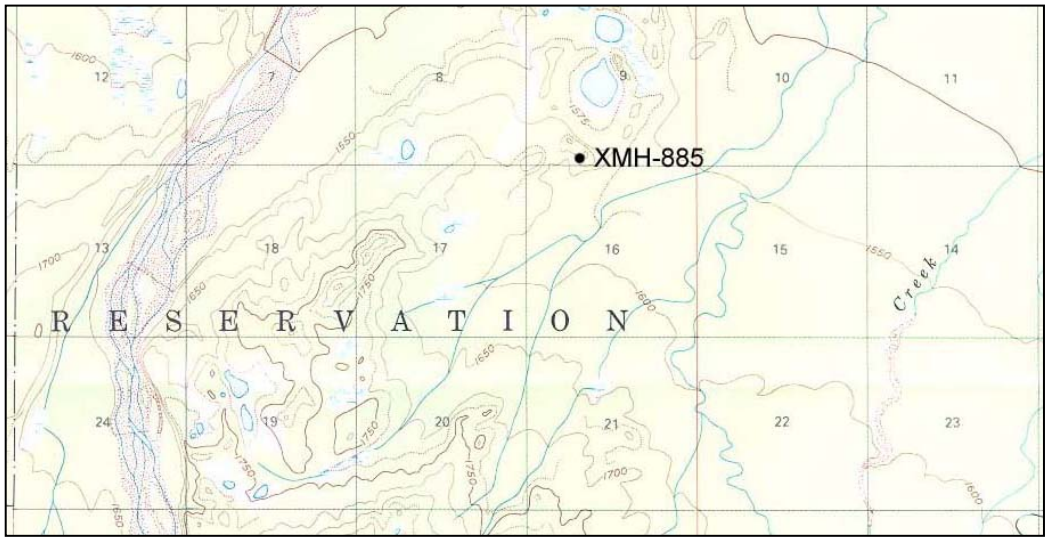


Figure 65. Location of site XMH-885 (from USGS Mt. Hayes (D-4) quad).

Like other sites described, the site is located on an isolated hill that is 750m south of Spring Lake. The hill is 400m in length along the east-west axis, and 250m in width along the north-south axis. The slope angles of the south and west sides are approximately 20 to 30 degrees. To the north and east the hill is fairly level for 200m, until dropping off. The surrounding terrain in the immediate vicinity is generally

flat in all directions, with the exception of the hill as it continues to the northeast.

The site area exhibits the effects of both natural erosion and modern use. It has experienced wind erosion on the south and east sides, where it is nearly devoid of all ground vegetation. Thus, surface visibility is good in this area. 33-Mile Loop Road passes through the site, extending across the site's northern boundary. Numerous vehicle tracks are present throughout the hilltop, and a recent fire ring is located nearby.

Figure 66. View of site XMH-885, heading south.

Prior to any excavation, an intensive surface examination was conducted, revealing one surface artifact located on the road. Shovel tests were then randomly placed throughout the hilltop at 5-10m intervals. A total of 29 shovel tests was excavated on the hilltop – 5 during the initial survey investigations, and 24 during the evaluation phase. The depth of the shovel tests varied, but in all cases were excavated below naturally deposited soil until encountering glacial till. Shovel testing resulted in a single positive shovel test, containing two flakes at a depth of approximately 5cm below the ground surface. Based on surface and sub-surface findings, the site was estimated to encompass a 5 x 7m area.

Findings

Shovel tests revealed soil deposition on the hilltop that varied between 5-25cm below the present ground surface. As with most of the hilltops in the area, the south and east sides have been scoured by wind and contain only approximately 5-10cm of soil, consisting of brown silt with moderate to high densities of gravel and cobbles. The north and west slopes typically have thicker soils, usually measuring 15-25cm in depth.

A total of 5 artifacts was recovered at the site: 2 obsidian flake fragments were recovered from the positive shovel test; a light gray chert flake, black chert blade fragment and dark gray chert microblade were observed on the road surface. All artifacts were collected.

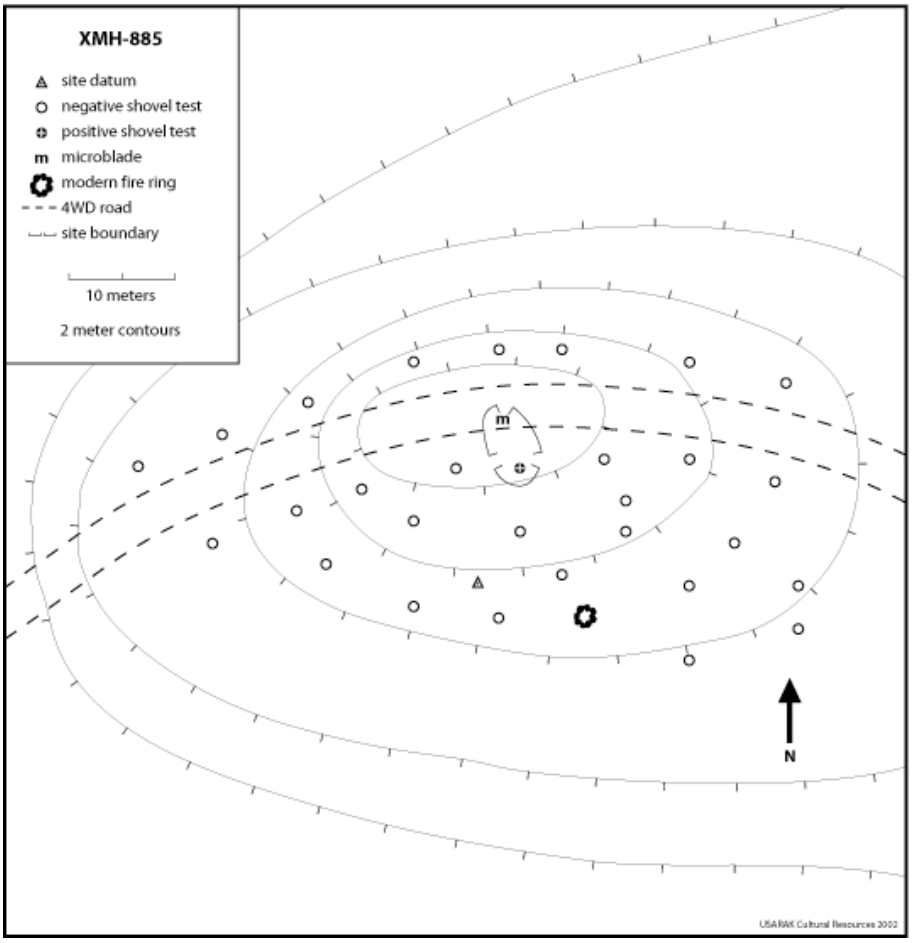


Figure 67. Site map of evaluations at XMH-885.

Based on the findings of the evaluation and survey investigations, XMH-885 appears to be limited to a very small quantity of lithic material, with no additional material evident, despite thorough sub-surface testing. Subsequently, the site does not represent a significant potential to reveal further information, and is thus not eligible for listing in the National Register of Historic Places.

Table 17. XMH-885, general attributes.

Area (m²)	Intact (%)	Shovel Tests	Artifacts (total #)	Surface Artifacts	Sub-Surface	Max. Depth	Diagnos.
35	40	29	5	3	2	5 cm	3

Table 18. XMH-885, artifacts collected.

Artifact	Material Type	Quantity	% of Total
Microblade	Drk Gray Chert	1	20%
Flakes	Obsidian	2	40%
Flake	Lt. Gray Chert	1	20%
Flake	Black Chert	1	20%
Total		5	100%

XMH-886
Latitude: [redacted]
Longitude: [redacted]
Determination: Eligible

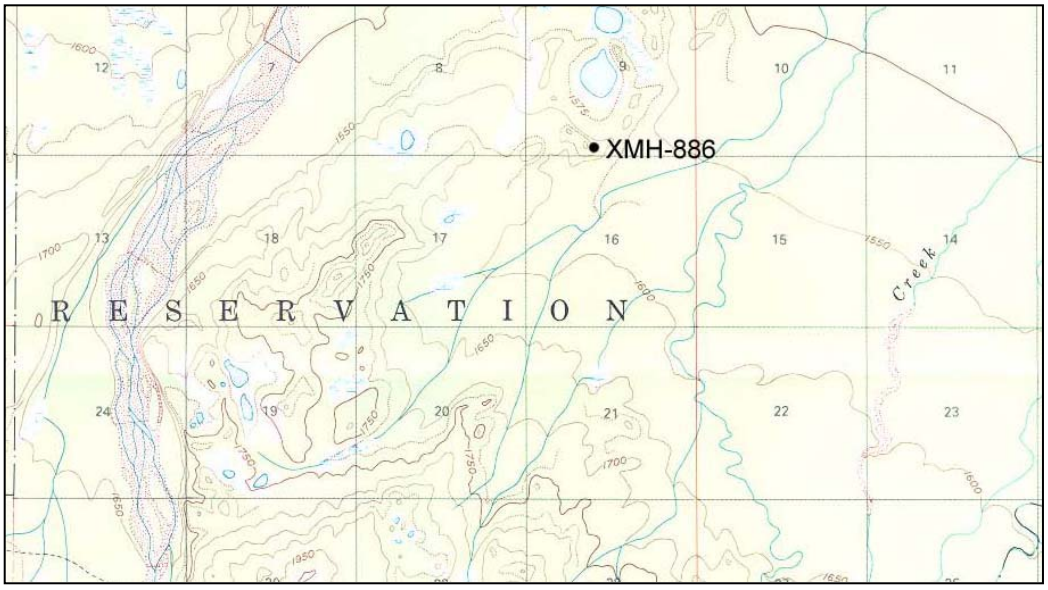


Figure 68. Location of site XMH-886 (from USGS Mt. Hayes (D-4) quad).

The site is located on 33-Mile Loop Road and is accessed by traveling south on the road approximately 10.5 kilometers south of its intersection with Fleet Street. UTM coordinates for the site are: [redacted]

Initial investigations of the site revealed 6 fragments of flaked stone and one projectile point, recovered from two different shovel tests. Site XMH-885 is located 60m to the southwest, on the same hill.

The site is located on an isolated hill, 750m south of Spring Lake. The hill spans 400m east-west, and 250m north-south. The slope is steep on the south and west sides, at a grade of 20 to 30 degrees. To the north and east, the hill is fairly level for 200m until dropping off. Surrounding terrain is generally flat

in all directions, with the exception of the hill as it continues north and east.

