FW-MOA-1409

DEPARTMENT OF THE ARMY
INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, U.S. ARMY GARRISON FORT WAINWRIGHT
1060 GAFFNEY ROAD #6000
FORT WAINWRIGHT, ALASKA 99703-6000

REPLY TO
ATTENTION OF:

MEMORANDUM OF AGREEMENT
BETWEEN
THE U.S. ARMY GARRISON FORT WAINWRIGHT
AND
THE ALASKA STATE HISTORIC PRESERVATION OFFICER
REGARDING
ARCHAEOLOGICAL EXCAVATION AND MITIGATION
OF THE
MCDONALD CREEK SITE (FAI-02043), TANANA FLATS TRAINING AREA, FORT WAINWRIGHT, ALASKA

WHEREAS, the U.S. Army Garrison Fort Wainwright (USAG FWA) proposes to permit Texas A&M University to excavate the McDonald Creek archaeological site (FAI-02043) located on land that the USAG FWA manages; and

WHEREAS, the USAG FWA has determined that this is an Undertaking subject to review under Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470(f), and its implementing regulations, 36 C.F.R. § 800; and

WHEREAS, the USAG FWA initiated consultation with the Alaska State Historic Preservation Officer (SHPO) on 23 December, 2013 pursuant to 36 C.F.R. § 800; and

WHEREAS, the USAG FWA defined the Undertaking's Area of Potential Effect (APE) as a 150 by 150 meter square area at [redacted], northeast of Blair Lakes (Attachment A); and

WHEREAS, the USAG FWA has determined that the McDonald Creek site (FAI-02043) is eligible for the National Register of Historic Places (National Register) and the Alaska State Historic Preservation Officer (SHPO) has concurred 9 September 2012; and

WHEREAS, the USAG FWA is a lead federal agency for this undertaking because it has authority to issue an Archaeological Resources Protection Act (ARPA) permit for excavation of an archaeological site on public domain lands and because the Undertaking would take place on withdrawn lands for military use and would require permission from the USAG FWA for access; and,

WHEREAS, the USAG FWA notified and invited the Texas A&M University to consult on this Undertaking pursuant to 36 C.F.R. § 800.6(c)2 as they are the applicant for the ARPA permit, and the Texas A&M University accepted the invitation to consult and sign this Memorandum of Agreement (MOA) as an invited signatory; and

WHEREAS, the USAG FWA notified and invited the Federally recognized tribes of Village of Dot Lake, Healy Lake Village, Nenana Native Association, Northway Village, Native Village of Tanacross, and Native Village of Tetlin to consult regarding the Undertaking pursuant to 36 C.F.R. § 800.3(f) by letter on 29 January 2014, by follow up phone calls in March and April 2014, and in the April 2014 Quarterly Update Newsletter, and no tribes accepted the invitation to consult nor requested to sign this MOA as concurring parties; and

WHEREAS, the USAG FWA notified and invited the Alaska Department of Transportation, Bureau of Land Management, Cook Consulting, Fairbanks North Star Borough Historic Preservation Commission, Holmes Cultural Resource Consulting, National Park Service, Tanana Chiefs Conference, Tanana-Yukon Historical Society, University of Alaska Fairbanks Department of Anthropology, and University of Alaska Museum of the North to consult regarding the Undertaking on 29 January 2014 pursuant to 36 C.F.R. § 800.3(f) and no consulting parties accepted the invitation to consult, and no consulting parties agreed to sign this MOA as concurring parties; and

WHEREAS, the USAG FWA consulted with the Fort Wainwright Cultural Resources Working Group, a group of interested parties and individuals who meet with the USAG FWA Cultural Resources staff typically twice a year to discuss and provide input on cultural resources projects at Fort Wainwright; and

WHEREAS, in accordance with 36 C.F.R. § 800.6(a)(1), the USAG FWA notified the Advisory Council on Historic Preservation (ACHP) of its adverse effect determination on 29 January 2014 providing the required documentation, and the ACHP chose to not participate in the consultation on 18 February 2014; and

WHEREAS, the USAG FWA provided the public with information on the Undertaking and an opportunity to consult through the USAG FWA Environmental Website; and

WHEREAS, the USAG FWA proposes to permit Texas A&M University to undertake block excavation (approximately 50 m^2), including full documentation of all destructive archaeological activities of the McDonald Creek site (FAI-02043) following the guidelines outlined in the ARPA Permit; and

NOW, THEREFORE, the USAG FWA, Texas A&M University, and the SHPO agree that the Undertaking will be implemented in accordance with the following stipulations in order to take into account the effect of the Undertaking on the historic properties.

STIPULATIONS

The USAG FWA will ensure that the following measures are carried out by the applicant, Texas A&M University:

I. DATA RECOVERY

A. Data recovery activities shall locate, recover, and document significant archaeological information at the McDonald Creek site (FAI-02043) in the 2014-2015 field seasons.

B. The data recovery work will be in accordance with the attached research design and data recovery plan (Attachment B). The research design and data recovery plan have been developed in compliance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*, the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation,* and the *Advisory Council on Historic Preservation's Treatment of Archeological Properties: A Handbook.*

II. SUBMITTALS

A. The USAG FWA shall ensure that the following products of data recovery activities are submitted:

1. A draft data recovery report shall be submitted to SHPO within nine months after the completion of all fieldwork and analysis. The USAG FWA shall ensure that the report is responsive to professional standards and to the *Secretary of the Interior's Format Standards for Final Reports of Data Recovery Programs* (42 FR 5377-79). Upon receipt, SHPO shall have 30 days to review the draft and submit comments to the USAG FWA.

2. The USAG FWA shall take into consideration SHPO's comments. Submittal of the final data recovery report shall consist of two printed copies sent to SHPO no later than 90 days after receipt of comments.

3. The USAG FWA shall send two printed copies of the final data recovery report to the Library Depository Clerk at the Alaska State Library.

4. An updated Alaska Heritage Resources Survey (AHRS) form shall be submitted to the SHPO within nine months after the completion of all fieldwork and analysis.

III. CURATION

A. All artifacts shall remain the property of the USAG FWA.

B. All artifacts, faunal remains, original field notes, and related materials shall be accessioned to the University of Alaska Museum, compling with federal regulation for curation *(36 CFR § 79).*

IV. PROFESSIONAL STANDARDS

All work pursuant to this MOA will be developed by or under the supervision of a person or persons meeting the minimum professional qualifications for an Archaeologist listed in the *Secretary of the Interior's Professional Qualification Standards (36 CFR § 61, Appendix A).*

V. ANNUAL REPORTING REQUIREMENT

The USAG FWA will provide the signatories an annual report that summarizes the actions under this MOA by June the following year, for every year this MOA is in effect.

A. Annual reports will include the following information.

1. A printed copy of the yearly interim report outlining the efforts and accomplishments of that field season.

2. Summary of all actions taken under this MOA, including status of meeting all stipulations.

3. Date the data recovery action or project was completed.

4. List of actions scheduled for coming year.

5. Signature of preparer of document.

6. Recommendations to amend this MOA or improve communications among the parties.

B. Review of Annual Report: The SHPO and the interested parties may review each report and provide review comments to the USAG FWA.

