EXCAVATIONS AT THE LITTLE JOHN SITE (KdVo-6)

A Summary Report Submitted To

The White River First Nation
Yukon Government - Heritage Branch
Government of Canada - Archaeological Survey of Canada
(Permit #'s 03-5ASR, 04-10ASR, 06)
Northern Research Institute - Yukon College

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ACKNOWLEDGEMENTS

The Little John site was first identified to me by the late Mrs. Bessie John and her brother Mr. Joseph Tommy Johnny, children of Little John. Financial and logistical support for the excavations at the Little John site and subsequent analysis has been received from the White River First Nation of Beaver Creek, Yukon, the Arts and Science Division and The Northern Research Institute of Yukon College, the Tanana Chief's Conference, Fairbanks, AK, the Tetlin National Wildlife Refuge, US Department of the Interior, and the Heritage Resources Board of Yukon. Peter Schnurr, Ken Hermanson, Duncan Armitage, Arthur McMaster, Patricia Young, Camille Sanford, Eldred Johnny, and Derrick Peters (the latter two both grandsons of Little John) have all provided extensive volunteer field assistance over the years of excavation. Grant Lowey, Charlie Roots, Tammy Allen, and Steve Isreal of the Yukon Geological Survey, Yukon Territorial Government, Whitehorse, identified the lithology of the artifacts. Excavations in 2003 were supported by the Yukon College Field School in Subarctic Archaeology and Ethnography, while those in 2005 by the Community Development Fund of the Yukon Government and youth workers of the White River First Nation. Roy Carlson, James Dixon, Robert Satler, and Greg Hare have all provided informed discussion to our understanding of the site, for which we are grateful. The artifact drawings are by Reta Postoloski and Kawina Robichaud, with assistance from Celeste Whalen.

<u>Cover Photo</u>

Trail Survey Crew, 2007. Left to Right: Patrick Johnny, Glen Stephens, Kaz Kuba, Carol Burns, Victor Sam, Derrick Peters, Camille Sanford, Patricia Young, Paul Nadasdy.

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INTRODUCTION

The Little John site (Borden site # KdVo-6) was first tested in 2002 during field survey associated with Easton's long-term Scottie Creek Culture History Project. Begun in 1992, this project combines archaeological and ethnographic documentation of the region about the Yukon – Alaska borderlands in the region of the Alaska Highway. Undertaken in collaboration with the White River First Nation of Yukon and the Alaska Native Village Councils of Northway, Tetlin, and Tanacross, this interdisciplinary effort seeks to build a comprehensive appreciation of the prehistoric archaeology, cultural geography, and social history of the upper Tanana and White River basins, an area traditionally occupied by *Dineh* speaking the Athapaskan language of Upper Tanana.

The site lies on a knoll overlooking the upper Mirror Creek valley. In the local Scottie Creek dialect of the Upper Tanana *Dineh* language this geographic location is known as *Haah Tu Taiy* (roughly "trail at the end of the hill"). After recognition of its significance and consultation with the White River First Nation, it was named the Little John site in 2006 after *Klaa Dii Cheeg* / his hand drops /, called in English White River Johnny, and known affectionately as "Little John", a respected ancestor of many of the contemporary members of the White River First Nation; like his ancestors before him, Little John often used the location as a hunting camp and lookout until his death in 1984, a practice continued by his descendents today.

Following controlled area excavations undertaken here in 2003, 2004, and 2006, it is now clear that this multi-component site contains evidence of use from the most recent past back to the Pleistocene Transition. The earliest, but undated, identified component represents the first unequivocal identification of a Nenana complex assemblage within a stratified context to be found in Canada. A subsequent dated Late Glacial component, which we currently relate to the Denali complex, overlies the Nenana material and has been dated by AMS methods to circa 9,500 radiocarbon years before present (2 ∂ calibrated results range from Cal BP 11090 - 10690).[1] Additional Holocene assemblages suggest occupations by the Little Arm Phase of post-glacial Yukon, the Northern Archaic Tradition (or Taye Lake phase) of mid-holocene age until the White River volcanic

[1] In this paper we present most dates as radio-carbon years before present (indicated by DATE BP); calibrated dates are indicated by Cal BP.

eruption, c. 1,900 – 1,200 years ago, the Late Prehistoric Period (or Aishihik phase) which post-dates this eruption, the Transitional Contact Period (Bennett Lake phase), and the Historic (20th century) Period, which includes occupation of the site by non-native builders of the Alaska Highway. An eighth component might be identified as the Contemporary, as the site is still used today by the local aboriginal *Dineh* as a hunting lookout and campsite.

As such, it is a remarkable site worthy of further investigation. This report will summarize work at the Little John site to date.

Figure 1. Upper Tanana Student Excavators, Little John Site, 2007.