The site area exhibits the effects of both natural erosion and modern use. Like other small rises in the area, it has experienced extensive wind erosion on the south and east sides, where it is nearly devoid of all ground vegetation, and thus surface visibility is good in this area. 33-Mile Loop Road passes through the site, extending across the site's north boundary. Numerous vehicle tracks are present throughout the hilltop, and a recent fire ring is located nearby.

Figure 69. View of site XMH-886, heading south.

Prior to any excavation, an intensive surface examination was conducted, revealing no additional surface artifacts. A total of 27 shovel tests was excavated at the site: 4 in the initial investigation, and 23 in the evaluation phase. All but the two initial shovel tests dug during survey were negative. The site was determined to measure 10 x 25m, based on sub-surface finds during the initial investigation.

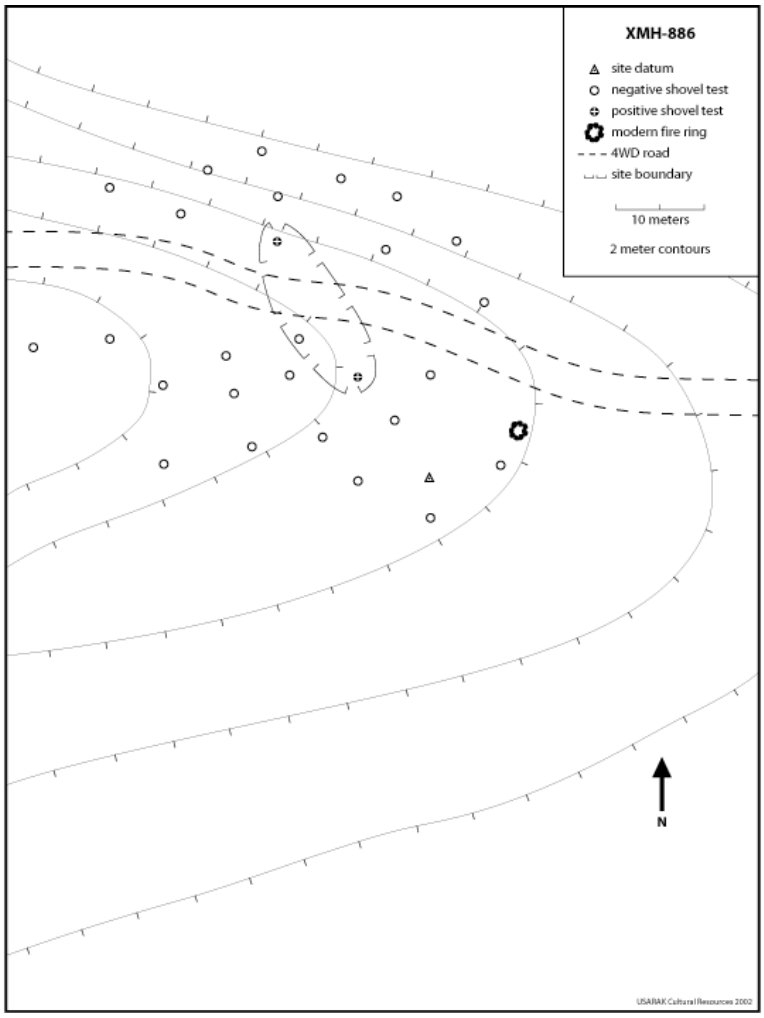


Figure 70. Site map of evaluations at XMH-886.

Evaluation revealed soil deposition on the hilltop varying between 5-25cm below the present ground surface. As with the majority of hilltops in the area, the south and east sides have experienced extensive wind erosion and do not have much soil deposition, approximately 5-10cm. Naturally deposited soil in these areas consists of brown silt with a moderate to high density of gravels and cobbles. The north and west slopes, lacking evidence of wind erosion, exhibit a greater amount of deposition, approximately 15-25cm. Soil here consists of dark brown silt, with a low to moderate density of gravels and cobbles.

A total of 7 artifacts was collected from the site: 6 chert flakes and a

light gray chert projectile point. All of these artifacts were found during the initial investigations of the site in sub-surface shovel tests. No other artifacts were recovered during the evaluation phase.

Findings

Like the preceding eligible sites, XMH-886 is a small low-density site situated on a hilltop. XMH-886 is also almost completely intact. Natural forces and prehistoric human activity have been the principle agents of the site formation process. For these reasons XMH-886 has the potential to contribute to a number of important research questions and has been determined eligible for inclusion in the National Register of Historic Places.

Table 19. XMH-886, general attributes.

Area (m²)	Intact (%)	Shovel Tests	Artifacts (total #)	Surface Artifacts	Sub-Surface	Max. Depth	Diagnos.
250	50	29	7	0	7	10 cm	3

Table 20. XMH-886, artifacts collected.

Artifact	Material Type	Quantity	% of Total
Biface, projectile point	Lt. Gray Chert	1	14%
Flakes	Dk. Gray Chert	6	86%
Total		7	100%

XMH-887

Latitude: [redacted]

Longitude: [redacted]

Determination: Eligible

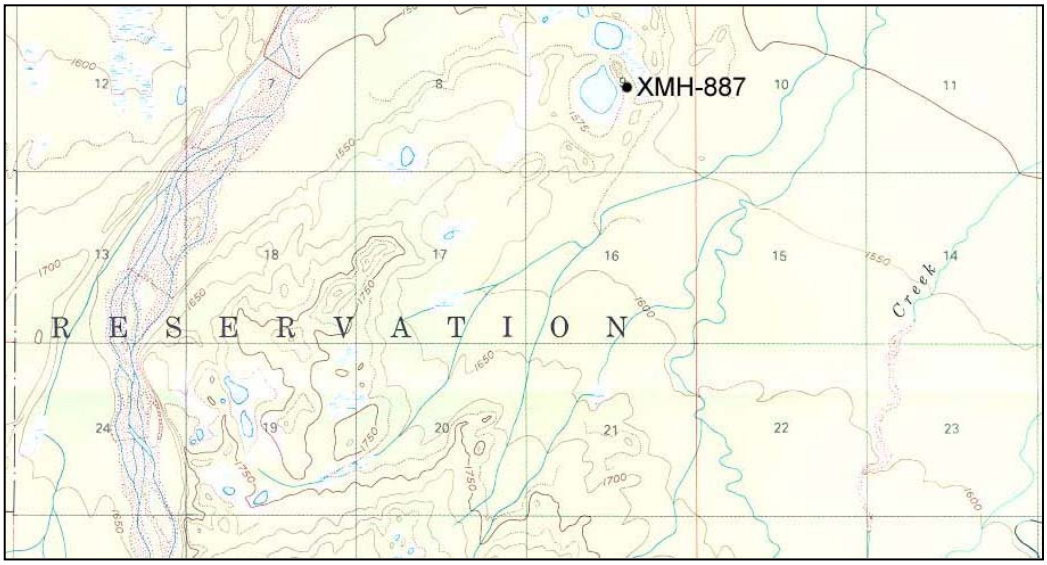


Figure 71. Location of site XMH-887 (from USGS Mt. Hayes (D-4) quad).

Site XMH-887 was identified on 08/09/02. The site is located on 33-Mile Loop Road and is accessed by traveling south on the road approximately 10 kilometers south of its intersection with Fleet Street. UTM coordinates for the site are: [redacted] Initial investigations at the site revealed 7 fragments of flaked stone found on the exposed road surface.

The site is located on a hilltop that is part of a larger hill or ridge system. The larger hill is 500m long along the north-south axis and 80m wide along the east-west axis. The slope is gradual on the east and west, at a grade of 10-20 degrees. The ridge continues to the north and south, and is continuously hilly in both directions.

The site area exhibits the effects of both natural erosion and modern use. Only a minimal amount of wind erosion has affected the hilltop, and surface visibility is minimal throughout much of the site area. 33-Mile Loop Road extends through the western edge of the site, and has exposed
the surface where artifacts were found.

Figure 72. View of site XMH-887, heading south.

Prior to any excavation, an intensive surface examination was conducted, revealing 5 additional surface artifacts located on the road surface. Shovel tests were then randomly placed across the hilltop. A total of 50 shovel tests was excavated at XMH-887. Shovel tests averaged 30cm in diameter, and were excavated into glacial till. A total of 4 shovel tests were positive, producing one or more artifacts. Sub-surface artifacts were found at an average depth of 10cm below the surface, and no greater than 15cm below the surface. As positive shovel tests were identified, additional shovel tests were placed nearby, to better determine the nature of cultural deposits. The site was determined to be 34m east-west and 18m north-south, based on surface and subsurface finds.

Findings

Evaluation revealed soil deposition on the hilltop varying between 10-45cm below the present ground surface. Unlike other site locations observed, the hilltop has not experienced considerable wind erosion, and thus soil deposition is greater here than at other sites located to the south. The depth of naturally deposited soil was fairly consistent throughout the hilltop, averaging 25-30cm below the surface. Naturally deposited soil on the hilltop consists of dark brown silt with a low to moderate density of gravels and cobbles. Glacial till is encountered below naturally deposited soil, consisting of a brown to light brown silty sandy soil, with a moderate density of gravels and cobbles.

Figure 73. Projectile point, microblade fragment and biface fragment recovered from XMH-887.

A total of 17 artifacts was found at the site: 12 on the surface and 5 below the surface, recovered in positive shovel tests. All surface artifacts were located on the road and were collected. All subsurface artifacts were collected as well. Various colors of chert comprised the artifact fragments, including gray, dark gray and red/brown. Of the surface artifacts collected, 2 were biface fragments of gray chert.

Similar to the preceding eligible sites, XMH-887 is a small low-density site situated on a hilltop, and is largely intact. Natural forces and prehistoric human activity have been the principle agents of the site

formation process. For these reasons XMH-887 has the potential to reveal additional information, and contribute to a better understanding of those research questions outlined above. Subsequently, it is eligible for inclusion in the National Register of Historic Places.