1. The SHPO and the interested parties may request additional documentation or further explanations from the USAG FWA.

2. The SHPO and the interested parties must comment and/or request additional documentation within 30 calendar days of receipt of the USAG FWA's report, otherwise, acceptance will be presumed. Received comments will be used by the USAG FWA to determine if the MOA requires amendment.

VI. POST REVIEW DISCOVERIES

If potential historic properties are discovered or unanticipated effects on historic properties occur, the USAG FWA will implement the discovery plan included as Attachment C of this MOA.

VII. DISPUTE RESOLUTION

A. Should any signatory party to this MOA object at any time to any actions proposed or the manner in which the terms of this MOA are implemented, the USAG FWA will consult with such party to resolve the objection. If the USAG FWA determines that such objection cannot be resolved:

1. The USAG FWA will forward all documentation relevant to the dispute, including the USAG FWA's proposed resolution, to the Advisory Council on Historic Preservation (ACHP). The ACHP will provide the USAG FWA with its advice on the resolution of the objection within 30 calendar days of receiving adequate documentation. Prior to reaching a final decision on the dispute, the USAG FWA will prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP and the signatories, and provide them with a copy of this written response. The USAG FWA will then proceed according to its final decision.

2. If the ACHP does not provide its advice regarding the dispute within the 30-calendar day time period, the USAG FWA may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, the USAG FWA will prepare a written response that takes into account any timely comments regarding the dispute from the signatories to the MOA, and provide the signatories and the ACHP with a copy of such written response.

3. The USAG FWA will be responsible for carrying out all other actions that are not the subject of the dispute.

B. If an objection pertaining to this MOA is raised by a member of the public at any time during implementation of any stipulation in this MOA, the USAG FWA will notify the signatories to this MOA and take into account the objection.

VIII. AMENDMENT

This MOA may be amended when such an amendment is agreed to in writing by all signatories. The amendment will be effective on the date a copy is signed by all of the signatories.

IX. TERMINATION

A. If any signatory believes that the terms of this MOA are not being honored or cannot be carried out, or that an amendment to its terms should be made, that signatory will immediately consult with the other signatories to consider and develop amendments to the MOA per Stipulation VIII.

B. If this MOA is not amended as provided for in Stipulation VIII, the USAG FWA, the SHPO, or the ACHP may propose in writing to terminate this MOA with an explanation of the reasons for termination. If the signatories have found no alternative

solution to termination within 30 calendar days after receipt of the written notice, the MOA shall be terminated. If this MOA is terminated and prior to work continuing on the Undertaking, the USAG FWA must either (a) execute a new MOA pursuant to 36 C.F.R. § 800.6, or (b) request, take into account, and respond to the comments of the ACHP under 36 C.F.R. § 800.7 and will notify the signatories as to the course of action it will pursue.

X. ANTI-DEFICIENCY ACT

All requirements set forth in this MOA requiring the expenditure of the USAG FWA funds are expressly subject to the availability of appropriations and the requirements of the Anti-Deficiency Act (31 U.S.C. § 1341). No obligation undertaken by the USAG FWA under the terms of this MOA will require or be interpreted to require a commitment to expend funds not obligated for a particular purpose.

XI. DURATION

This MOA will become effective upon execution by the signatories and will remain in effect until terminated or five years after its execution. If all stipulations are not completed prior to such time, the USAG FWA may consult with the signatories to reconsider the terms of the MOA and amend it in accordance with Stipulation VIII.

EXECUTION of this MOA by the USAG FWA, Texas A&M University, and the SHPO, and implementation of its terms evidence that the USAG FWA has taken into account the effects of this Undertaking on historic properties and afforded the ACHP an opportunity to comment.

MEMORANDUM OF AGREEMENT
AMONG
THE U.S. ARMY GARRISON FORT WAINWRIGHT,
AND
THE ALASKA STATE HISTORIC PRESERVATION OFFICER
REGARDING
ARCHAEOLOGICAL EXCAVATION AND MITIGATION
OF THE
MCDONALD CREEK SITE (FAI-02043), TANANA FLATS TRAINING AREA,
FORT WAINWRIGHT, ALASKA

Signatories:

U.S. ARMY GARRISON FORT WAINWRIGHT

By: _____
S.C. ZEMP
Garrison Commander

Date: 3 June 2014

ALASKA STATE HISTORIC PRESERVATION OFFICER

By: _____
JUDITH E. BITTNER
State Historic Preservation Officer

Date: June 25, 2014

Invited Signatory:

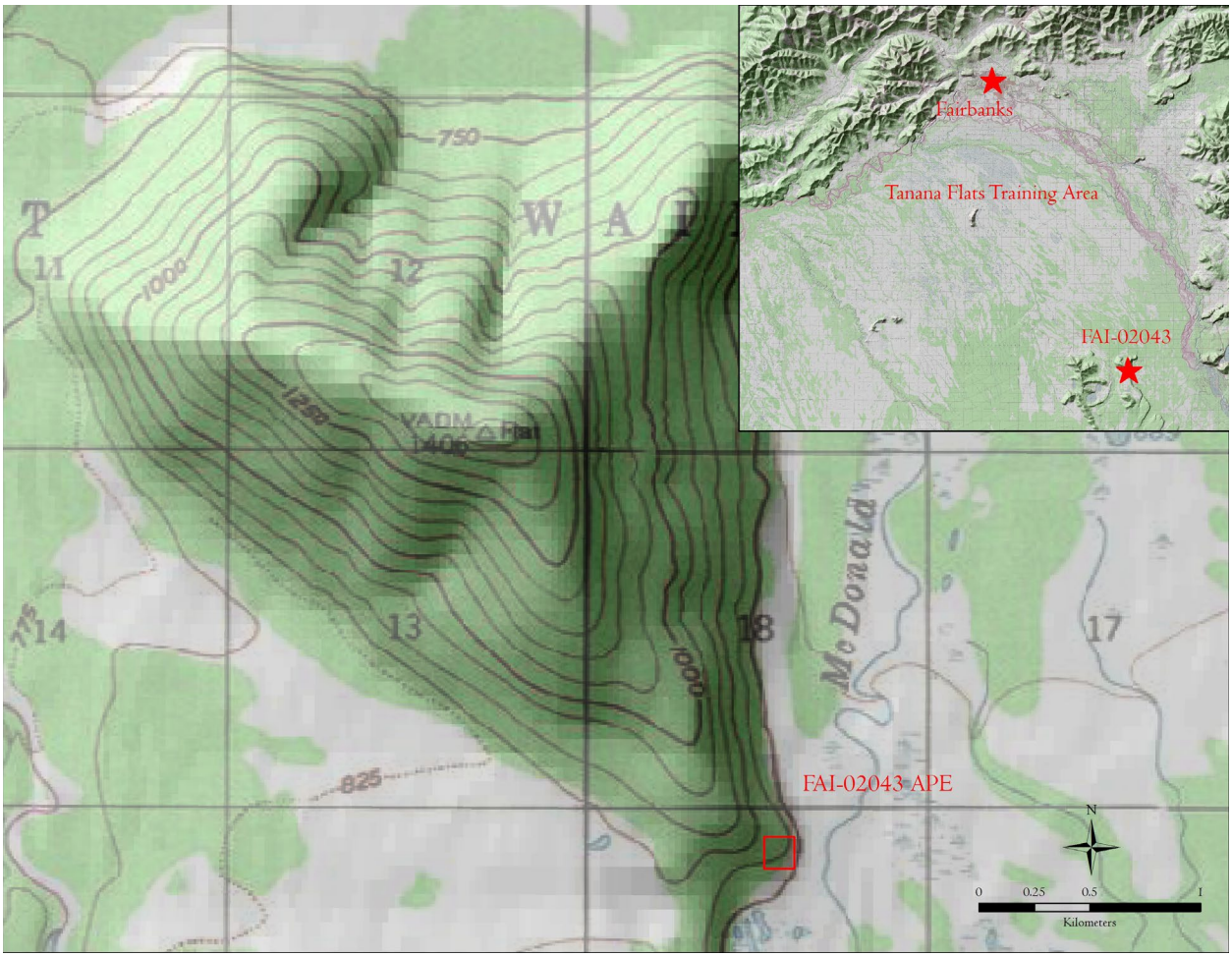
TEXAS A&M UNIVERSITY

By: _____
FRANK E. GOEBEL
Professor of Anthropology

Date: 1 July 2014

Attachment A

AREA OF POTENTIAL AFFECT FOR THE UNDERTAKING



Attachment B

RESEARCH DESIGN
(next page)

Proposal to Conduct Archaeological Testing at FAI-2043, Blair Lakes Area, Central Alaska

Ted Goebel, Texas A&M University

This proposal presents plans to excavate at the prehistoric McDonald Creek site (FAI-2043), located about 5 km east of Blair Lakes on a ridge overlooking McDonald Creek, Tanana Flats Training Area (Figure 1). The proposed project will encompass lands managed by the U.S. Army, and will provide a much-needed in-depth look at early human lifeways in the central Tanana basin. In 2013, we initiated a subsurface testing project at these sites, in conjunction with a U.S. Army/Colorado State University survey directed by Dr. Julie Esdale. In 2014 and 2015, we would like to continue this research by expanding test-pit excavations and initiating block excavations at FAI-2043. This fieldwork will provide us with a golden opportunity to learn about the geomorphology, paleoecology, and prehistory of the region, given that already we have recorded cultural occupations in stratified settings spanning the last 14,000 years. This excavation is part of a larger program of research, described below, designed to study early human lifeways and subsistence and raw material choices in central Alaska.

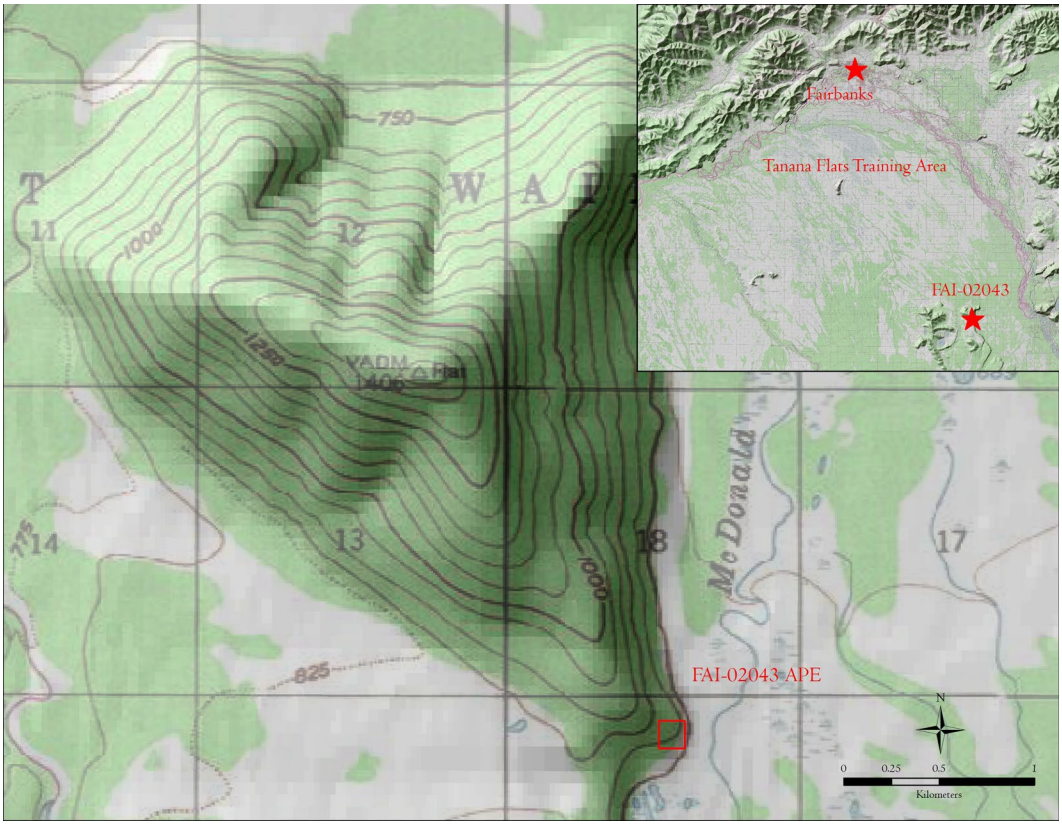


***Figure 1**. Location of FAI-2043 (McDonald Creek site) in Tanana Flats Training Area, Fort Wainwright, Alaska.*

BACKGROUND

Three major questions guiding early-period archaeology in Beringia today concern (1) the timing and ecological context of dispersal of humans across the region (whether the spread of shrub tundra during the late glacial "conditioned" human expansion and adaptation) (e.g., Guthrie 2006; Hoffecker and Elias 2007), (2) the explanation of stone-tool variability evident in the region's late-glacial assemblages (whether differences between the microblade and non-microblade industries of Beringia are culture-historical or behavioral) (e.g., Bever 2001; Goebel and Buvit 2011; Wygal 2011), and (3) the evolution of human adaptations during the terminal Pleistocene and early Holocene, specifically technological, subsistence and settlement organization (e.g., Graf and Bigelow 2011; Mason et al. 2001; Potter 2008; Potter et al. 2013). No region may be better suited for addressing these issues than the Tanana basin, where multiple eco-zones and geomorphic contexts exist that potentially contain critical information on early environmental succession, human technologies, and subsistence activities. Until now, most early-period archaeological research in central Alaska has focused on upland settings like the Nenana and Delta areas, where loess profiles typically "bottom-out" around 14,000 calendar years ago (cal BP) and harsher conditions before this date could have prevented human occupation (Dilley 1998; Hamilton and Goebel 1999). The lowlands south and west of Fairbanks may have become habitable earlier, and loess deposition likewise may have begun earlier, providing greater opportunities for the discovery of late-glacial sites. Previous work on U.S. Army lands in the Tanana flats has already shown that late Pleistocene sites exist in the region and that loess deposits and sand sheets occur in a variety of topographic settings that could potentially contain a rich late Pleistocene/early Holocene archaeological record (Esdale et al. 2012; Gaines et al. 2010). Our work at McDonald Creek in 2013 also has led to the discovery of a 14,000 cal BP occupation, a cultural component that in age rivals the earliest occupation at the Swan Point site (Holmes 2011).