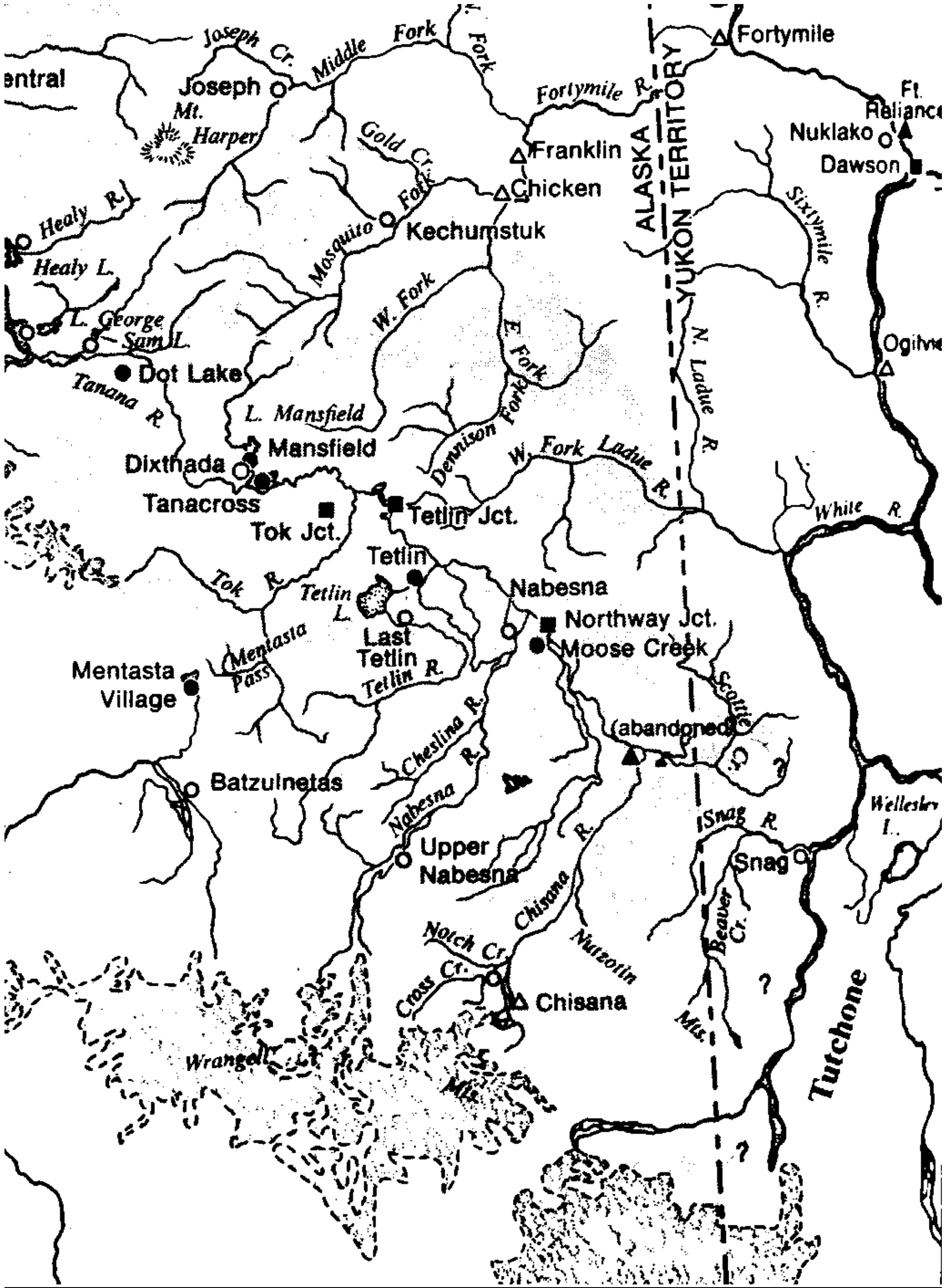

Figure 2. Historic Distribution of Upper Tanana *Dineh*.
(Source: McKennan 1981)

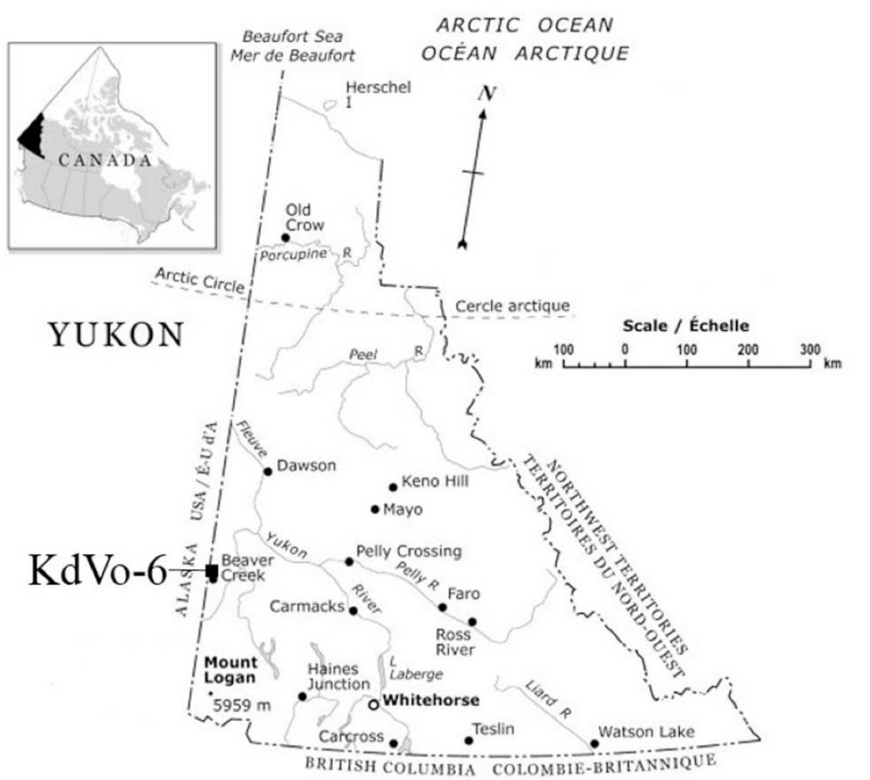

Figure 3. General Location of the Little John Site, Yukon Territory, Canada

LOCATION

The Little John site is located just off the Alaska Highway, twelve kilometers north of the village of Beaver Creek, Yukon, about two kilometers from the international border with Alaska. It occupies most of the higher surface of a knoll overlooking the upper reach of Mirror Creek, known as *Cheejil Niik* / Grayling Creek / in the local Upper Tanana Athapaskan language. It overlooks the basin of the creek below from the north and lies within the most western extension of the Tanana River drainage; Snag Creek crosses the valley about seven kilometers east of the site, marking the watershed division between the Tanana and Yukon River drainage basins.

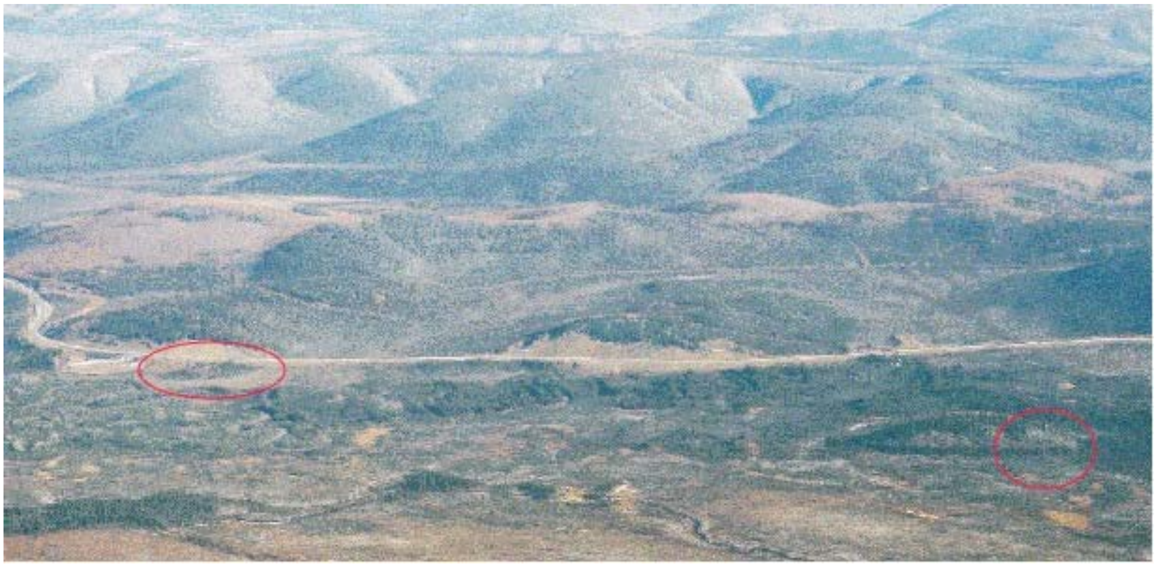

Figure 4. Aerial view of the Little John Site from the South.
KdVo-6 on left, KdVo-7 on right. Mirror Creek can be seen in the foreground, the Alaska Highway running across the centre, and Little Scottie Creek valley behind.

Figure 5. Aerial view of the Little John site from the West.

Figure 6. Aerial view of the Little John site from the Southwest

HISTORY AND METHODS OF INVESTIGATION

Although the Little John site lies within the Alaska Highway corridor its archaeological deposits were not discovered until 2002, during regional survey efforts. In that year, plans to work further up the Scottie Creek valley were delayed and several test pits were dug at the location on the recommendation of Joseph Tommy Johnny.[3] The results of these tests indicated mid-holocene (Northern Archaic) to historic occupation of the site. In 2003, an additional 61 test pits were dug across the hillside and 22 m^2 of the site were excavated by natural levels by the Yukon College Field School in Subarctic Archaeology and Ethnography.[4] Thirteen of these units were in the West lobe, four in the Rockfall lobe, one in the East lobe, and the remainder scattered along the periphery of the site. These efforts recovered Nenana complex artifacts from the West lobe, underlying a microblade bearing horizon, identified the presence of a paleosol containing fauna and artifacts in the

[3] Directed by Easton, crew members consisted of Glen MacKay, Ken Hermanson, Duncan Armitage, and Joseph Tommy Johnny.
[4] Directed by Easton, crew members consisted of Glen MacKay, Ken Hermanson, Christopher Baker, Jolene Johnny, Terrance Sam, Peter Schnurr, Nicole Schiffart, Michael Nieman, Mellissa Winters, Eldred Johnny, and Vance Hutchinson.