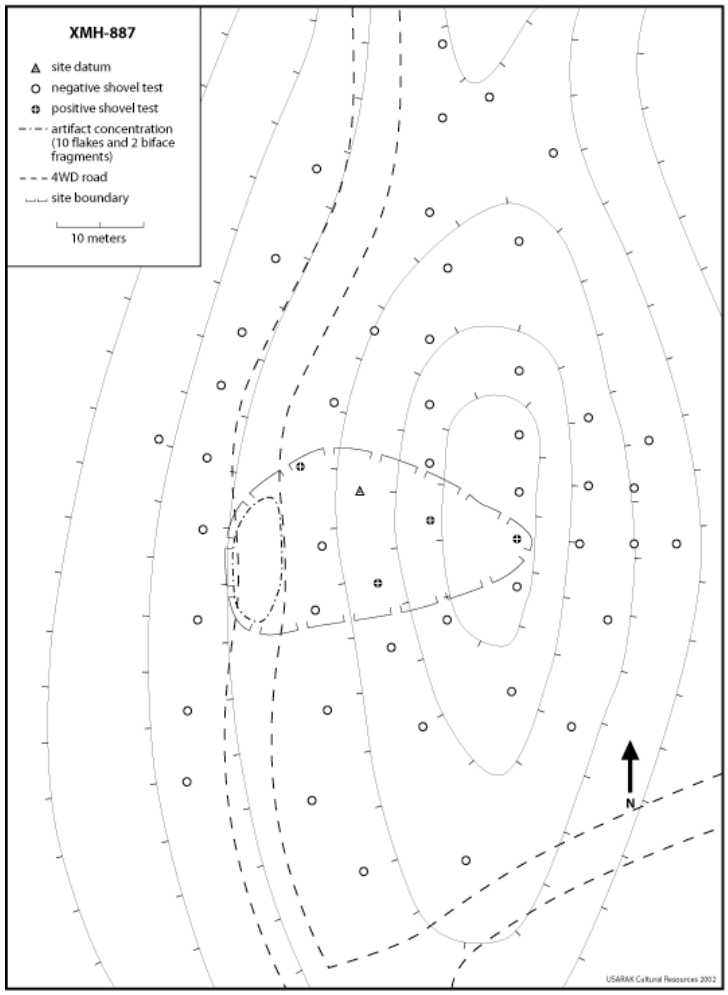


Figure 74. Site map of evaluations at XMH-887.

Table 21. XMH-887, general attributes.

Area (m²)	Intact (%)	Shovel Tests	Artifacts (total #)	Surface Artifacts	Sub-Surface	Max. Depth	Diagnos.
612	85	50	17	12	5	10 cm	3

Table 22. XMH-887, artifacts collected.

Artifact	Material Type	Quantity	% of Total
Biface Fragments	Dark Gray Chert	2	12%
Microblade Fragment	Light Gray Chert	1	6%
Utilized flake	Gray Chert	1	6%
Flakes	Lt. Gray Chert	5	29%
Flakes	Drk. Gray Chert	6	35%
Flakes	Red/Brown Chert	2	12%
Total		17	100%

XMH-888
Latitude: [redacted]
Longitude: [redacted]
Determination: Not Eligible

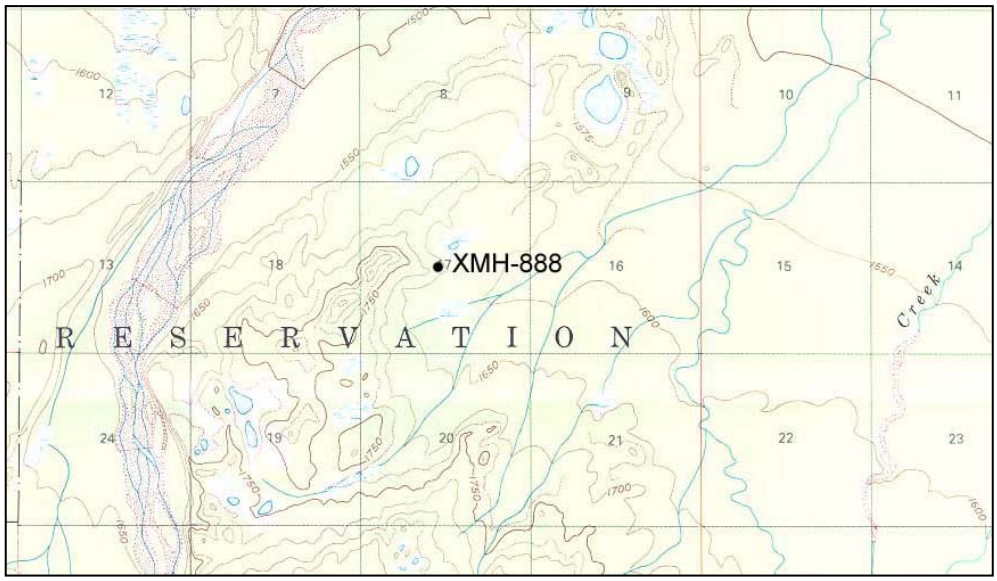


Figure 75. Location of site XMH-888 (from USGS Mt. Hayes (D-4) quad).

The site is located on 33-Mile Loop Road and is accessed by traveling south on the road, approximately 12.5 kilometers south of its intersection with Fleet Street. UTM coordinates for the site are: [redacted]

Initial investigations of the site revealed one fragment of flaked chert, recovered from a shovel test.

The site is located on a low, northern end of a large hill that is nearly 2 kilometers long, and approximately 250m wide. The slope is gradual on all sides, estimated at 10 degrees. The surrounding terrain is generally flat, with the exception of the ridge that continues to the southwest. The site location provides an unobstructed view to the east.

The site area exhibits the effects of both natural erosion and modern use. The area exhibits evidence of burning from fire, which apparently destroyed all large trees in the area. Ground cover has begun to grow back only minimally, thus surface visibility at the site is excellent. 33-Mile Loop Road is located 15m to the north-west of the site. Trash and moose bones were observed, evidence of modern use of the site.

Figure 76. View of site XMH-888, heading north.

Prior to any excavation, an intensive surface examination was conducted revealing no surface artifacts. A total of 21 shovel tests was excavated at the site: 4 during the initial investigation, and 17 during the evaluation phase. The depth of shovel tests varied, but in all cases were excavated below naturally deposited soil until encountering glacial till. The site produced only 1 positive shovel test; no other surface or subsurface artifacts were observed.

Findings

Shovel tests revealed soil deposition at the site, varying between 10 and 35cm below the existing ground surface. Soil deposition at the site is fairly consistent throughout the site area, consisting of naturally deposited brown silt with a low density of gravels and cobbles, to an average depth of 20cm. Below naturally deposited soil, glacial till is encountered, consisting of a light brown sandy silty soil, with a high density of gravels and cobbles.

The only artifact recovered at the site is a single chert flake, recovered in the initial shovel test investigations. Despite extensive sub-surface investigations, no further cultural material was identified, and the single chert flake initially recovered appears to be a true isolate. The site is thus not eligible for listing in the National Register of Historic Places.

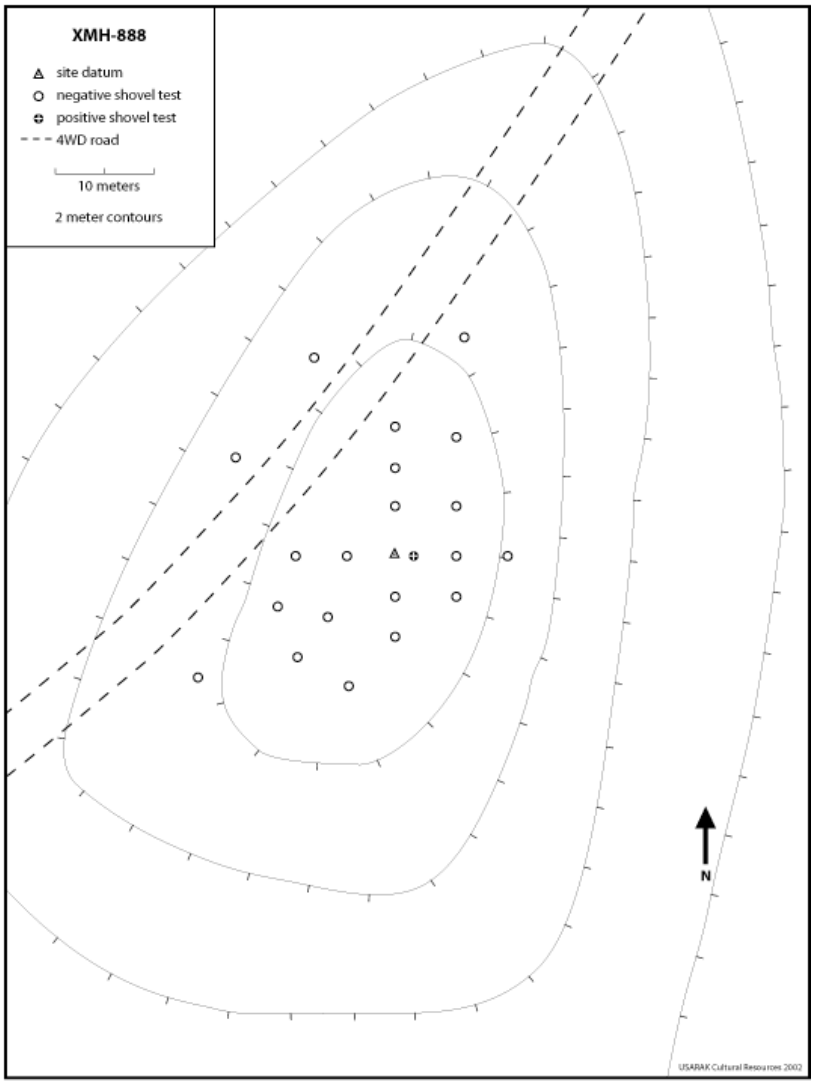


Figure 77. Site map of evaluations at XMH-888.

Table 23. XMH-888, general attributes.

Area (m²)	Intact (%)	Shovel Tests	Artifacts (total #)	Surface Artifacts	Sub-Surface	Max. Depth	Diagnos.
N/A	100	21	1	0	1	10 cm	0

Table 24. XMH-888, artifacts collected.

Artifact	Material Type	Quantity	% of Total
Flakes	Lt. Gray Chert	1	100%
Total		1	100%

XMH-889
Latitude: [redacted]
Longitude: [redacted]
Determination: Not Eligible

The site is located on 33-Mile Loop Road and is accessed by traveling south on the road, approximately 10 kilometers south of its intersection with Fleet Street. UTM coordinates for the site are: [redacted] Initial investigations of the site revealed 4 fragments of flaked chert on the exposed surface of the road.