Geographically, this portion of our Tanana Flats research program will focus on lands managed by the U.S. Army. Temporally, our research traditionally has focused on the early period of prehistory predating about 6000 years ago; however, with the Blair Lakes project we are expanding it to include the middle and later parts of the Holocene as well. All cultural resources encountered during our field work will be recorded and reported, no matter their age.

MCDONALD CREEK SITE (FAI-02043)

McDonald Creek is a buried, intact, archaeological site located in the Blair Lakes Region of the Tanana Flats Target Area (TFTA), Fort Wainwright, south of Fairbanks, AK (Gaines et al. 2011). The site is located [redacted] and was determined eligible for the National Register of Historic Places on September 9, 2012. Three separate components produced radiocarbon dates indicating late Pleistocene and middle Holocene occupations. Charcoal was found in association with lithic debitage in both components. Mammal bone fragments, including bison, occurred in the second-lowest component.

The site is located at the foot of a large bedrock knoll, roughly seven kilometers east of Blair Lakes (Figure 1). Site elevation is 260 masl. The vantage point provides a commanding view to the east of the flats below, the Tanana River valley and Flag Hill. The ecosystem is characterized as mixed needleleaf-broadleaf forest with an understory of young birch, some alder, shrubs and forbs. This site was identified through subsurface testing. At the time of

discovery and initial testing in 2010 (Esdale et al. 2012), 94 flakes were recovered from four of four test pits excavated. Two of these tests also yielded unidentifiable large-mammal faunal fragments. Shovel testing suggested that the site contained at least two components: one at ~0-45 cm BS, and another deeply buried in the lower loess and basal sands at 90-120 cm BS. Three of the four test pits (*Figure 2*), those nearest the edge of the landform, reached basal gravels at 100-130 cm BS, while one test pit (AT 50) was excavated to the depth possible with a shovel, terminating at 140 cm BS without finding the bottom of basal sands.

To understand the significance of the site, two square meters were excavated to a depth of about 135 cm BS (Esdale et al. 2012). A total of 14 levels were excavated, extending the excavation roughly 35 cm into the basal sands and at least 15 cm deeper than the lowest recovered artifact. Levels 1-5 of the excavation unit produced no cultural remains. Artifacts were recovered from Levels 6-13. The basal level, Level 14, was 25 cm thick and excavated into entirely sterile deposits.
Figure 3 shows the location of lithics and bone in each excavation level. A total of 1106 pieces of lithic debitage and 538 faunal fragments were recovered from the excavation unit. In addition, two cobble hammerstones, and at least four enigmatic angular rocks, likely manuports, were recovered from the lower zone of cultural material. Lithic and faunal materials were recovered from depths of 10-30 cm BS and 75 to 125 cm BS (
Figure 3).

During the 2010 exploratory testing (Esdale et al. 2012), no diagnostic artifacts were found at the site, but stone-tool-making debris was found with charcoal and large-mammal remains including bison. Test pit AT 50 provided a piece of charcoal associated with flaked stone roughly 2 cm above the loess/sand contact that dated to 12,800 cal BP (Beta-281235), demonstrating the antiquity of the lower component. Dispersed charcoal found in association with flakes in the upper component at 22 cm BS produced a date of 7,300 cal BP (Beta-283427), revealing the presence of a middle Holocene occupation. Excavation of a 1x2-m test unit also yielded numerous small stone-tool retouching debris and charcoal flecks, one of which yielded a radiocarbon date of 13,600 cal BP. The initial tests demonstrated that at least two terminal Pleistocene cultural components and additional Holocene components existed at the site (Esdale et al. 2012).

In 2013, four additional 1x1-m excavation units were opened to determine if there was enough cultural data to warrant data-recovery block excavations and to determine if the initially described late Pleistocene cultural stratigraphy and radiocarbon dates could be reproduced (*Figure 2*). In addition to confirming the context and age of the cultural components already described, an even lower component containing bifacial pressure flakes and charcoal was discovered and radiocarbon dated to 14,000 cal BP. Due to an extraordinarily large quantity of materials recovered and time constraints, however, none of the four 2013 test units were completed.