East lobe, expanded the assemblage related to the mid-holocene Northern Archaic, and identified a military presence on the site, likely during the building of the Alaska highway. In 2004, nine m^2 were excavated contiguous to the first unit in the East lobe, while an additional six m^2 were excavated in the West lobe; a five meter trench was also begun in the Permafrost lobe of the site.[5] Finally, in 2006, with support of the White River First Nation and the Tanana Chief's Conference, 14 m^2 were excavated in the East lobe.[6] The maps below illustrate the relative locations of test pits and excavation units.

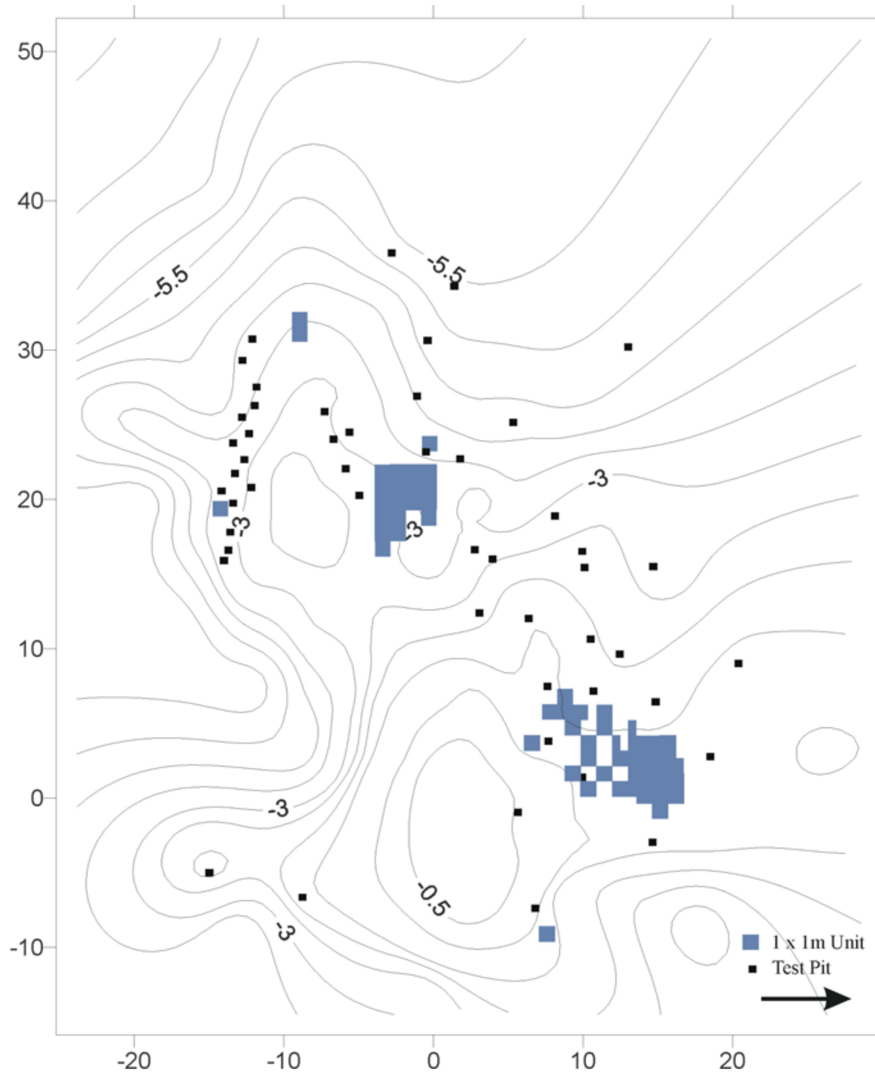

Figure 7. Location of Test Pit and Excavation Units at the Little John Site, 2002-2006

[5] Directed by Easton, crew members consisted of Glen MacKay, Arthur McMaster, Paul Nadasdy, Eldred Johnny, and Joseph Graham.
[6] Directed by Easton, crew members consisted of Patricia Young, Camille Sanford, Glen MacKay, Eldred Johnny, Derrick Peters, David Johnny jr., Nicolas Sam, Peter Schnurr, Kathy Lowe, and Patrick Johnny.