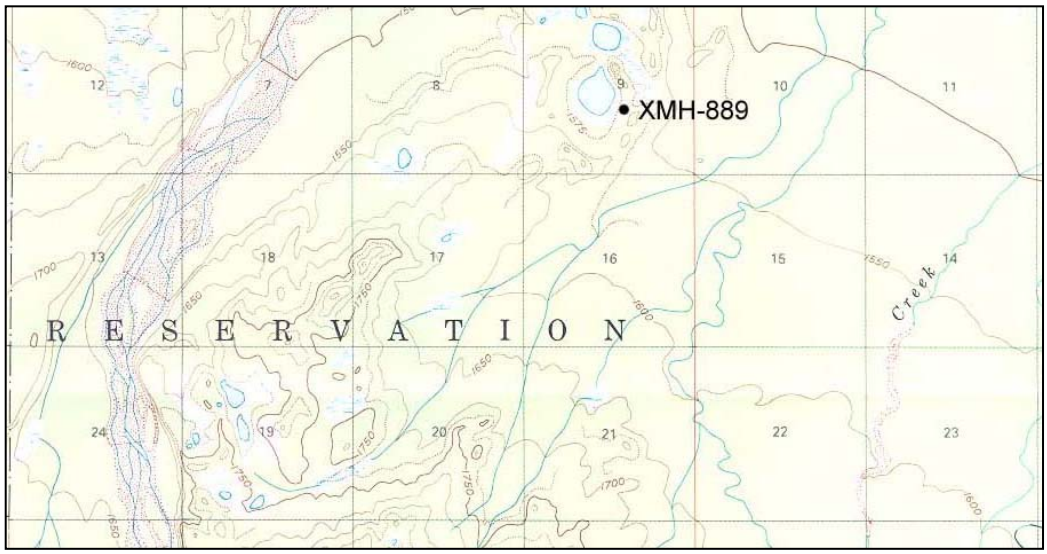


Figure 78. Location of site XMH-889 (from USGS Mt. Hayes (D-4) quad).

Similar to those sites described above, the site is located on a hilltop that is part of a larger hill or ridge system. The largest ridge is approximately 500m in length along the north-south axis, and 80m in width along the east-west axis. The slope is gradual on the east and west sides, approximately 10 to 20 degrees. The ridge continues to the north and south, and is continuously hilly in both directions.

The site area exhibits the effects of both natural erosion and modern use. Evidence of wind erosion is minimal on the hilltop, and surface visibility is limited throughout much of the site area. 33-Mile Loop Road passes through the western edge of the site, causing the erosion and destruction of portions of the site.

Prior to any excavation, an intensive surface examination was conducted revealing no additional surface artifacts. A total of 29, 30cm diameter shovel tests was excavated at the site. The depth of shovel tests varied, but in all cases were excavated into glacial till. All shovel tests were negative. The site was determined to be 15 x 5m, based on the location of surface artifacts.

Figure 79. View of site XMH-889, heading south.

Findings

Evaluation revealed soil thickness on the hilltop varying between 10 and 45cm. The hilltop has not undergone as much wind erosion as those to the south at higher elevations, and soil deposition is thus greater than at locations tested to the south. Soil depth was relatively consistent across the hilltop, averaging 25-30cm below the surface. The soil consists of dark brown silt, with a low to moderate density of gravels and cobbles.

A total of 4 artifacts was found at the site, all of which were found on the surface of the road and were collected: 2 fragments of dark gray chert, one of red/brown chert, and one light gray chert biface fragment.

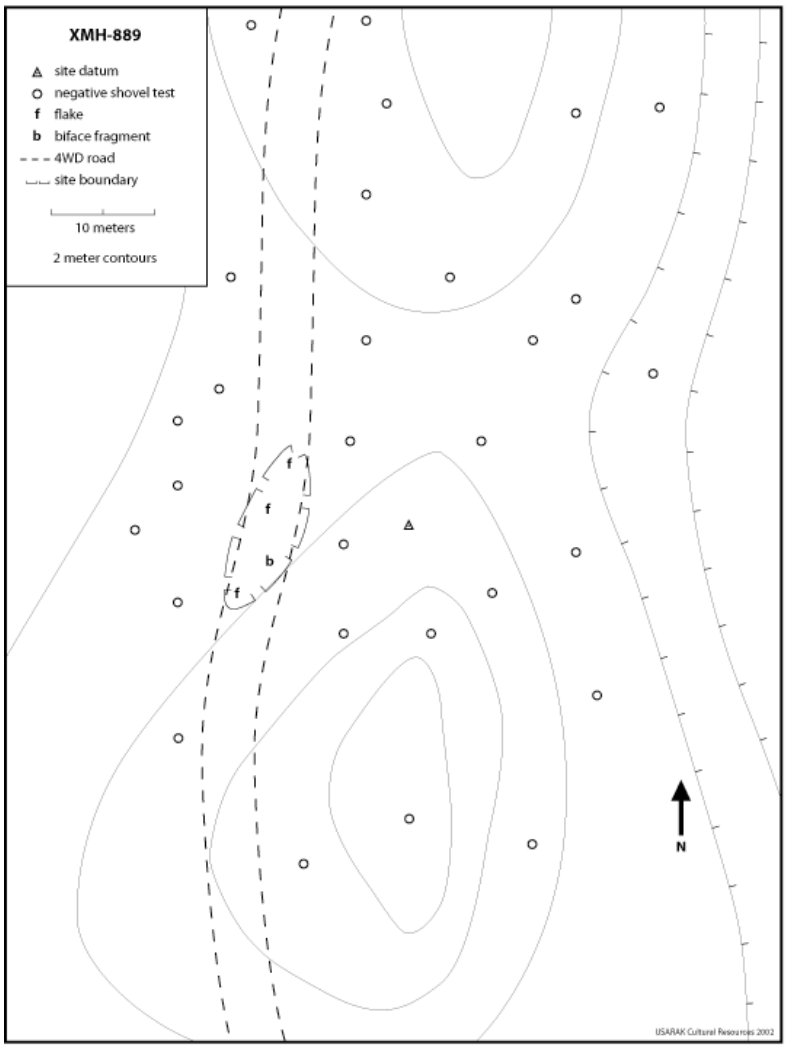


Figure 80. Site map of evaluations at XMH-889.

Table 25. XMH-889, general attributes.

Area (m²)	Intact (%)	Shovel Tests	Artifacts (total #)	Surface Artifacts	Sub-Surface	Max. Depth	Diagnos.
75	0	29	4	4	0	0 cm	1

Table 26. XMH-889, artifacts collected.

Artifact	Material Type	Quantity	% of Total
Biface Fragment	Drk. Gray Chert	1	25%
Blade Fragment	Drk. Gray Chert	1	25%
Flake	Red/brown Chert	1	25%
Flake	Lt. Gray Chert	1	25%
Total		4	100%

XMH-890
Latitude: [redacted]
Longitude: [redacted]
Determination: Eligible

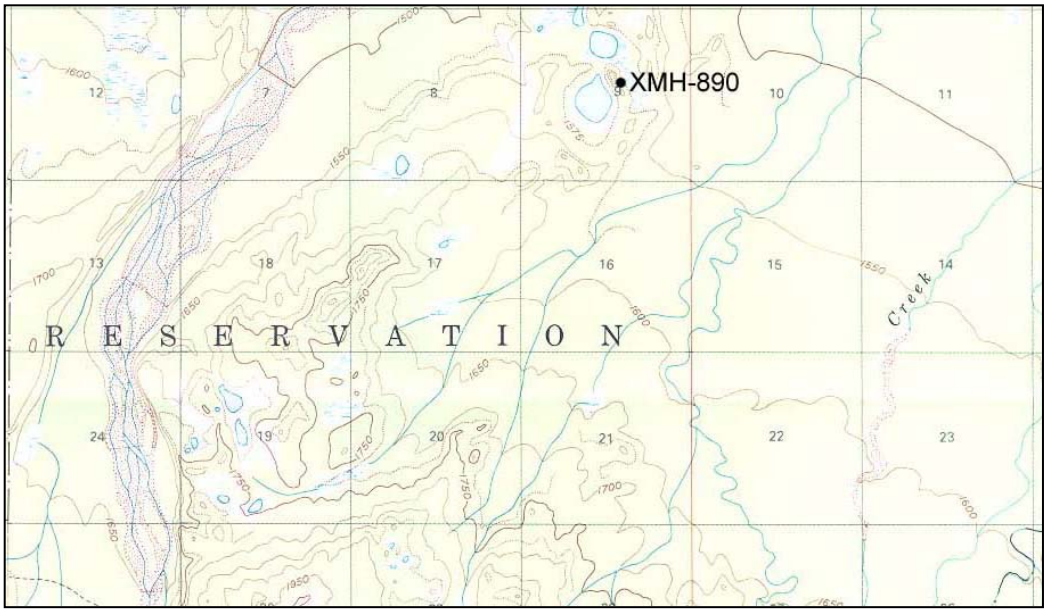


Figure 81. Location of site XMH-890 (from USGS Mt. Hayes (D-4) quad).

The site is located on 33-Mile Loop Road and is accessed by traveling south on the road, approximately 10 kilometers south of its intersection with Fleet Street. UTM coordinates for the site are: [redacted] Initial investigations of the site revealed a moderate density concentration of artifacts found on the surface adjacent to the road.

The site is located on the southern end of a ridge system. The ridge is 500m in length along the north-south axis, and 80m in width along the east-west axis. The slope is gradual on the east and west sides, at a grade of 10 to 20 degrees. The ridge continues to the north and south and is continuously hilly in both directions. The location offers relatively unobstructed views to the west.

Figure 82. View of site XMH-890, heading north.

The site area exhibits the effects of both natural erosion and modern use. Wind erosion has affected the hilltop, and thus surface visibility is fair to good throughout much of the site area. Additionally, 33-Mile Loop Road extends through the site, and thus has exposed portions of the ground surface. Numerous vehicle tracks and a recent fire ring are present as well.

Prior to any excavation, an intensive surface examination was conducted, revealing a total of 47 fragments of flaked stone on the ground surface. Within the artifact concentration, 43 fragments of flaked stone were identified, while 4 additional surface artifacts were observed nearby. One fragment of flaked stone, found on the road surface, was collected. All potentially diagnostic tools found on the surface of the site were collected, as well as all subsurface artifacts. All surface artifacts were mapped as to their location on the surface.