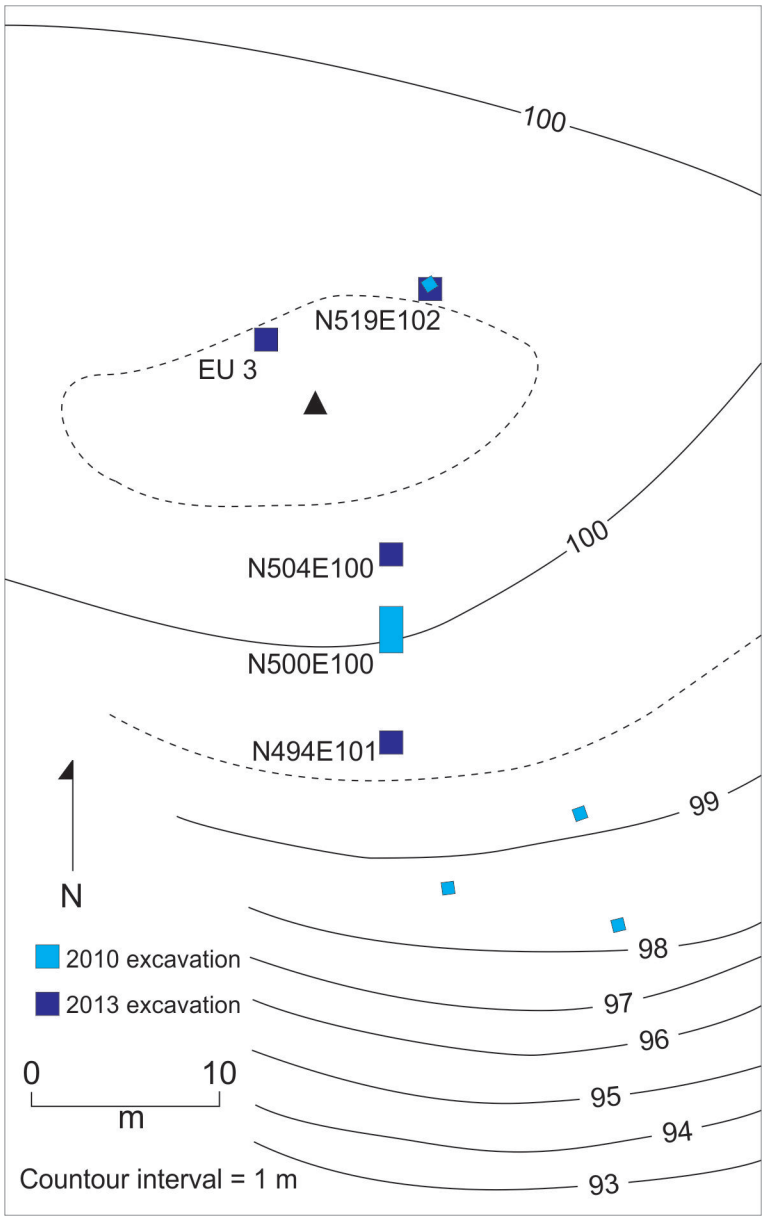


***Figure 2**. McDonald Creek site map with 2010 and 2013 test locations.*

While the recovered sample from FAI-2043 is limited thus far, several robust inferences are possible. The three recognized terminal Pleistocene cultural components span from 14,000 to 12,500 cal BP, making them coeval with terminal Pleistocene components at Upward Sun River, Broken Mammoth, Mead, Swan Point, Dry Creek, Walker Road, Owl Ridge and Moose Creek (Goebel et al. 1996; Hoffecker et al. 1993; Holmes 1996, 2001; Pearson 1999; Potter 2013; Potter et al. 2008, 2011, 2013; Yesner 1996). So far, the character of the lithic and faunal assemblages from McDonald Creek is most similar to Broken Mammoth CZ 4 and Upward Sun River C1 with abundant lithic debitage and few formal tools. The presence of large and small game and waterfowl is also very similar to the Upward Sun River C1 and Broken Mammoth CZ 4 faunal assemblages and provides further evidence of broad-spectrum hunting strategies in late

Pleistocene eastern Beringia. Long-bone breakage patterns and associated cobbles indicate marrow extraction, and the presence of waterfowl suggests an early summer to fall occupation. Needless to say, given that the site has just been initially tested, these inferences may change as test excavations continue and block excavations are eventually conducted.

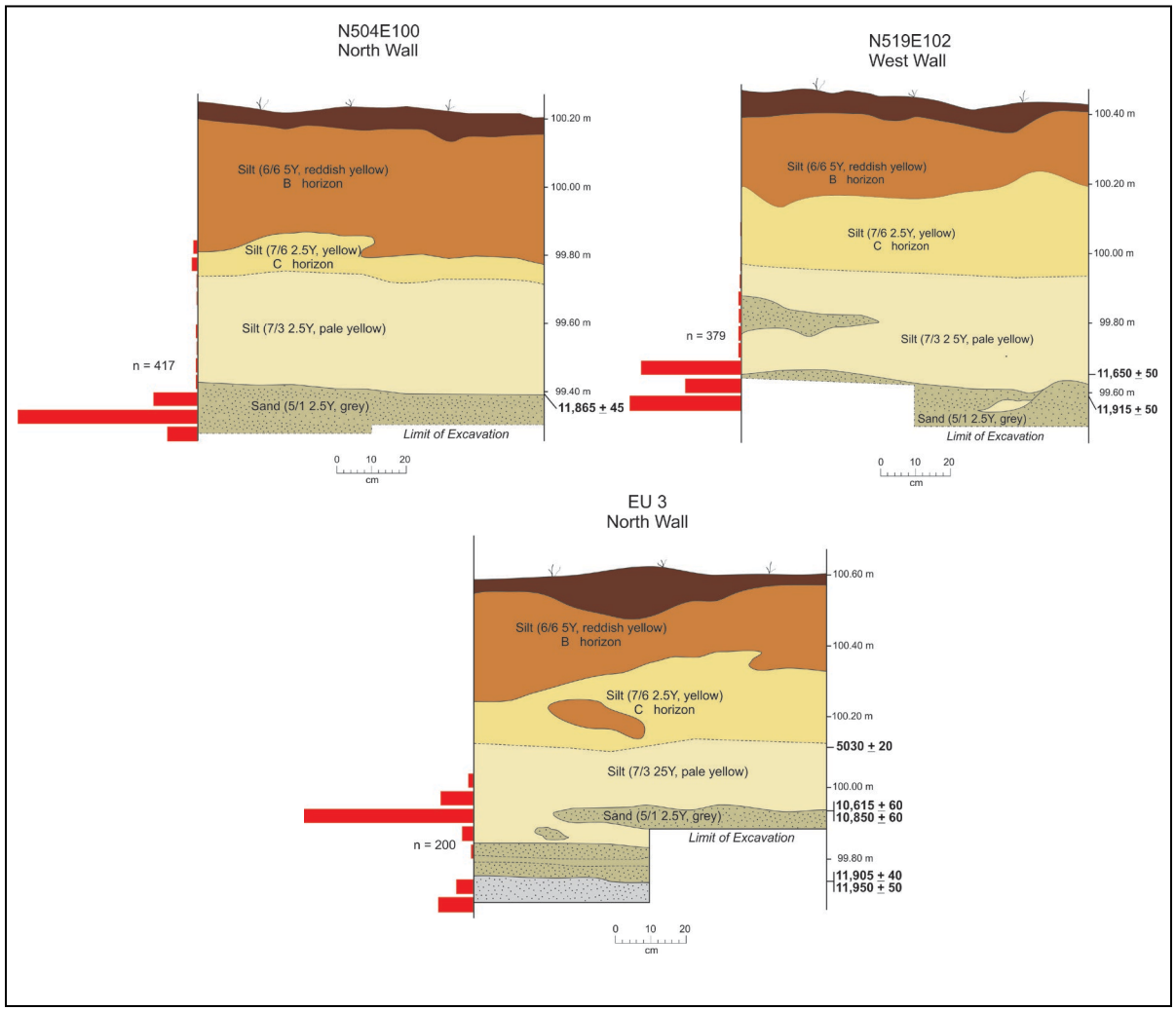


Figure 3. *Representative stratigraphic profiles from McDonald Creek, 2013.*

OBJECTIVES AND SCOPE OF WORK FOR 2014

Our specific objectives for 2014 are to undertake a systematic subsurface testing and mapping program across the extent of FAI-2043, to define the geomorphic setting of the site and the ages of its cultural components, to identify the lateral distributions of the site's various cultural components, of which already four have been discovered, to preliminarily characterize the components' artifact and ecofact assemblages, and to establish a fundable long-term research design for prehistoric archaeological studies at the site. Upon completion of systematic testing and development of a full-fledged research design, in 2015 we plan to expand block excavations in areas of artifact concentrations and features defined during 2014.

As stated above, our research is guided by three major research questions, all of which we can address through testing and excavation at McDonald Creek. These are reiterated below.

1. Paleoecological and geochronological research at McDonald Creek and the surrounding Blair Lakes area has the potential to provide important information about the timing and environmental context of initial dispersal of humans in the region. With a preliminary basal date of cultural occupation at 14,000 cal BP, the McDonald Creek record contains some of the earliest evidence of humans in the Tanana River basin, nearly as early as the evidence from the Swan Point site (Holmes 2001). Continued testing may result in even earlier evidence, given that only about 3 m^2 of the site's area have been excavated into deposits known to date to before 14,000 cal BP. Moreover, geomorphic and paleoecological research in the site vicinity will certainly help us reconstruct the physical-environmental and biotic-environmental contexts of early human settlement in the Blair Lakes area, permitting us to test the hypothesis that dispersal was tied to the spread of the shrub-tundra biome during the Allerød interstadial, as proposed by Hoffecker and Elias (2007).