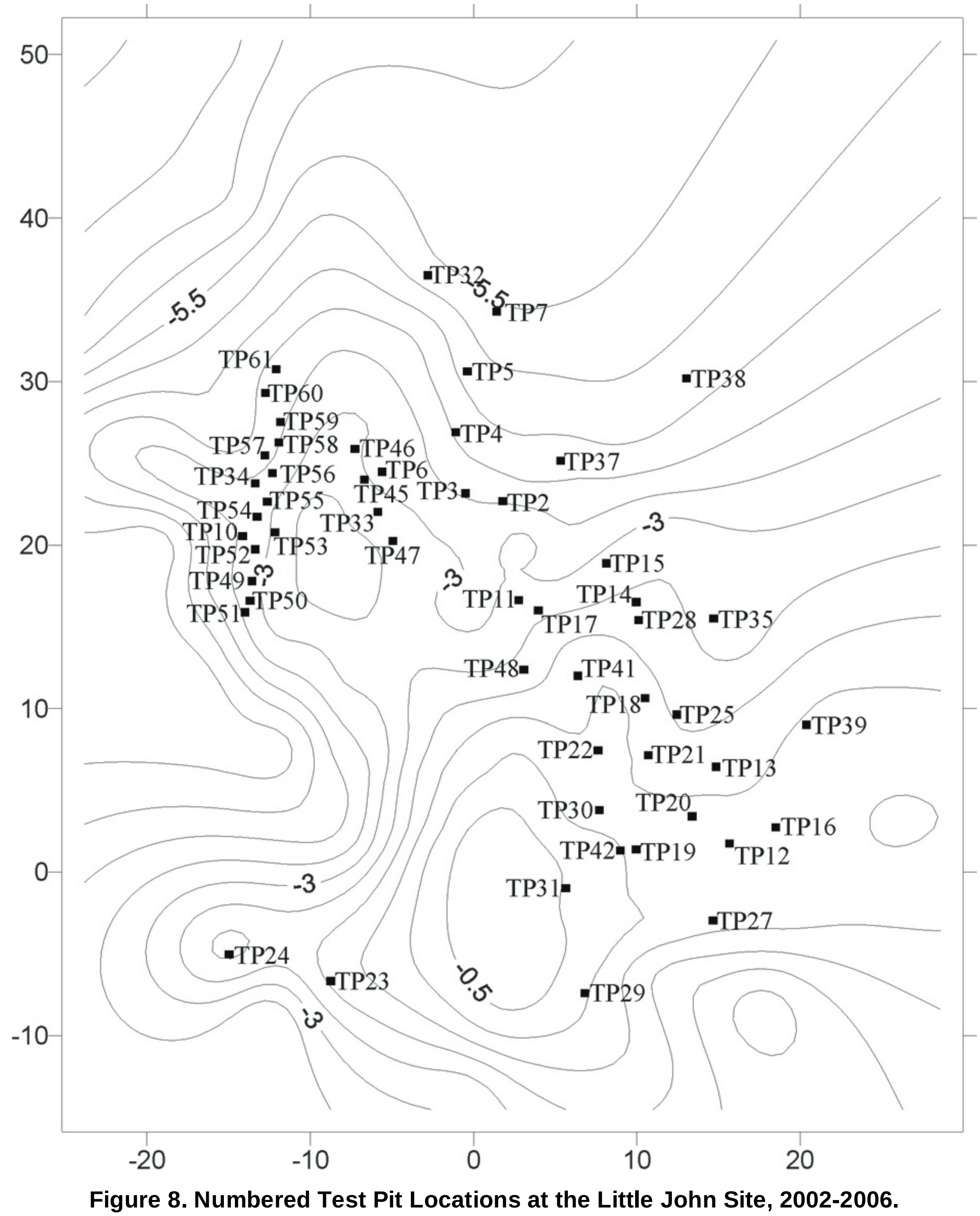

Figure 8. Numbered Test Pit Locations at the Little John Site, 2002-2006.

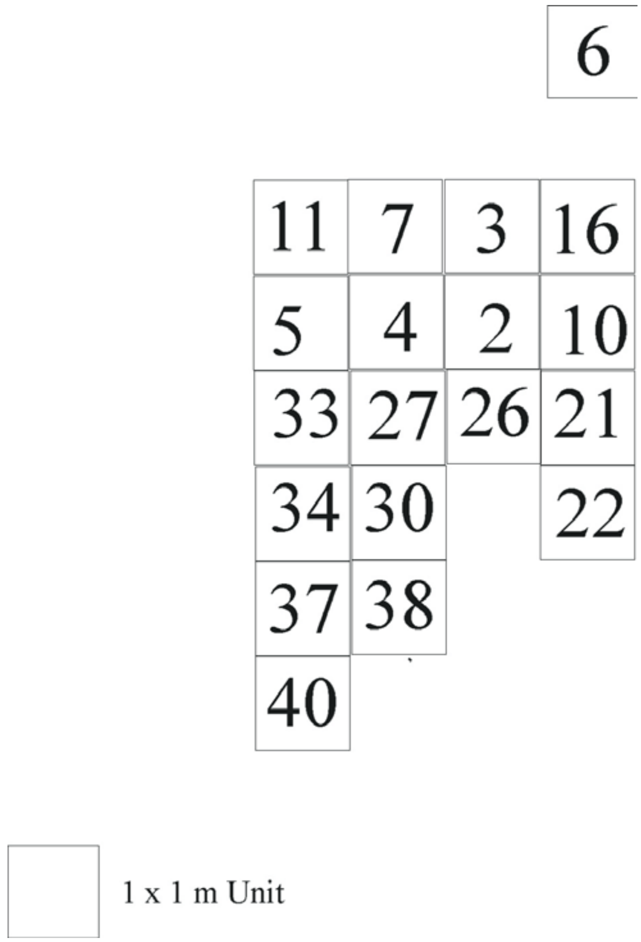

Figure 9. Detail of West Lobe Excavation Units.

Test pits were excavated by shovels of 20 cm width. All 1 m^2 excavation units were excavated by trowel within unit quadrants by the natural layers identified in the site stratigraphy noted earlier. The majority of test and excavation units had at least one side profiled; many excavation units had two or more. Recovered artifacts and fauna were recorded by three-dimensional provenience to the surface of the unit, unless they were recovered in the excavation screen, in which case their provenience was recorded by natural level and unit quadrant. Electronic Appendices provide catalogues of recovered artifacts and inventoried recovered fauna. Photographs of representative strata, features, and artifacts *in situ* were regularly taken. A representative selection of these photographs is presented in this report and digital copies of additional photos are provided in the Electronic Appendix. Finally, representative sediment samples and potential radiocarbon samples have been collected and archived; a number of these have received further analysis, as discussed later in this report.

A cartographic survey of the site was conducted in 2003 using theodolite and vertical measuring rod and unit excavations plotted according to their field unit numbers, which were simply assigned by their sequence of excavation (i.e., 1, 2, 3, …). In 2006, it was decided to recalibrate the site excavations to a grid datum dividing the site into compass quadrants, aligning the north-south axis with the eastern edge of the current extent of excavations in the East lobe. This required establishing a new grid datum 1.3 meters west of the original map datum; as a result the new one meter site grid overlaps the previous one by c. 50 cm. Both datums are physically comprised of a one meter iron rebar hammered flush with the ground surface at the highest portion of the site.

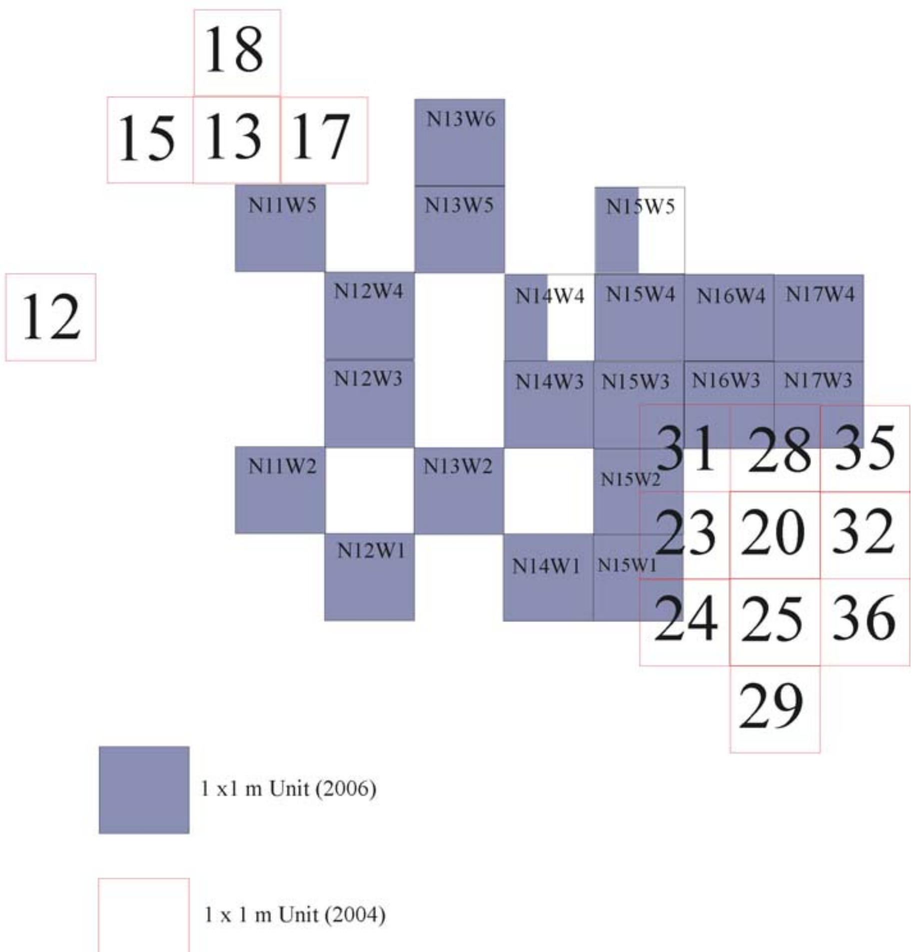

Figure 10. East Lobe Excavation Units, illustrating the two grid systems.