Shovel tests were randomly placed throughout the hilltop in intervals of 5-10m, depending on terrain and vegetation. A total of 42, 30cm diameter shovel tests was excavated at the site. The depth of shovel tests

varied, but in all cases were excavated into glacial till. A total of 4 shovel tests was positive, producing one or more artifacts. Subsurface artifacts were found at a maximum depth of 5cm below the ground surface. Shovel tests were placed throughout the hilltop, and as positive shovel tests occurred, additional shovel tests were placed nearby in order to determine the nature of cultural deposits. The site was estimated to be 25m in length along the north-south axis, and 10m in width along the east-west axis.

Figure 83. Chert blade from XMH-890.

Findings

Evaluation revealed soil deposition on the hilltop that varied between 10 and 45cm below the existing ground surface. The hilltop has experienced wind erosion on the south and east sides, with soil thickness averaging 15cm. The north and west sides were only minimally affected by wind erosion, and soil deposition here averaged 35cm. Soil on the hilltop consists of brown silt, with a moderate density of gravels and cobbles.

A total of 51 artifacts was found at the site: 47 on the surface and 4 below the surface in shovel tests. 5 of the surface artifacts were collected: one brown chert flake was collected from the road, and 4 tool fragments that were located near the road. The tool fragments include: a dark gray chert biface fragment, one gray chert retouched flake, and one brown chert blade (4cm x 1.5cm), all of which were found within the surface artifact concentration, and one gray-banded chert projectile point fragment, which was located at the eastern edge of the site, outside of the main artifact concentration. All sub-surface artifacts were also collected.

Like the preceding eligible sites, XMH-890 is a small low-density site situated on a hilltop, with a large proportion of the site remaining intact. Natural forces and prehistoric human activity appear to be the principle agents of the site formation process. For these reasons XMH-890 has the potential to contribute to a number of important research

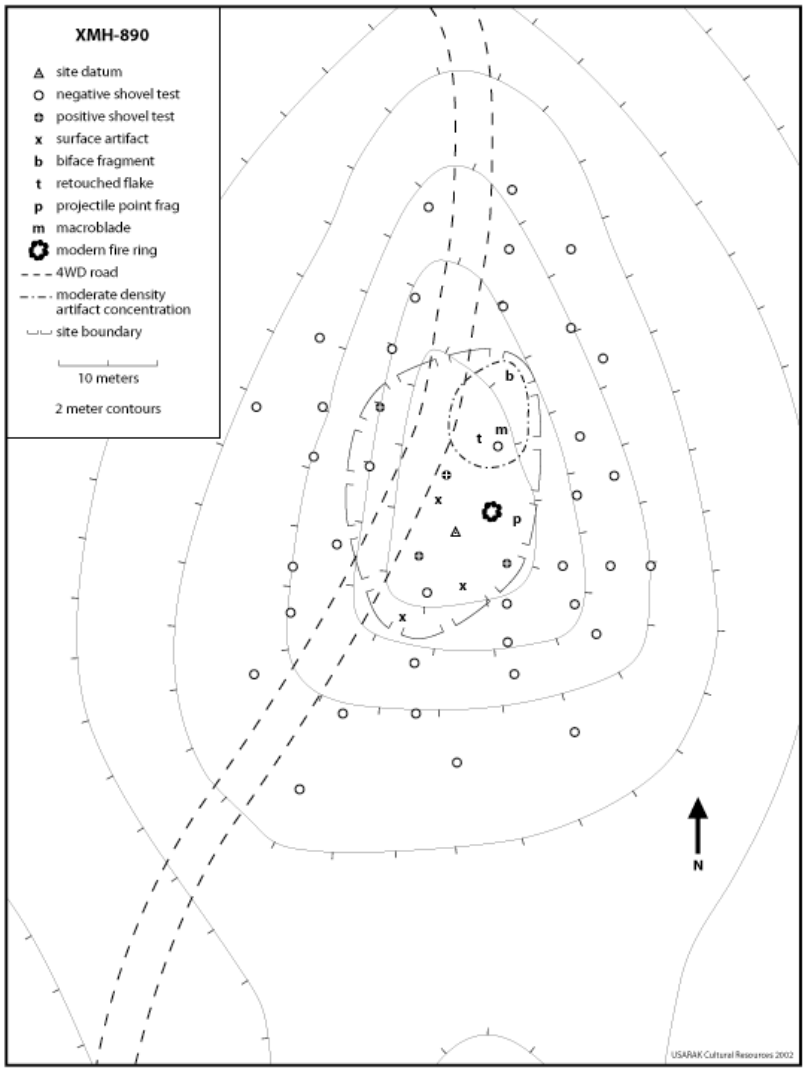


Figure 84. Site map of evaluations at XMH-890.

questions, and has been determined eligible for inclusion in the National Register.

Table 27. XMH-890, general attributes.

Area (m²)	Intact (%)	Shovel Tests	Artifacts (total #)	Surface Artifacts	Sub-Surface	Max. Depth	Diagnos.
250	75	42	51	47	4	5 cm	3

Table 28. XMH-890, artifacts collected.

Artifact	Material Type	Quantity	% of Total
Biface Fragment	Drk. Gray Chert	1	11.1%
Blade Fragment	Brown Chert	1	11.1%
Flake	Brown Chert	1	11.1%
Projectile Point fragment	Gray Banded Chert	1	11.1%
Flakes	Gray/Brown Chert	4	44.4%
Re-touched flake	Gray Chert	1	11.1%
Total		9	100%

XMH-891
Latitude: [redacted]
Longitude: [redacted]
Determination: Eligible

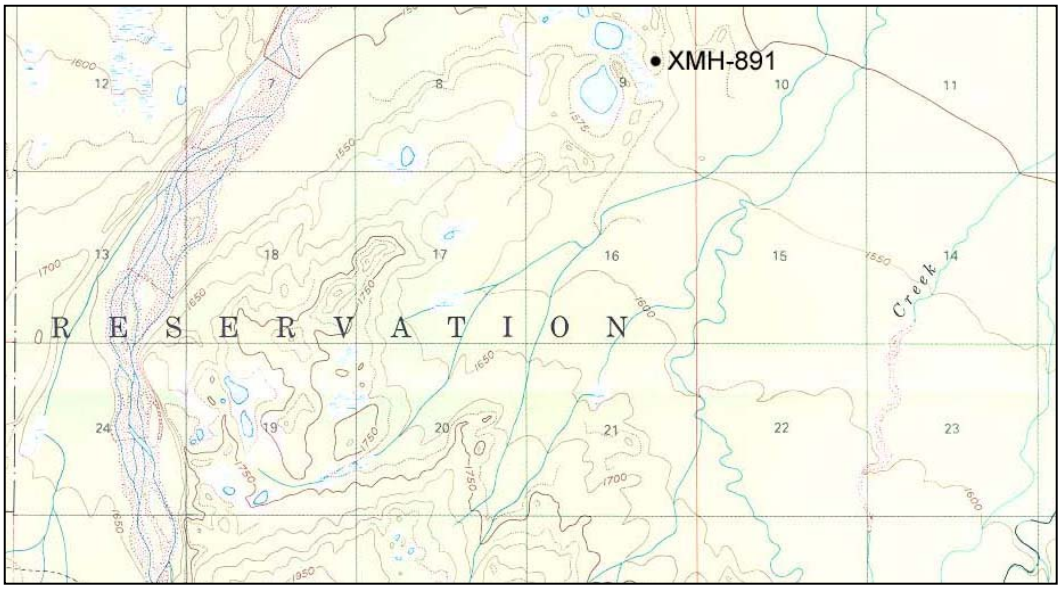


Figure 85. Location of site XMH-891 (from USGS Mt. Hayes (D-4) quad).

The site is located on 33-Mile Loop Road, and can be accessed by traveling south on the road to approximately 9 kilometers south of its intersection with Fleet Street. UTM coordinates for the site are: [redacted] Initial investigations at the site revealed two fragments of flaked stone on the existing ground surface.

The site is located at the southern end of a long hill or ridge system that extends north for approximately 3 kilometers. It is along the spine of this ridge that 33-Mile Loop Road has been constructed. The slope is steep, approximately 20 to 30 degrees on the south and west sides. The slope on the east is more gradual, approximately 10 to 15 degrees. Proceeding north, the ridge flattens. The hilltop provides unobstructed views to the south and west towards Spring Lake.

The site area exhibits the effects of both natural erosion and modern use. There is evidence of significant wind erosion on the south side of the site, where surface vegetation is almost non-existent. The immediate site area has been cleared of trees and other vegetation, and surface visibility is good throughout the site area. 33-Mile Loop Road lies adjacent to the site, and numerous vehicle tracks are present across the site area. A recent fire ring and modern trash are also present.

Figure 86. View of site XMH-891, heading south.

Prior to any excavation, an intensive surface examination was conducted, revealing 24 fragments of flaked stone on the ground surface. 13 very small (less than 5 millimeters in length) thinning or pressure flakes were concentrated in a 10m diameter area at the southern end of the site. Surface artifacts were individually mapped as to their location on the surface, with the concentration of thinning flakes mapped as a unit. Shovel tests were then randomly placed throughout the hilltop in intervals of 5-10m, depending on terrain and vegetation. A total of 30 shovel tests was excavated at the site. Only one shovel test was positive, producing a single gray chert flake. The site was determined to be 45m in length along the north-south axis, and 20m in width along the east-west axis, based on surface findings.