2. Recovery of new artifact and ecofact assemblages from the McDonald Creek site will provide us with the materials needed to investigate the causes of stone-tool variability evident in the region's late-glacial assemblages (i.e., whether differences between oft-recognized industries of Beringia are culture-historical or behavioral). What makes McDonald Creek especially important in this regard is that it contains multiple cultural components in clearly separated stratigraphic contexts spanning from 14,000 to 12,000 cal BP and later. The accumulation and analysis of representative samples of lithic and faunal material from these components can therefore help address questions relating to diachronic change in projectile technology and the reasons for it (e.g., seasonal variation in hunting strategies, climate/environmental change, or cultural differences, just to name a few) (Goebel and Buvit 2011).

3. In addition, the recovery of new artifact and ecofact assemblages as well as the excavation of important archaeological features (e.g., hearths, pits, dwellings) at McDonald Creek can provide useful information about the evolution of human adaptations during the terminal Pleistocene and early Holocene, specifically technological, subsistence and settlement organization (e.g., Potter et al. 2013). Again, due to the multi-component nature of the site, the excellent preservation of faunal remains, and the apparent preservation of features (some containing paleobotanical remains), through testing and excavation we can accumulate the data needed to chronicle change in lithic technology/typology, subsistence, site function, and even pyrotechnology at one locality. Detailed correlation with the local and regional paleoenvironmental records can further help us explain why these changes occurred, in an evolutionary-ecological context (e.g., Aldenderfer 1998). We expect that an important component of the McDonald Creek project will be a continuation of palynological analyses of cores derived from Blair Lakes and nearby bogs.

METHODS AND ACTIVITIES FOR 2014

Surface Reconnaissance Survey and Mapping

Preliminary surface surveys have been conducted around FAI-2043, but deep loess deposits and thick vegetation have led to little success in recovering surface cultural remains. However, with a total-station theodolite, we will produce a surface-contour map of the site and will record the provenience of and collect any surface finds. A site datum has already been established on the site; all provenience data will be measured in reference to it.

Geoarchaeological Analyses

Geological work will entail a complete examination of the stratigraphy and sedimentology at FAI-2043, as well as studies of local geomorphology to determine the context and age of the site's cultural layers.

Site-Specific Studies. Geoarchaeological investigation of FAI-2043 will begin by exposing side-walls of previous test excavations. This will provide basic information about the site's sediments and stratigraphic profile, facilitating sensible excavation of 1-m^2 test units. Once test units have been excavated into sterile, Pleistocene sands, we will draw each unit's stratigraphic profile, describe in detail recognizable stratigraphic layers and deformation features, and collect sediment samples for textural and chemical analyses. We will record the position of all artifacts, cultural components, faunal remains, and other samples on stratigraphic sections, and if features are encountered, we will collect oriented samples for micromorphological analysis to better understand site formation processes. We will record data on artifact orientation (i.e., strike and dip), too. These studies will result in an understanding of the geologic history of the site (e.g., Goebel et al. 2003). From these data inferences can be made about site formation, site age, and site environment.

Areal Studies. A local geological survey will be initiated to establish the regional geomorphic context of the site in relation to other landforms in the vicinity of FAI-2043 (e.g., Buvit et al. 2003; Goebel et al. 2003). This will be achieved by first constructing a geomorphic map of the area surrounding the site with the use of aerial photography. This map will document the sequence of Quaternary landforms and exposures of pre-Quaternary bedrock. To document the character of the sediments underlying the surfaces of these landforms, natural stratigraphic exposures will be examined and recorded, and additional stratigraphic profiles will be exposed by excavating small test pits (less than 1-m^2 in size). Radiocarbon samples will be collected from these exposures to assist in developing a chronology of geologic events. This will place FAI-2043 within a regional stratigraphic framework, which ultimately will help define the origin and age of the sediments at the site. Kelly Graf and Duane Froese will direct geomorphological and geoarchaeological studies of McDonald Creek.

Excavation Methodology

In 2014, we will excavate up to 20 1-m^2 units at FAI-2043. Initially, the 1-m^2 excavation units will be placed systematically across the site as "test pits", to help determine site boundaries and to assist in defining lateral extents of the site's various cultural components. If time permits, during 2014 we will also expand a small set of excavated 1-m^2 units into 2x2-m blocks.

Excavations will proceed with trowels and by 50-cm^2 horizontal quadrants. Vertically, the excavations will follow natural stratigraphic units, and within such units we will excavate by 5-cm level. Known cultural layers will be more precisely excavated by 2.5-cm level. Every artifact and ecofact encountered *in situ* will be carefully three-point provenienced with a total-station theodolite. All excavated sediments will be screened through 1/8" mesh. Cryogenic and biogenic disturbances will be fully documented, and stratigraphic contexts and orientations (strike, dip) of all materials recovered *in situ* will be recorded. Features encountered will be carefully documented with digital photography and precise hand-drawn maps. Complete (100%) samples of feature fill will be collected from features for careful water screening and laboratory analyses.

Collections
We will collect stone artifacts, paleobotanical samples (e.g., charcoal), sediment samples, and faunal samples (e.g., animal bones and teeth) from excavations. In addition, we will collect any lithic artifacts encountered from the surface of the site, unless instructed not to.

All materials collected during the 2014 excavation will be cataloged and preliminarily analyzed at the archaeological laboratories of the Center for the Study of the First Americans, Texas A&M University. Some materials (e.g., obsidian artifacts, charcoal samples, sediment samples, unique faunal remains) will be sent to specialists for more detailed analyses. Upon completion of the project, all collected materials and archives will be turned over to the U.S. Army/CSU CEMML) for permanent curation at the University of Alaska Museum of the North in Fairbanks. In 2014, we anticipate collecting no more than two or three regular-sized banker's boxes of material.

Destructive Analyses
No artifacts will be analyzed in a way that is destructive; however, radiocarbon dating of a limited sample of charcoal and bone will be subjected to radiocarbon analysis, which is destructive. However, in all of these cases, we will strive to sacrifice only small portions of samples, retaining voucher samples for later analysis. Sediment analyses will be destructive of sediment samples, but again we will attempt to conserve vouchers of these for later use.

Geochronological Analyses
Charcoal and bone samples will be collected from entire profiles for AMS ^{14}C analysis to determine the age(s) of the cultural layer(s) and test for potential mixing of strata. These samples will be taken from clearly defined contexts (e.g., hearths) in our excavations, or from cleaned and described stratigraphic profiles. Charcoal samples will be prepared by physically separating datable material from rootlets and other modern contaminants, and pretreating with hydrochloric acid and sodium hydroxide to remove carbonates, humic acids and fulvic acids (e.g., Goebel et al. 2003). Bone samples will be purified with XAD-2 resin to purify bone collagen of humates and other organic contaminants (e.g., Waters and Stafford 2007). Sediment samples for IRSL dating will also be collected systematically from entire profiles, to complement radiocarbon dating and to facilitate development of a luminescence record of eolian deposition in central Alaska (e.g., Balescu and Lamothe 1994). Kelly Graf and Ted Goebel will direct geochronological analyses of the site's deposits and features; radiocarbon studies will be accomplished through Doug Kennett at Pennsylvania State University; luminescence studies will be accomplished by Michel Lamothe, University of Montreal.