A full total station digital survey of the site is planned for 2007 which will integrate the two different methods of excavation unit designation into a single comprehensive site plan based on the 2006 compass quadrants. Since this no excavation units were undertaken in the West lobe in 2006 it is currently only applicable to the East lobe. The figure above illustrates the distribution of the East lobe excavation units under the two grid systems.

Subsequent to field recovery, artifacts and faunal remains have been curated at the Arts and Sciences Division at Yukon College, where they have been catalogued by unique site numbers, along with recovery provenience and additional descriptive characteristics.

Formed artifacts and modified flakes have received metric and character (form, raw material, flake or modification location, among others) descriptions, using the categories established by the Yukon Heritage Branch artifact database forms which use the FileMaker computer program. Major formed artifacts have been photographed and/or drawn. Unmodified flakes and manuports have also been described more basically; smaller unmodified flakes are described by lot, for example. The Electronic Appendices provide a full listing of these derived data.

In addition to basic cataloguing, faunal material recovered through 2004 has been identified to genus and species to the extent possible through comparison with known skeletal remains held by a variety of sources, including the Yukon Heritage Branch, standard published skeletal guides, and consultations with colleagues.[7] An initial identification of fauna recovered in 2006 has been completed based on previous identification efforts; detailed further comparative identification with known skeletal material remains to be done. A set of Electronic Appendices provide a full listing of these derived data.

Structure, texture, and composition of representative sediments from both the West and the East lobe have been described and analyzed. These data are presented in detail below in the section on Site Stratigraphy.

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[7] These colleagues have included Paul Mateus, Vance Hutchinson, David Yesner, Scott Gilbert, David Mossop, and Greg Hare.

Five AMS radiocarbon dates have been returned on nine samples submitted to the Beta-Analytic laboratory in Florida; one bone sample had insufficient collagen to allow dating, while three others are currently being analyzed.

Detailed distributional analysis of several representative units has been undertaken, while more limited distributional analysis of recovered artifacts has been undertaken across all of the site, based on recovered level, raw material, artifact type. The results of these analyses are presented below.

A series of conference and published presentations of work at the Little John site has allowed for broader public education and more focused peer review of the excavations to date. These have included an eight-part series in the Yukon News covering the 2003 excavations (Easton 2003), presentations at meetings of the Alaska Anthropology Association meetings and the Arctic Sciences Conference of the American Association for the Advancement of Science (Easton, et. al. 2004, Easton 2005, Easton, et al. 2007a, Hutchinson, et al. 2007), and accepted publications in the journal *Current Research in the Pleistocene* (Easton, et al. 2007b) and a forthcoming volume on projectile point sequences in the North American northwest edited by Roy Carlson (Easton and MacKay 2007b). A short public interpretation document is in preparation by Easton for the White River First Nation for distribution in 2007. As a result of this exposure, the significance of the Little John site is being recognized within the discipline. A description of results through 2005 is included in the most recent summary of early western subarctic prehistory (Hoeffecker and Elias 2007). The University of Alaska - Anchorage has requested permission to hold its Field School in Archaeology under the direction of David Yesner at the site in 2007, and Ted Goebel of the Center for First Americans at Texas A&M University will be visiting the region in 2007 with a view of assessing the possibility of collaborative research in the region in subsequent years.

GLACIAL HISTORY

Pleistocene glacial advances in the region were thin piedmont glaciers extending from the Nutzotin – Wrangel – St. Elias Mountain chain, which begin forty kilometers to the southwest of the site. The Little John site lies at the edge of the maximum extent of the Mirror Creek glacial advance, variously dated to the Late Illinoian - MIS 6, c. 140000 BP (Bostock, 1965; Krinsley, 1965) or the Early Wisconsin – MIS 4, c. 70000 BP (Denton 1974; Hughes et al., 1989).

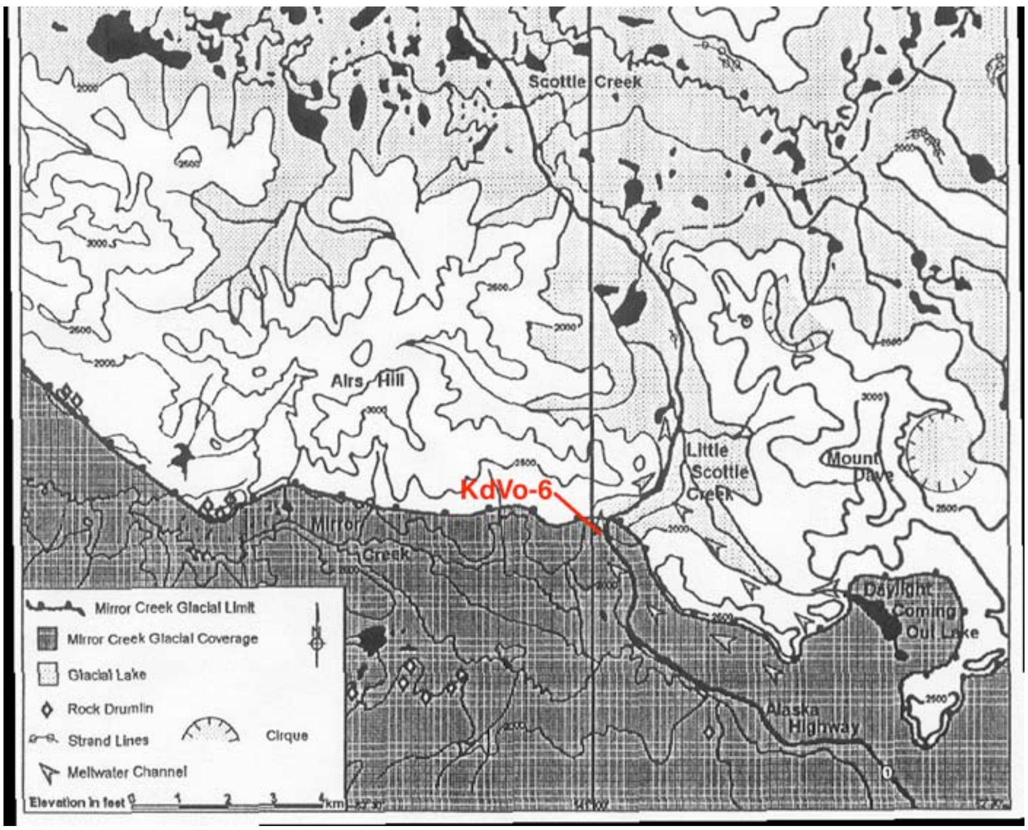

Figure 11. Maximum Extent of Mirror Creek Glacial Advance
(Adapted from MacIntosh 1997)

However the Late Wisconsin advance of glacial ice, known locally as the McCauley glacial advance, ended at McCauley Ridge, some fifty kilometers to the southeast, and began a rapid recession at about 13500 BP; by 11000 BP the region was ice-free to at least the White River, some 150 kilometers to the southeast (Rampton 1971).