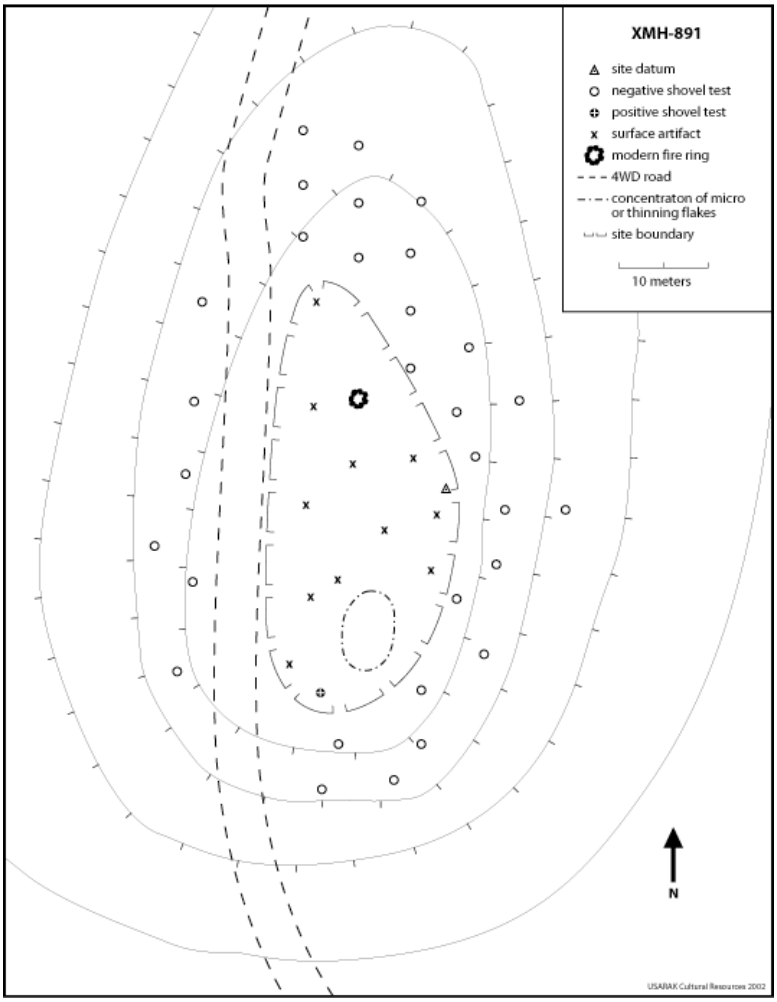


Figure 87. Site map of evaluations at XMH-891.

Findings

The shovel tests revealed soil deposition varying between 5-35cm below the ground surface. The southern slope has experienced wind erosion, and thus soil deposition averaged only 7cm. Naturally deposited soil here is brown loosely compacted silt, with a high density of gravels and cobbles. Over the remaining part of the hilltop soil deposition was greater, averaging a depth of 28cm below the surface. Soil here consists of dark brown silty soil, with a low density of gravels and cobbles. A total of 24 fragments of flaking debris was found at the site: 9 gray chert flakes, 1 dark gray chert flake, and 14 thinning or pressure flakes (1 brown, 12 gray, and 1 white).

A single fragment of gray chert shatter or angular debris was also recovered, which may be natural. 3 artifacts were collected, including 1 light gray chert flake from a positive shovel test (0-5cmbs), and 2 dark gray chert flakes recovered during the initial investigation.

Like the preceding eligible sites, XMH-891 is a relatively small low-density site situated on a hilltop, that appears to be also almost completely intact. Natural forces and prehistoric human activity have been the principle agents of the site formation process. For these reasons XMH-891 has the potential to contribute to a number of important research questions, and has been determined eligible for inclusion in the National Register of Historic Places.

Table 29. XMH-891, general attributes.

Area (m²)	Intact (%)	Shovel Tests	Artifacts (total #)	Surface Artifacts	Sub-Surface	Max. Depth	Diagnos.
1250	90	30	25	24	1	5 cm	0

Table 30. XMH-891, artifacts collected.

Artifact	Material Type	Quantity	% of Total
Flake	Lt. Gray Chert	1	33%
Flakes	Drk. Gray Chert	2	67%
Total		3	100%

XMH-892
Latitude: [redacted]
Longitude: [redacted]
Determination: Not Eligible

The site is located on 33-Mile Loop Road, and is accessed by traveling south on the road to approximately 4 kilometers south of its intersection with Fleet Street. UTM coordinates for the site are: [redacted]
Initial investigations of the site revealed two fragments of flaked chert on the existing ground surface.

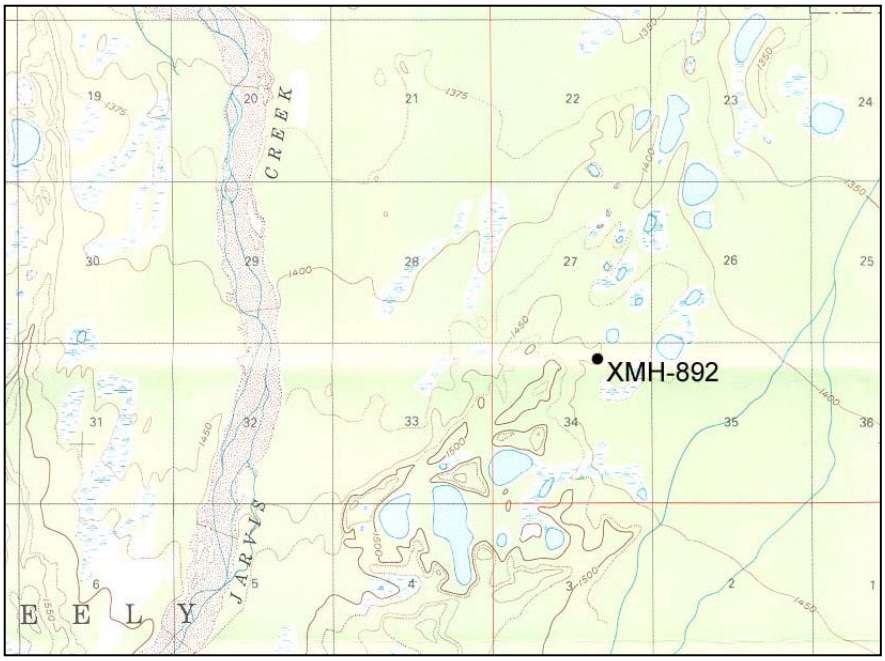


Figure 88. Location of site XMH-892 (from USGS Hayes quad).

The site is located on a hilltop, at the northern end of a larger hill or ridge system that continues on to the southwest. The slope of the hill is gradual on all sides, at a grade of approximately 5 to 10 degrees. Surrounding terrain to the southeast is generally flat with unobstructed views; in all other directions the surrounding terrain is hilly.

The site has experienced natural and manmade disturbance. Wind erosion has only moderately affected the hilltop, and has provided some surface visibility in areas that have not been heavily disturbed. Mechanical excavation equipment has apparently been used to clear the area of trees and level the ground in the immediate area. Thus the surface has been exposed in a large area (ca. 20meters in diameter). A bench mark survey marker and modern fire ring are present at the site as well.

Figure 89. View of XMH-892 to the southeast, with 33-Mile Loop Road in the foreground.

Prior to any excavation, an intensive surface examination was conducted, revealing no additional surface artifacts. Shovel tests were then randomly placed throughout the hilltop in intervals of 5-10m, depending on terrain and vegetation.

A total of 20 shovel tests was excavated at the site, averaging approximately 30cm in diameter. The depth of shovel tests varied, but in areas that were not heavily disturbed, shovel tests were excavated below deposited soil until encountering glacial till. In areas that were heavily disturbed, shovel tests were excavated to approximately 50cm. All of the shovel tests were negative. The site was thus determined to consist only of the two fragments of flaked chert that were identified on the surface in the initial investigation.

Findings

Evaluation revealed soil deposition at the site varying between 10-50cm below the existing ground surface. The hilltop has not experienced as much wind erosion as those to the south at higher elevations, and thus soil deposition is greater. The depth of naturally deposited soil was fairly consistent throughout the site, averaging 35-40cm below the surface. Naturally deposited soil consisted of a dark brown silt, with a low to moderate density of gravels and cobbles. Glacial till is encountered below naturally deposited soil, consisting of a brown to light brown silty sandy soil, with a moderate density of gravels and cobbles. In areas that were heavily disturbed, soil has been mixed to a depth of 50cm below the leveled surface. This soil consists of a dark brown silt, with a low density of gravels and cobbles.

A total of 2 artifacts was found at the site, which were recovered from the disturbed surface of the site during initial survey, and were collected. These artifacts consist of two dark gray chert microblade fragments, apparently from the same flake; the fragments fit together and are nearly 10cm in length as one piece. Terrain situation indicates that this was probably a small site not unlike others found in the area, but it has been heavily disturbed by activity associated with construction, maintenance, and use of 33-Mile Loop Road. Given the lack of integrity and intact cultural material at the site, XMH-892 is not eligible for listing in the National Register of Historic Places.

Table 30. XMH-892, general attributes.

Area (m²)	Intact (%)	Shovel Tests	Artifacts (total #)	Surface Artifacts	Sub-Surface	Max. Depth	Diagnos.
200	10	20	2	2	0	5 cm	0

Table 31. XMH-892, artifacts collected.

Artifact	Material Type	Quantity	% of Total
Microblade fragments	Drk. Gray Chert	2	100%
Total		2	100%

XMH-323
Latitude: [redacted]
Longitude: [redacted]
Determination:
Not eligible

Site XMH-893 is located on 33-Mile Loop Trail and can be accessed by traveling south on the road approximately 2.5 kilometers south of the intersection with Fleet Street. Initial investigations of the site revealed four flakes on the existing ground surface. UTM coordinates for the site are: [redacted]

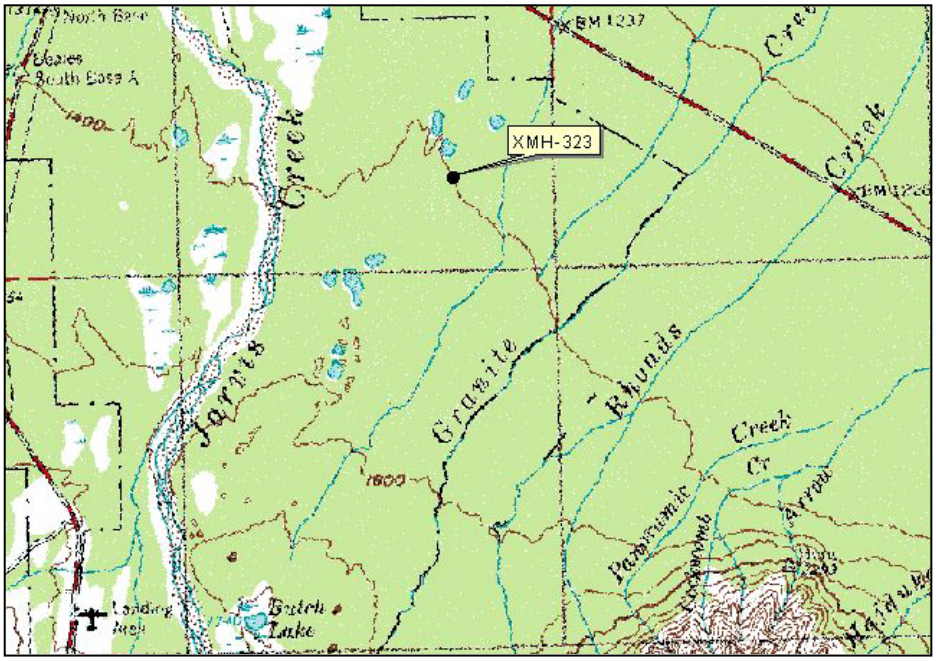


Figure 90. Location of XMH-323 (from USGS Mt. Hayes quad).