Lithic Analyses
All tools and debitage discovered during excavation will undergo a technological analysis to determine the types of production sequences and activities taking place at the site. In addition, raw material analyses will attempt to source the stone used and identify minimum analytical units (e.g., Esdale 2009; Goebel 2011; Graf and Goebel 2009; Rasic 2011), and use-wear analyses will attempt to define the functions of stone artifacts. Ted Goebel and Julie Esdale will direct the analyses of lithic artifacts recovered from McDonald Creek.

Faunal Analyses
All faunal remains will be studied in detail to determine the types of animal species present as well as the types of butchering and processing activities that are represented at the site (Grayson 1984; Reitz and Wing 1999). Melissa Mueller, a PhD student at Texas A&M University, will develop a dissertation project related to the analysis of faunal remains recovered from McDonald Creek.

Feature Analyses
Contents of all hearth features and other features will be collected completely for paleobotanical, phytolith and pyrotechnological analyses (e.g. Kedrowski et al. 2009; Théry-Parisot and Henry 2012). Dr. Aureade Henry of the University of Nice, France, will direct this component of the project.

Paleoenvironmental Studies
Dr. Nancy Bigelow has already initiated a detailed pollen analysis of the Blair Lakes area, drawing cores from the bottom of Blair Lake South during the Spring of 2014. We expect that during upcoming summers she will also core bogs in the area surrounding FAI-2043, to determine whether a local pollen record is also preserved in these contexts. Detailed pollen analyses of the Blair Lakes and local bog cores will provide the precise record of vegetation change during the terminal Pleistocene and early Holocene, so that changes in the archaeological record can be firmly placed in a local and regional environmental context (e.g., Bigelow and Edwards 2001).

Data interpretation and Dissemination of Results
Data will be synthesized in a final report as stipulated in the ARPA permit. Results of this research will also be disseminated in conference presentations and scholarly articles.

Staffing, Equipment and Logistics
This work will take place under the direction of the Principal Investigator, Ted Goebel, Ph.D., and with assistance from colleagues (Kelly Graf, Ph.D.; Julie Esdale, Ph.D.; Duane Froese, Ph.D.; Michel Lamothe, Ph.D.; Nancy Bigelow, Ph.D.; Aureade Henry, Ph.D.), graduate students from Texas A&M University (Melissa Mueller, Angela Gore, and Josh Lynch) as well as Texas A&M University undergraduate assistants, and Colorado State University's Center for the Environmental Management of Military Lands field crews at Fort Wainwright. The Principal Investigator, who meets the Secretary of the Interior's professional qualification standards for an archaeologist, will be on site during the entire excavation.

All equipment including a total station, field screens, and excavation equipment and materials will be provided by Texas A&M University. The site will be accessed by helicopter from Fairbanks. Julie Esdale, Fort Wainwright archaeologist, will provide administrative support for accessing Army Training Lands.

References Cited

Aldenderfer, M. S. (1998) *Montane Foragers: Asana and the south-central Andean Archaic*. University of Iowa Press, Iowa City.

Balescu, S., and M. Lamothe (1994) Comparison of TL and IRSL age estimates of feldspar coarse grains from waterlain sediments. *Quaternary Science Reviews* 13.5:437-444.

Bever, M. R. (2001) An overview of Alaskan late Pleistocene archaeology: historical themes and current perspectives. *Journal of World Prehistory* 15:125-191.

Bigelow, N. H., and M. E. Edwards (2001) A 14,000 yr paleoenvironmental record from Windmill Lake, Central Alaska: Lateglacial and Holocene vegetation in the Alaska range. *Quaternary Science Reviews* 20:203-215.

Buvit, I., M. R. Waters and M. V. Konstantinov (2003) Geoarchaeological investigations at Studenoe, an Upper Paleolithic site in the Transbaikal region, Russia. *Geoarchaeology* 18:649-673.

Dilley, T. E. (1998) *Loess Stratigraphy, Soils and Environments of the Shaw Creek Flats Paleoindian Sites, Tanana Valley, Alaska*. Ph.D. dissertation, Department of Geosciences, University of Arizona, Tucson.

Esdale, J. A. (2009) *Lithic Production Sequences and Toolkit Variability: Examples from the Middle Holocene, Northwest Alaska*. Ph.D. dissertation, Department of Anthropology, Brown University, Providence.

Esdale, J. A., E. P. Gaines, K. S. Yeske, W. E. McLaren, M. Shimel and J. F. Kunesh (2012) *Section 110 Report: Cultural Resources Survey and Evaluation, Fort Wainwright and Training Lands 2010 and 2011*.

Gaines, E. P., K. S. Yeske and S. JU. McGowan (2010) *Annual Report: Cultural Resources Survey and Evaluation, Fort Wainwright, Alaska 2009*.

Gaines, E. P., K. S. Yeske, S. J. Shirar, W. C. Johnson and J. F. Kunesh (2011) Pleistocene archaeology of the Tanana Flats, eastern Beringia. *Current Research in the Pleistocene* 28:42-44.

Goebel, T. (2011) What is the Nenana complex? Raw material procurement and technological organization at Walker Road, central Alaska. In *From the Yenisei to the Yukon: Interpreting Lithic Assemblage Variability in Late Pleistocene/Early Holocene Beringia*, edited by T. Goebel and I. Buvit, pp. 199-214. Texas A&M University Press, College Station.

Goebel, T., and I. Buvit (2011) Introducing the archaeological record of Beringia. In *From the Yenisei to the Yukon: Interpreting Lithic Assemblage Variability in Late Pleistocene/Early Holocene Beringia*, edited by T. Goebel and I. Buvit, pp. 1-32. Texas A&M University Press, College Station.

Goebel, T., W. R. Powers, N. H. Bigelow and A. S. Higgs (1996) Walker Road. In *American Beginnings: the Prehistory and Palaeoecology of Beringia*, edited by F. H. West, pp. 356-363. University of Chicago Press, Chicago.

Goebel, T., M. R. Waters and M. Dikova (2003) The archaeology of Ushki Lake, Kamchatka, and the Pleistocene peopling of the Americas. *Science* 501-505.

Graf, K. E., and N. H. Bigelow (2011) Human response to climate during the Younger Dryas chronozone in central Alaska. *Quaternary International* 272:434-451.

Graf, K. E., and T. Goebel (2009) Upper Paleolithic toolstone procurement and selection across Beringia. In *Lithic Materials and Paleolithic Societies*, edited by B. Adams and B. S. Blades, pp. 55-77. Blackwell, Oxford.

Grayson, D. K. (1984) *Quantitative Zooarchaeology: Topics in the Analysis of Archaeological Faunas*. Academic Press, New York.