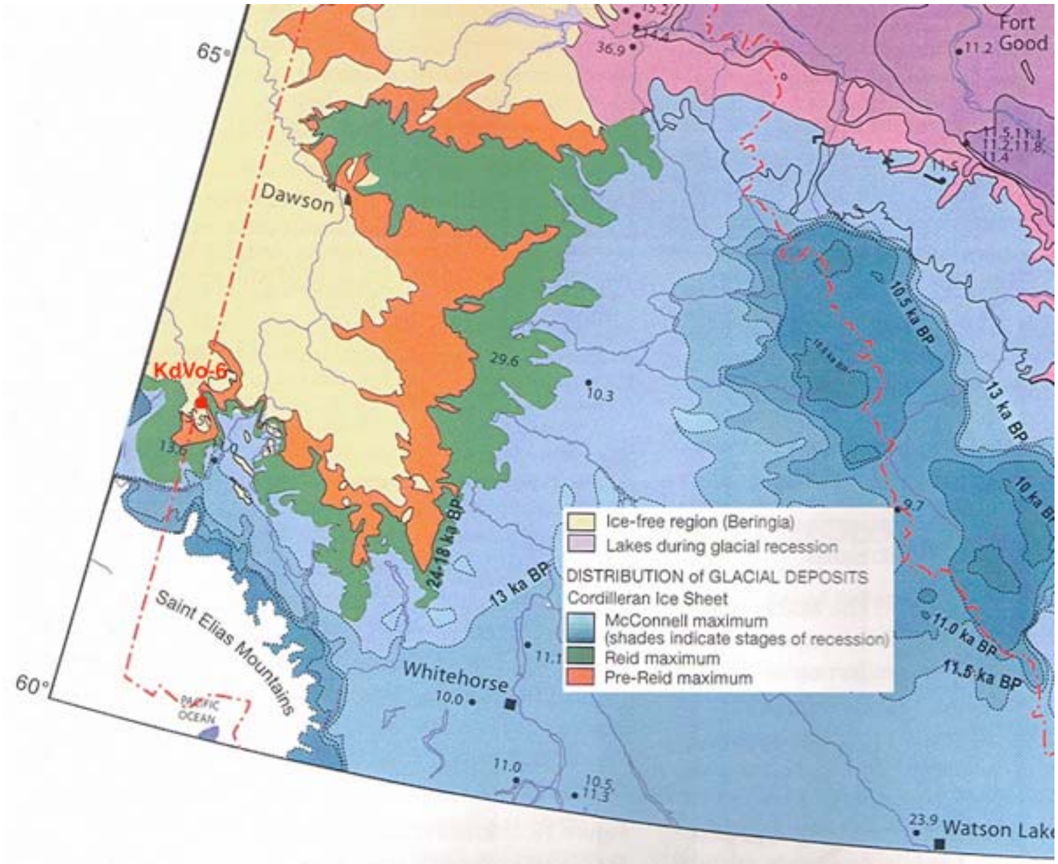

Figure 12. Maximum Glacial Advances in the Southwest Yukon.
Blue denotes the maximum advance of the Yukon McConnell Glaciation, equivalent to the local McCauley advance. (Adapted from Smith, et al. 2004).

Thus, the Little John Site lay within Beringia, a proposition further supported by the recovery of Pleistocene fauna (*Bison*, *Equus*, *Mammuthus*, *Rangifer*, and possibly *Saiga*) less than a kilometer from the site and elsewhere in the Mirror Creek and neighbouring Scottie Creek valleys. A local *Equus lambei* specimen, recovered about two km from the site, has been radiocarbon dated to 20660 +/- 100 BP (MacIntosh 1997).

PALAEOECOLOGY

Several palaeoecological studies have been carried out in the region, which allow us to reconstruct the local post-glacial environmental history of the past 13,000 years or so. Rampton (1971b) analyzed sediments from Antifreeze Pond, just south of Beaver Creek, while MacIntosh (1997) examined sediments from "Daylight Coming Out" Lake (Upper Tanana = *Yikahh Männ'*) just north of Beaver Creek and the uppermost lake on the Little

Scottie Creek drainage, and "Island" Lake (Upper Tanana = *Cha'atxaa Männ'*), which lies just over the Alaska border and drains into Big Scottie Creek via Desper Creek. The results of these two studies were in general agreement, differing slightly in some aspects of dating and environmental indicators. In combination they present us with the following palaeoenvironmental reconstruction:

Herb-Tundra Steppe Zone

The late glacial environment of between 13,500 to 11,000 years ago was dominated by grasses (*Gramineae*), sage (*Artemisia spp.)*, willow (*Salix spp.*) and sedges (*Cyperaceae*), equivalent to that of the predominantly herbaceous tundra steppe zone proposed for much of eastern Beringia at the end of the Wisconsin glaciation.[8] MacIntosh estimates minimum July temperatures of five degrees Celsius.

Birch Rise

The period between 11,000 and 8,000 years ago is marked by a significant (up to seventy-five percent of the pollen record) increase in birch (*Betula spp.* - predominantly dwarf birch - *Betula pumila* var. *glandulifera*), with a slow decline in the levels of Artemisia. These data suggest a continuing warming climate to at least a minimum mean July temperature of nine degrees Celsius. A rise in aquatic plants and algae is also noticeable in the pollen record, suggesting increased moisture and precipitation, as well as a general reduction in erosion and accompanying stabilization of the landscape.

Spruce Rise

This is a relatively short period, which is marked by the first appearance of spruce (*Picea spp.*) in the region. It is also one which different localities present different time depths. Rampton's estimates for Antifreeze Pond place the onset of spruce at about 8,700 years ago; MacIntosh's data from *Yihkah Männ'* place it at between 7,400 and 8,400 years ago. Birch and willows retain the high values of the previous period however, while other taxa are greatly reduced. The presence of spruce suggests a minimum mean July temperature of thirteen degrees Celsius.

Spruce Zone

[8] There is not unanimous agreement on Wisconsinan Beringian environments, but I follow the position set out by Guthrie (1990) on the matter, which argues for a productive "mammoth steppe".

After about 7,500 years ago, spruce becomes predominant within the pollen record in the region, with an accompanying dramatic decrease in the presence of birch and willow. Sphagnum pollen also rises noticeably, with a corresponding decrease in aquatic species. These data suggest at least maintenance of minimum mean July temperatures of thirteen degrees Celsius.

Alder Zone

A rise in alder (*Alnus spp.*) is found at about 5,400 years ago at *Yihkah Männ'*, and 5,600 at Antifreeze Pond; both suggest an increase in relative moisture in the region at about this time to about present levels. Both Rampton and MacIntosh interpret their data as indicating the onset of an environment generally similar to that of today, with the exception of a gradual rise in mean annual July temperatures to its contemporary level of about twelve degrees Celsius.

It was during this last period that the region experienced the ash fall from two major volcanic eruptions near Mount Churchill, near the headwaters of the White River. The figure below shows the limits of the two ash falls.