The site is situated on a hilltop at the northern end of a larger hill or ridge system that continues on to the southwest. The slope of the hilltop is rather gradual on the all sides at a grade of 5-10%. The surrounding terrain to the southeast is generally flat; in all other directions the surrounding terrain is hilly. The hilltop has experienced both natural and non-natural disturbance; wind erosion has only moderately affected the hilltop, and has provided some surface visibility in areas that have not been heavily disturbed. Mechanical excavation equipment has apparently been used to clear the area of trees in the immediate vicinity. Subsequently, the surface has been exposed in a large area (15m diameter); although heavily disturbed, this exposed area revealed several artifacts.

The site was evaluated through the excavation of shovel tests to determine eligibility and to define site boundaries. Prior to excavation, an intensive surface examination was conducted, revealing two additional fragments of flaked stone on the surface of the disturbed area. Shovel tests were randomly placed throughout the hilltop in intervals of 5-10m, depending on terrain and vegetation. A total of 25 shovel tests was excavated at the site, averaging approximately 30cm in diameter. Depth of shovel tests varied, but in areas that were not heavily disturbed, shovel tests were excavated until encountering glacial till. In

areas that were heavily disturbed, shovel tests were excavated to a depth of approximately 50cm. All of the shovel tests were negative, revealing no cultural material. The site was subsequently determined to be a small scatter of 6 artifacts, measuring 15 x 7m, based on location of surface artifacts.

Findings

Evaluation revealed soil deposition at the site varying between 10-50cm below ground surface. The site has not experienced as much wind erosion as others to the south at higher elevations, and thus soil deposition is greater. The depth of naturally deposited soil was fairly consistent throughout the site, averaging 35-40cm below the surface. Naturally deposited soil consists of dark brown silt with a low to moderate density of gravels and cobbles. Glacial till is encountered below naturally deposited soil, consisting of a brown to light brown, silty sandy soil, with a moderate density of gravels and cobbles. In areas that were heavily disturbed, soil has been mixed to a depth of 35cm below the leveled surface. This soil consists of a dark brown silt with a low density of gravels and some cobbles.

A total of 6 artifacts was identified at the site, all of which were located on the disturbed surface; none were collected. These artifacts consist of three fragments of chert, (one each of dark gray, gray, and brown), and three fragments of gray quartzite. The black chert flake has had some retouch to one of the sides. Given the lack of integrity and intact cultural material at the site, XMH-323 was determined not eligible for listing in the National Register of Historic Places.

Table 33. XMH-323, general attributes.

Area (m^2)	Intact (%)	Shovel Tests	Artifacts (total #)	Surface Artifacts	Sub-Surface	Max. Depth	Diagnos.
105	10	25	6	6	0	5 cm	0

Table 34. XMH-323, artifacts collected.

Artifact	Material Type	Quantity	% of Total
Flakes	Drk. Gray/Gray Chert	2	33%
Flake	Brown Chert	1	17%
Flakes	Gray quartzite	3	50%
Total		2	100%

Summary

Seventeen newly identified sites were recorded during the course of survey for the proposed 33-Mile Loop Road upgrade project, with one previously recorded site relocated, at Fort Wainwright's Donnelly Training Area East; 15 of these sites fell directly within the area of potential effect (APE) of the proposed road upgrade, and were subsequently evaluated for eligibility for listing in the National Register of Historic Places. Seven of the fourteen sites, (XMH-879, 881, 882, 886, 887, 890, and 891), have been determined eligible for inclusion in the National Register. All of these sites are largely intact and contain cultural material that can provide significant information pertaining to the prehistory of the Alaskan interior and the Tanana River Valley. These sites are representative of many archaeological sites of the glacial recessional terrain immediately north and south of the Alaska Range; these sites are typically small, south-facing hilltop or lakeside locations, with less than 50cm of soil deposition. Although artifact densities can be relatively low at these apparent short-term camps and hunting lookouts, they have significant research potential for addressing a number of important regional questions. As the integrity of many of the sites in the vicinity of Donnelly Training Area East has been diminished by intensive military training activity, these sites are particularly important for interpreting the prehistory of this training area. These sites will be avoided through design modification whenever possible. If avoidance is not feasible, consultation with the State Historic Preservation Office and interested Tribal governments will ensue to identify appropriate mitigation measures, prior to the advent of any future construction.

4.0 References

Anderson, Douglas D.
1968 *Early Notched Point and Related Assemblages in Western American Arctic*. Unpublished manuscript on file in the University of Alaska Museum.

1970a Microblade Traditions in Northwestern Alaska. *Arctic Anthropology* 7(2):2-16.

1970b Akmak: An Early Archaeological Assemblage from Onion Portage, Northwest Alaska. *Acta Arctica* 16. Copenhagen.

Andrews, E.F.
1975 *Salcha: an Athabaskan Band of the Tanana River and its Culture*. Master's Thesis, University of Alaska Fairbanks.

1987 Archaeological Evidence of European Contact: the Han Athapaskans near Eagle, Alaska. *High Plains Applied Anthropology* 7(2):51-64

Bacon, Glenn H.
1978 *Final Report on the Archaeological Survey of the XM-1 Tank Range, Fort Greely, Alaska*. Final Report. Prepared for the U S Army Corps of Engineers. Alaska District, NPASU-78-78-41. Prepared by Alaskarctic, Fairbanks.

Bacon, Glenn H.
1979. Malamute Drop Zone, Preliminary Archaeological Survey Report. Division of Parks and Outdoor Recreation, Anchorage, AK.

Bacon, G.H. and C.E. Holmes
1979 *Archaeological Survey and Inventory of Cultural Resources at Fort Greely, Alaska,* 1979. Final Report. Prepared for the U.S. Army Corps of Engineers, Alaska District.

Burr Neely, Ronald J.
2001 Early Mining History: Fort Wainwright and Fort Greely, Alaska. Prepared for the Center for Ecological Management of Military Lands, Colorado State University. CEMML TPS 01-3.

2003. Early Transportation Routes: Fort Wainwright, Alaska. Prepared for the Center for Environmental Management of Military Lands, Colorado State University. CEMML TPS 02-10.

Carberry, Michael and Donna Lane.
1986. *Patterns of the Past: An Inventory of Anchorage's Historic Resources.* Municipality of Anchorage Community Planning Department. Van Cleve Printing Company, Anchorage, Alaska.

Center For the Environmental Management of Military Lands
2001 *Integrated Cultural Resources Management Plan 2002-2006, Fort Richardson, Alaska*, United States Army Alaska, CEMML, Colorado State University, Fort Collins, CO

Chandonnet, Ann
1979 *The Once and Future Village of Ikluat/Eklutna*. Adams Press, Chicago.

1985 *On The Trail of Eklutna*. User-Friendly Press, Anchorage.

Cook, John P.
1989 Historic Archaeology and Ethnohistory at Healy Lake, Alaska. *Arctic* 42(3):109-118.

Davis, Nancy Yaw
1965 *A Tanaina Indian Village*. Unpublished Master's thesis, Department of Anthropology, University of Chicago.

Davis, Nancy Yaw and the Dena'ina Team
1994 *Draft Report – Ethnohistoric Land Use Patterns: Elmendorf Air Force Base (Knik Arm) Area, Alaska*. Prepared for the National Park Service and Elmendorf Air Force Base. Cultural Dynamics. Anchorage, Alaska.

DeLaguna, Frederica
1975 *The Archaeology of Cook Inlet*, 2nd edition. Alaska Historical Society, Anchorage.

Department of the Interior, National Park Service, National Register, History and Education
2000 *National Register Bulletin, Guidelines for Evaluating and Registering Archaeological Properties*. Eds. Barbara Little, Erika Martin Seibert, Jan Townsend, John H. Sprinkle, Jr., and John Knoerl.

Dilley, T.E.
1996 *The Geoarchaeological Potential of Elmendorf Air Force Base*. Manuscript on File at U.S. Army Alaska Directorate of Public Works, Environmental Office.

Dixon, E.J., G.S. Smith, and D. Plaskett
1980 *Archaeological Survey and Inventory of Cultural Resources, Fort Wainwright, Alaska.* Prepared for U.S. Army Corps of Engineers, Alaska District.

Dixon, Greg
1980 The Moose River Site, 1978 (with a special appendix by John E. Lobdell). In Archaeological Survey Projects, 1978, ed. T.L. Dilliplane. Pp. 32-48. *Miscellaneous Publications, History and Archaeology Series*, No. 22. Alaska Division of Parks, Department of Natural Resources, Anchorage.

Dumond, Don E.
1977 *The Eskimos and Aleuts*. London: Thames and Hudson

Dumond, Don and R.L.A. Mace
1968 An Archaeological Survey Along Knik Arm. *Anthropological Papers of the University of Alaska* 14(1):1-21.

Ellana, Linda J. and Andrew Balluta
1992 *Nuvendaltin Quht'ana: The People of Nondalton*. Smithsonian Institution Press, Washington D.C.

Fall, James.
1987. Upper Inlet Dena'ina Regional Bands, Subsistence Patterns, and Traditional Leaders. In James Kari & James A. Fall (eds.), *Shem Pete's Alaska: The Territory of the Upper Cook Inlet Dena'ina.* Alaska Native Language Center, University of Alaska, CIRI Foundation. Pp. 21-28.

Frizzera, Arturo
1973 *Preliminary Survey Report, Blair Lakes Alaska*. Fairbanks, Alaska: University of Alaska, Fairbanks, and Anthropology Department.

Gabriel, H.W., and G.F. Tande.
1983. *A Regional Approach to Fire History in Alaska.* U.S. Department of the Interior, Bureau of Land Management Technical Report 9, BLM/AK/TR-83/09.