Guthrie, R. D. (2006) New carbon dates link climatic change with human colonization and Pleistocene extinctions. *Nature* 441:207-209.

Hamilton, T. D., and T. Goebel (1999) Late Pleistocene peopling of Alaska. In *Ice Age Paeoples of North America: Environments, Origins, and Adaptations*, edited by R. Bonnichsen and K. L. Turnmire, pp. 156-199. Oregon State University Press, Corvallis.

Hoffecker, J. F., and S. A. Elias (2007) *Human Ecology of Beringia*. Columbia University Press, New York.

Hoffecker, J. F., W. R. Powers and T. Goebel (1993) The colonization of Beringia and the peopling of the New World. *Science* 259:46-53.

Holmes, C. E. (1996) Broken Mammoth. In *American Beginnings: the Prehistory and Palaeoecology of Beringia*, edited by F. H. West, pp. 312-318. University of Chicago Press, Chicago.

Holmes, C. E. (2001) Tanana River valley archaeology circa 14,000 to 9000 BP. *Arctic Anthropology* 38(2):154-170.

Holmes, C. E. (2011) The Beringian and Transitional periods in Alaska: technology of the East Beringian tradition as viewed from Swan Point. In *From the Yenisei to the Yukon: Interpreting Lithic Assemblage Variability in Late Pleistocene/Early Holocene Beringia*, edited by T. Goebel and I. Buvit, pp. 179-91. Texas A&M University Press, College Station.

Kedrowski, B. L., B. A. Crass, J. A. Behm, J. C. Luetke, A. L. Nichol, A. M. Moreck and C. E. Holmes (2009) GC-MS analysis of fatty acids from ancient hearth residues at the Swan Point archaeological site. *Archaeometry* 51:110-122.

Mason, O. K., P. M. Bowers and D. M. Hopkins (2001) The early Holocene Milankovitch thermal maximum and humans: adverse conditions for the Denali complex of eastern Beringia. *Quaternary Science Reviews* 20:525-548.

Pearson, G. A. (1999) Early occupations and cultural sequence at Moose Creek: a late Pleistocene site in central Alaska. *Arctic* 52:332-345.

Potter, B. A. (2008) Radiocarbon chronology of central Alaska: technological continuity and economic change. *Radiocarbon* 50(2):181-204.

Potter, B. A., J. D. Reuther, P. M. Bowers and C. Gelvin-Reymiller (2008) Little Delta Dune site: a late Pleistocene multicomponent site in central Alaska. *Current Research in the Pleistocene* 25:94-97.

Potter, B. A., J. D. Irish, J. D. Reuther, C. Gelvin-Reymiller and V. T. Holliday (2011) A terminal Pleistocene child cremation and residential structure from eastern Beringia. *Science* 331:1058-1062.

Potter, B. A., C. E. Holmes and D. R. Yesner (2013) Technology and economy among the earliest prehistoric foragers in interior eastern Beringia. In *Paleoamerican Odyssey*, edited by K. E. Graf, C. V. Ketron and M. R. Waters, pp., 81-103. Center for the Study of the First Americans, Texas A&M University Press, College Station.

Rasic, J. T. (2011) Functional variability in the late Pleistocene archaeological record of eastern Beringia: a model of late Pleistocene land use and technology from northwest Alaska. In *From the Yenisei to the Yukon: Interpreting Lithic Assemblage Variability in Late Pleistocene/Early Holocene Beringia*, edited by T. Goebel and I. Buvit, pp. 128-164. Texas A&M University Press, College Station.

Reitz, E. J., and E. S. Wing (1999) *Zooarchaeology: Cambridge Manuals in Archaeology*. Cambridge University Press, Cambridge.

Théry-Parisot, I., and A. Henry (2012) Seasoned or green? Radial cracks analysis as a method for identifying the use of green wood as fuel in archaeological charcoal. *Journal of Archaeological Science* 39:381-388.

Waters, M. R., and T. W. Stafford (2007) Redefining the age of Clovis: implications for the peopling of the Americas. *Science* 315:1122-1126.

Wygal, B. T. (2011) The microblade/non-microblade dichotomy: climatic implications, toolkit variability, and the role of tiny tools in eastern Beirngia. In *From the Yenisei to the Yukon: Interpreting Lithic Assemblage Variability in Late Pleistocene/Early Holocene Beringia*, edited by T. Goebel and I. Buvit, pp. 234-254. Texas A&M University Press, College Station.

Yesner, D. R. (1996) Human adaptation at the Pleistocene-Holocene boundary (ca 13,000 to 8,000 BP) in eastern Beringia. In *Humans at the End of the Ice Age: The Archaeology of the Pleistocene-Holocene Transition*, edited by L. G. Straus, B. V. Eriksen, J. M. Erlandson and D. R. Yesner, pp. 255-276. Plenum Press, New York.

Attachment C

POST REVIEW AND UNANTICIPATED DISCOVERIES PLAN

A. In the course of conducting approved activities, the Army shall not intentionally or knowingly affect (such as remove, disturb, or cause to be removed or disturbed) any historic properties outside the approved scope of work.

B. In the event that a previously unidentified archaeological site is discovered during the execution of this undertaking, all ground disturbing activity shall immediately cease in the area of the discovery until the Army archaeologist or other Army personnel who meet *The Secretary of the Interior's Professional Qualification Standards for Archeologists* can evaluate the archaeological site. Excavation may continue in the project area outside the archaeological resource area. The Army shall notify the SHPO and appropriate Alaska Native tribes within 3 business days of discovery. The Army shall ensure that any archaeological work that may be necessary shall be completed in accordance with the NHPA and the Archaeological Resources Protection Act. The SHPO and/or the Alaska Native tribes, if they so request, may immediately inspect the work site to determine the nature and area of the affected archaeological site. Within 10 business days of the original notification of the discovery, the Army, in consultation with the SHPO and interested Alaska Native tribes, will determine the National Register eligibility of the resource and will propose action to resolve possible adverse effects to any affected National Register-eligible archaeological sites. Work may resume in affected areas after approval by the Army Cultural Resources Manager and the SHPO.

C. If human remains are inadvertently discovered; the Army shall notify the SHPO within 24 hours of discovery. The Army shall cease all work by their contractors and ensure that the remains are secured from further disturbance or vandalism until after the appropriate law enforcement authorities have ensured that the remains are not related to any crime, and until a plan for treatment has been developed. If the Army determines that the remains are Native American, the Garrison Commander shall immediately undertake any actions necessary under the Native American Graves Protection and Repatriation Act, as amended. If the Army determines that the remains are not Native American, and do not warrant criminal investigation, the Army shall immediately notify the SHPO and consult with the SHPO to identify descendants or other interested parties, if any. The Army, in consultation with the SHPO and any interested parties, shall develop a plan for the respectful treatment and disposition of the remains. Work may resume in affected areas after approval by the Army Cultural Resources Manager and the SHPO.

D. If during the course of the undertaking there are any unforeseen or unanticipated effects to historic properties other than the identification of a previously unknown archaeological site, the Army shall initiate consultation pursuant to 36 C.F.R. § 800.13(b)(3) to resolve the unforeseen effects.