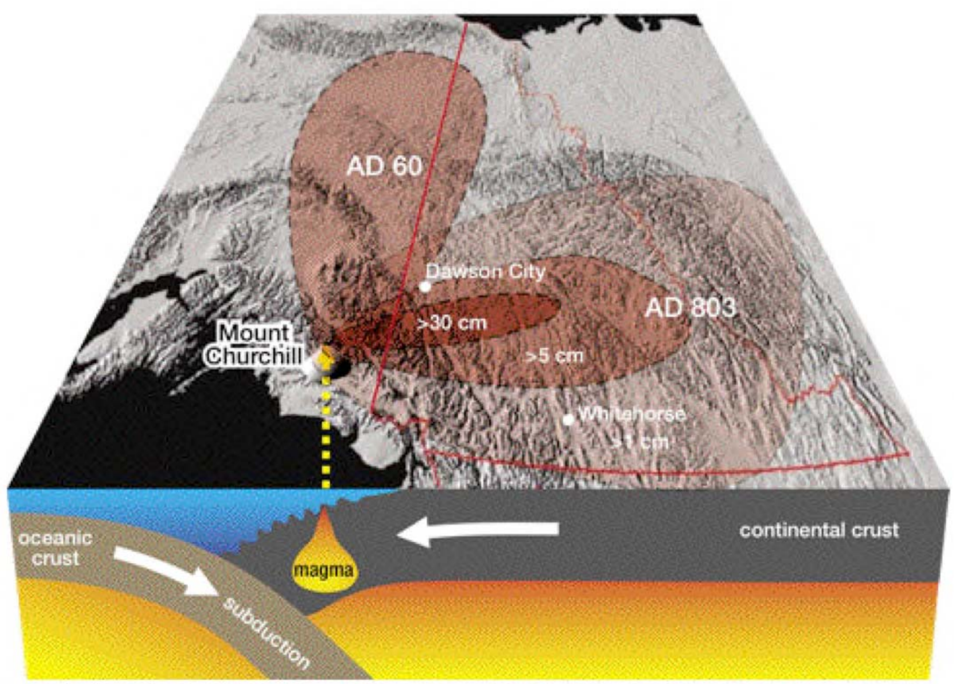

Figure 13. Distribution of the White River Ash fall, c. 1,900 and 1,250 years ago
(from Smith et al. 2004:28)

The first, smaller eruption occurred at about 1,900 years ago; the majority of ash was deposited northward from the eruption. The second, larger, eruption occurred at about 1,250 years ago; the ash fall from this eruption was carried eastward to beyond the Yukon - Northwest Territory border (Lerbekmo et al. 1975). The effect of these ash falls must have been significant for both the environment and the humans living in the region (Workman 1974). Moodie and Catchpole (1992) suggest that this may have been the impetus for the migration of the Athapaskan speaking ancestors of the Navaho and Apachean peoples into the American southwest desert lands. Easton was told by several Upper Tanana Elders that the traditional village site of *Leek'ath Niik* / muddy water creek /, which lies on the eastern side of the middle Scottie Creek valley, was the location to which their ancestors retreated at the time of the eruption and subsequent ash fall - a time referred to in their oral history as the year of two winters.

After the last eruption about 1,200 years ago the region's environment has been relatively stable, although fluvial erosion and redeposition of sediments as well as localized mass wasting of hillsides continued to occur.

CONTEMPORARY ENVIRONMENTAL ECOLOGY

From a contemporary perspective, Oswald and Senyk's (1977) categorization of the ecoregions of the Yukon place the southwest Yukon and the adjacent Upper Tanana valley within the eastern portion of their "Wellesley Lake Ecoregion" (pp. 42-45; see also Smith et al. 2004).

The surface of the valley floors are characterized by extensive meandering streams across boggy, largely permafrost muskeg. Though technically discontinuous, permafrost is extensive and can reach as deep as thirty metres (Rampton 1980). Frozen ground features include fen polygons, stone nets, felsenmeer, solifluction lobes and stripes, and rock rivers.[9] Loess (wind blown) sediments and volcanic ash deposits, both of

[9] All of these surficial features are directly related to permafrost conditions:

- Fen polygons are peatlands with slowly moving water above or below the surface, commonly supporting grasses, sedges, cottongrass, bulrushes, and reeds, on patterned ground, roughly polygonal in shape.

which can reach over 50 cm in depth, are also found throughout the region (Oswald and Senyk 1977).

Today the ground is covered with sphagnum mosses, sedges, blueberry, bearberry, Labrador tea, and is dotted with remnant oxbows and a plethora of small lakes ringed with willows. Black spruce bowers and scattered growth of dwarf birch, alder, and willow crowd any rise in the valley landscape, which are often elevated frost mounds, shading ground patches of cranberry and wild rose. The surrounding hillsides support alternating patches of white and black spruce, birch, alder, aspen, and poplar trees and a wide variety of shrubs, up to their low summits. Due to the near surface presence of permafrost, north-facing hillsides are predominantly black spruce. Many of these plants were used by the Upper Tanana (see Easton 2004b).

Despite the abundance of water in the region, the humidity is low. This is because the lowland bogs are more a function of the low relief and summer solar thaw of the fifty or so centimetres of soil above the permafrost than of precipitation, which averages only about 30cm per year. Seasonal variation in temperatures is extreme, ranging from -57 degrees Celsius or greater in the winter to the low 30s in the summer. The mean low temperature is -31 degrees Celsius in January, the mean high temperature is 12 degrees Celsius in July, and the annual mean temperature is -6 degrees Celsius. (The lowest recorded temperature for North America was recorded at nearby Snag, Yukon on 3 February 1947 of -62.8 degrees Celsius (-81 degrees Fahrenheit). Cloud coverage is relatively high, averaging overcast for 27% and broken for 30% of the year (Wahl et al. 1987).

The low mean temperatures combined with the low solar values associated with the high cloud cover, result in long winters with lakes and streams frozen from October to mid-May (Hosley 1981a). And while the depth of snow is never very deep, it can come as early as September and remain on the ground until May. As a result, the seasons of spring

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- Stone nets are characterized by fine-grained soils in the centre and coarse-grained, stony materials found on the rim of patterned ground intermediate between sorted circles and sorted polygons.
- Felsenmeers are chaotic assemblages of fractured rocks resulting from intensive frost shattering of jointed bedrock.
- Solifluction lobes and stripes are two forms of surficial sediment deposits which have resulted from the slow, gravitational downslope movement of saturated, unfrozen sediments moving as a viscous mass over a surface of frozen material (Oswald and Senyk 1977).

and fall are short, while the difference between winter and summer might best be summed up as frozen or wet.

In the present, the basin supports a wide range of fish species, large and small mammals, and is an important component of the interior western continental flyway; in Alaska the lower Chisana River basin is completely within the Tetlin National Wildlife Refuge, while the upper portion lies in Wrangell-St.Elias National Park and Preserve.

Dominant large mammals include moose (*Alces alces*), black and brown (grizzly) bear (*Ursus americanus* and *Ursus arctos*), mountain sheep (*Ovis dalli*), and caribou *(Rangifer tarandus*) of the Chisana and Forty-Mile C aribou Herds.

Furbearers include wolf (*Canis lupus*), lynx (*Lynx canadensis*), wolverine (*Gulo gulo*), beaver (*Castor canadensis*), muskrat (*Ondatra zibethica*), otter (*Lontra canadensis*), and the snowshoe hare (*Lepus americanus*).

Pre-eminent among the fish species are whitefish (*Coregonus sp.*), grayling (*Thymallus arcticus*), pike (*Esox lucius*), sucker (*Catostomus spp.*), and lingcod [burbot] (*Lota lota*). Salmon is also available to the region from fishing localities on the White and Yukon Rivers, as well as through reciprocity with relatives living in the Copper River watershed and in the Dawson region (see Friend, et al. 2007, for a comprehensive survey of traditional and contemporary subsistence fishing in the upper Tanana River basin).

Like the plants, most all animals were integrated into Upper Tanana culture. All retain an important social and spiritual relationship to people - the Dineh culturally categorizes animals as non-human persons - and many were important components of the aboriginal technology and subsistence persons (see Nadasdy 2007; Easton n.d.A).