Gamza, Thomas
1995 *Excavation and Evaluation of Sullivan's Roadhouse (XBD-061), Fort Greely, Alaska 1994*. Final Report. Prepared for the Office of History and Archaeology, Division of Parks and Recreation, Alaska Department of Natural Resources, Anchorage.

Hedman, William.
2002. Research Design: U.S. Army Alaska, 2002 Range Developments. Section 106 Archaeological Inventory and Evaluation, Fort Richardson and Fort Wainwright. Center for Environmental Management of Military Lands (CEMML), Colorado State University, Ft. Collins, CO and U.S. Army Alaska, Fort Wainwright, Alaska.

Henn, Winfield
1978 Archaeology on the Alaska Peninsula: The Ugashik Drainage, 197301975. *University of Oregon Anthropological Papers* 14. Eugene.

Higgs, A.S., B.A. Potter, P.M. Bowers, and O.K. Mason
1999 *Cultural Resource Survey Report of the Yukon Training Area and Fort Greely Army Lands Withdrawal, Alaska. Draft Report*. Prepared for CRREL and ABR Inc., Fairbanks.

Hollinger, Kristy
2001 Homesteads on Fort Richardson, Alaska. Prepared for the Center for the Ecological Management of Military Lands, Colorado State University. CEMML TPS 01-4.

Holmes, Charles E.
1979 *Archaeological Reconnaissance Report for Fort Wainwright, Fort Greely, and Fort Richardson Withdrawal Lands, Alaska.* Report Prepared for the 172nd Infantry Brigade.

1996 Broken Mammoth Site. In *American Beginnings: The Prehistory and Paleoecology of Beringia.* Frederick Hadleigh West, ed. University of Chicago Press.

1998 New Data Pertaining to Swan Point, the Oldest Microblade Site Known in Alaska, *CRP* (15) 21-22.

Holmes, Charles E., Richard VanderHoek, and Thomas E. Dilley
1996 Swan Point. In *American Beginnings: The Prehistory and Paleoecology of Beringia*. Frederick Hadleigh West, ed., Pp. 319-323 University of Chicago Press.

Kari, James
1988 Some linguistic insights into Dena'ina Prehistory. In *The Late Prehistoric Development of Alaska's Native People*. Eds. Robert Shaw, Roger Harritt, and Don Dumond. Aurora, Alaska Anthropological Association Monograph Series #4, Anchorage. Pp. 319-338.

Kari, James and Priscilla Russell Kari (edited by Jane McGary)
1982 *Tanaina Country = Denaina elnena.* Alaska Native Language Center, University of Alaska (Fairbanks).

Lichvar, R., C. Racine, B. Murray, and G. Tande.
1997. *Floristic Inventory of Vascular and Cryptogam Plant Species at Fort Richardson, AK.* Report prepared by Waterways Experiment Station and Cold Regions Research and Engineering Laboratory, U.S. Army Corps of Engineers.

McKennan, R.A.
1981 Tanana. In: Handbook of North American Indians, Vol. 6, Subarctic. Gen. Ed. William Sturtevant, Vol. Ed. June Helm. Smithsonian Institution, Washington.

McMahan, J.D., R.J. Dale, and C.E. Holmes
1991 Cultural Resources Testing and Evaluation of Selected Sites Along the Sterling Highway Milepost 37-60, Kenai Peninsula, Alaska, 1988-89 Project F021-2(15)/(A09812). Office of History and Archaeology Report No. 14, Alaska Division of Parks and Outdoor Recreation, Anchorage.

Mishler, Craig W.
1986 *Born With the River: An Ethnographic History of Alaska's Goodpaster and Big Delta Indians*. Alaska Department of Natural Resources, Division of Geological and Geophysical Surveys Reports, Public Data File 86-14, Fairbanks.

Osgood, Cornelius.
1937. The Ethnography of the Tanaina. *Yale University Publications in Anthropology* 16. New Haven, Conn.

Phillips, Walter T., Sr.
1984 *Roadhouses of the Richardson Highway, the First Quarter Century: 1898-1923*. State of Alaska, Alaska Historical Commission, Anchorage.

Potter, B.A., S.C. Gerlach, A.S. Higgs, and P.M. Bowers
2000 *Final Cultural Resource Survey: Fort Greely, Yukon Training Area (Fort Wainwright), Alaska for the National Missile Defense Program*. For USAR Space and Missile Defense Command, by Northern Land Use Research, Inc. Fairbanks, Alaska.

Price, Kathy
2002 Homesteads on Fort Wainwright, Alaska. Prepared for the Center for Environmental Management of Military Lands, Colorado State University. CEMML TPS 02-9.

Rabich, J. and D. Reger
1978 Archaeological Excavations at the Gerstle River Quarry Site, in *Archaeological Survey Projects 1977. Miscellaneous Publications in History and Archaeology Series* No. 18. Alaska Department of Natural Resources, Division of Parks, Anchorage.

Reger, Douglas R.
1977 An Eskimo Site Near Kenai, Alaska. *Anthropological Papers of the University of Alaska* 18(2):37-52.

1981 *A model for culture history in Upper Cook Inlet, Alaska*. Ph.D. Dissertation, Washington State University, Pullman.

Reger, Douglas R. and Glenn H. Bacon
1996 Long Lake. In *American Beginnings: The Prehistory and Paleoecology of Beringia*, Ed. Frederick Hadleigh-West. University of Chicago Press, Chicago. Pp. 436-438.

Reger, Douglas and Alan Boraas
1991 *An Overview of the Radiocarbon Chronology in Cook Inlet Prehistory*. Paper presented at the 20th Annual Meetings of the Alaska Anthropological Association, Anchorage.

1996 *An overview of radiocarbon chronology in Cook Inlet prehistory. In Adventures Through Time: Readings in the Anthropology of Cook Inlet, Alaska*. Eds. Nancy Yaw-Davis and William E. Davis. Cook Inlet Historical Society, Anchorage. Pp. 156-171.

Reger, Douglas R. and DeAnne S. Pinney
1996 Late Wisconsin Glaciation of the Cook Inlet region with emphasis on the Kenai Lowlands and implications for early peopling. In *Adventures Through Time: Readings in the Anthropology of Cook Inlet, Alaska*. Eds. Nancy Yaw-Davis and William E. Davis. Cook Inlet Historical Society, Anchorage. Pp. 15-35.

Reynolds, Georgeanne L.
1996 *Survey of Moose Run Golf Course Expansion*, Fort Richardson, Alaska. Division of Parks and Outdoor Recreation, Anchorage, AK

Shaw, Robert D.
2000 *Historical Properties and Paleontological Resources Survey for the Realignment of the Alaska Railroad Corporation Tracks Across Elmendorf AFB and Fort Richardson, Alaska*. Report by Robert Shaw Enterprises for Tryck Nyman Hayes Inc. for Alaska Railroad Corporation.

Sheppard, W., A.F. Steffian, D.P. Staley, and N.H. Bigelow
1991 *Late Holocene Occupations at the Terrace Site, Tok, Alaska. Final Report.* Prepared for U.S. Air Force Over-the–Horizon Backscatter Radar Program, Fairbanks.

Shinkwin. A.D.
1979 Dakah De'nin's Village and the Dixthada Site: a Contribution to Northern Alaskan Prehistory. *National Museum of Man Mercury Series* No. 91.

Staley, David P.
1993 *A Phase I Cultural Resource Survey of 19 Locations for the Proposed Yukon Measurement and Debriefing System in Interior Alaska*. Final Report. Prepared by Mariah Associates, Inc. Albuquerque.

Steele, Julia L.
1978 *Otter Lake Reconnaissance*. Manuscript on file at the U.S. Army Corps of Engineers, Anchorage, AK.

1980 *Archaeological Survey and Cultural Resources Overview, Fort Richardson, Alaska*. U.S. Army Corps of Engineers, Anchorage, AK.

Townsend, Joan
1965 *Ethnohistory and Culture Change of the Iliamna Tanaina*. Ph.D. Dissertation. Anthropology Department, UCLA, Los Angeles.

1970 The Tanaina of Southwestern Alaska: An Historic Synopsis. *Western Canadian Journal of Anthropology* 2(1):2-16.

1975 Alaskan Natives and the Russian-American Company: Variations in Relationships. In *Proceedings of the Second Congress of Canadian Ethnology Society*, Vol. 2, Eds. Jim Freedman and Jerome Barkow, pp. 555-570. National Museum of Man. Mercury Series. Canadian Ethnology Service Paper No. 28, Ottawa.

1981 Tanaina. In *Handbook of North American Indians* Vol. 6: Subarctic, Ed. June Helm, pp. 623-640. Smithsonian Institution Press, Washington D.C.

Veltre, Douglas W.
1978 *Report to Chugach Electric Association: Archaeological Survey of Right-of-way from University Substation to Knik Arm (East Terminal)*. Manuscript on file at U.S. Army Corps of Engineers, Anchorage, AK.

Viereck, L.A., and Little. E.L.
1972. *Alaska Trees and Shrubs*. U.S. Department of Agriculture, Forest Service, Agriculture Handbook No. 410.

West, Frederick H.
1967 The Donnelly Ridge Site and the Definition of an Early Core and Blade Complex in Central Alaska. *American Antiquity* 32 (2):360-382

1981 *The Archaeology of Beringia*. New York: Columbia Press.

Workman, William R.
1974 First Dated Traces of Early Holocene Man in the Southwest Yukon Territory, Canada. *Arctic Anthropology* 11(suppl.):94-103.

Workman, William R.
1978 Prehistory of the Aishishik-Kluane Area, Southwest Yukon Territory. *Mercury Series Paper* No. 74. Ottawa: National Museum of Man.

1996 Human Colonization of the Cook Inlet Basin before 3000 years ago. In *Adventures Through Time: Readings in the anthropology of Cook Inlet, Alaska*. Eds. Nancy Yaw-Davis and William E. Davis. Cook Inlet Historical Society, Anchorage. Pp 40-48.

Yarborough, Linda F.
1978 *Chena River Lakes Project Cultural Resource Investigation. Final Report.* Prepared for the U.S. Army Corps of Engineers, Alaska District.

Yesner, David R., Charles Holmes and G. Pearson
1999. *Recent Excavations at the Broken Mammoth Site, Big Delta, Alaska: Reflections on Activity Patterning and Artifact Assemblages*. Paper Presented at the 64th Annual Meeting of the Society of American Archaeology, Chicago