CULTURAL GEOGRAPHY

The Little John site occupies a location named *Haah Tuuh Taiy* (roughly "trail at the end of the hill") in the local Scottie Creek dialect of the Upper Tanana *Dineh* language. Easton first visited the site in 1997 in the company of Upper Tanana Elder Mrs. Bessie John, where we visited with her brother, Mr. Joseph Tommy Johnny, who was encamped there and using the location as a moose-hunt lookout. Both siblings had often camped at this location over the years to hunt, both before and after the building of the Alaska Highway, as had their father and grandfather. Not surprisingly the site offers an excellent view of the broad flat valley below.

Figure 14. View of the Mirror Creek Valley from the Little John Site.

Bessie and Tommy also pointed out to me a number of the surrounding landmarks visible from the site and supplied their names in Upper Tanana language. These are indicated on the map below. The numbers on the map correspond to their entry number into the Upper Tanana Dineh Place Names Database (Easton 2005). Several of these locations have confirmed prehistoric archaeological deposits, indicated in the table below, along with their Upper Tanana names and translations as Easton has been able to document them.

The importance of mapping trails and place names to the archaeological understanding of the region's history cannot be overstated. Over the past fifteen years of local archaeological survey, every located site has been situated at a location which bears a *Dineh* name and lies along an aboriginal trail. This fact should not surprise us, since prehistoric people likely used the same trails and hunting / residential localities as the *Dineh*; indeed it may reflect a very ancient continuity in land use and knowledge passed on through the iteration of place names in the oral historical training typical of non-literate foragers.

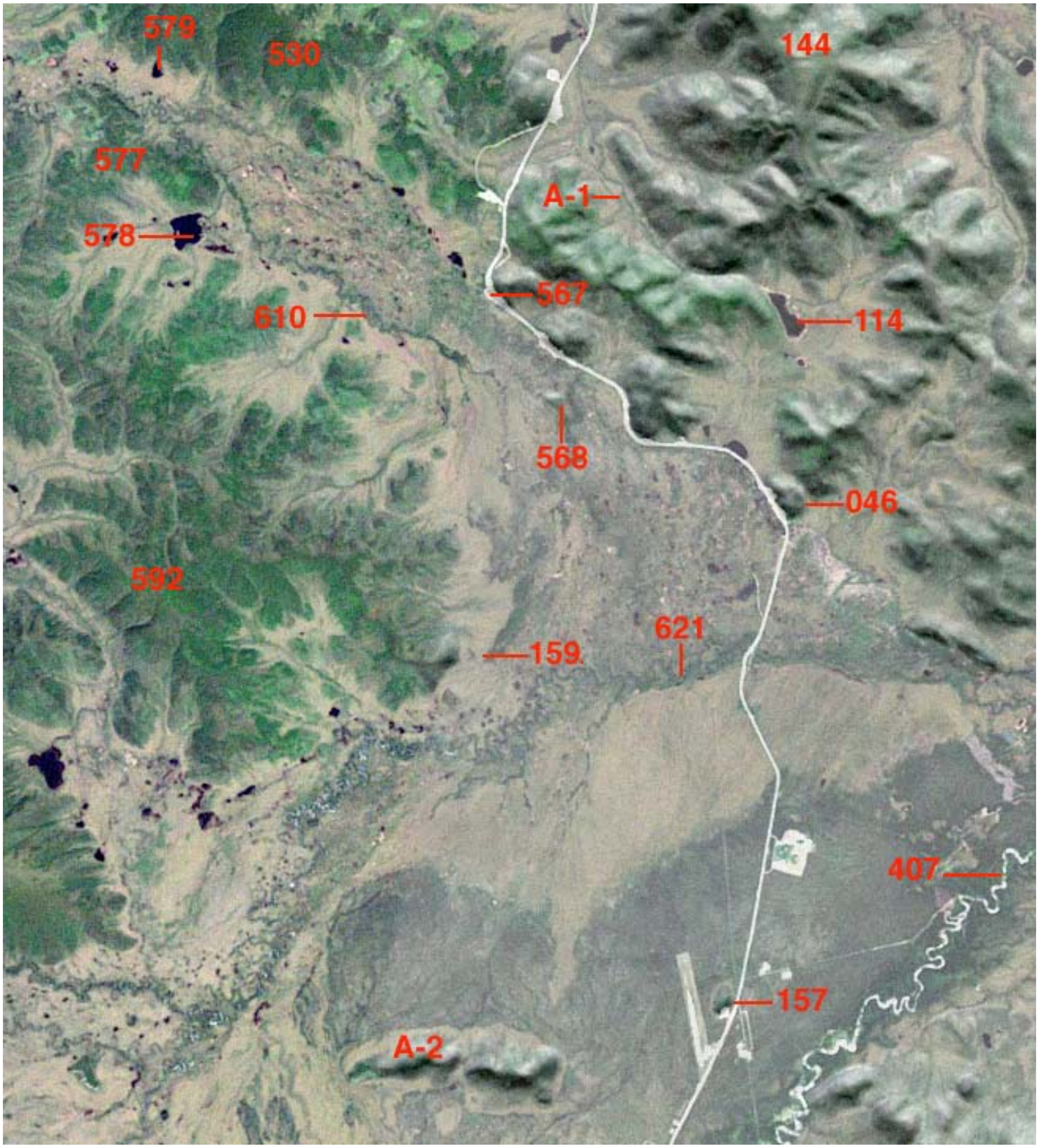


Figure 15. Upper Tanana Place Names in the Region of the Little John Site.

Table 1. Cultural Geographic Place Names.

Upper Tanana Place Names in the Vicinity of the Little John Site			
PNDB #	Name	Gloss	Common English Name
046	*Nı̨̀ı̨’ı̨̀ı̨’*	*look-out (away from)*	*Sourdough Hill*
114	*Yihkah Mȁnn’*	*daylight coming out lake*	*none*
144	*Tsüü Hǫ̀ǫłı̨ı̨ Ddhȁl’*	*bear root hill*	*none*
157	*Taatsàan T’oh*	*raven's or crow's nest*	*Red Hill*
159	*Taatsàan* [village]	*raven or crow*	*none*
407	*Ttheetsà Niign*	*rockwater Stream*	*Beaver Creek*
530	*Ts’oogot Ddhal*	*Ts’oogot Mountain*	*none*
567	*Haa Tuuh Taiy*	*end of the hill*	*"1216" - Little John site*
568	*Ch’eejil Niik Nakeeg*	*Grayling Creek hunting lookout*	*none*
577	*Ch’ign Niign Ddhal̀*	*Ch’ign stream mountain*	*None*
578	*Dlaadal Mȁnn’*	*red moss lake*	*none*
579	*T’uuh Mȁnn’*	*T’uuh lake*	*none*
592	*Utuh Nats’eneey Ddhal̀*	*Utuh Nats’eneey mountain*	
610	*Ch’eejil Niik*	*grayling stream*	*Mirror Creek*
621	*Haltal Niign*	*bursting stream*	*Snag Creek*
A-1	*Ts’oogot Gaay Niik*	*Little Ts’oogot steam*	*Little Scottie Creek*
A-2			*Chief Johnson's Lookout*
Source: An Upper Tanana Place Names Database. Compiled by N. A. Easton. Research Manuscript. Northern Research Institute. Whitehorse 2005.			

Culturally, one of the most important places that one can see from the Little John site are two mountain peaks far off in the distance on a clear day, particularly when they are snow-capped in the sunshine. They are said to be the remains of a man and a woman whose love for each other was so strong that they chose to sit down facing each other there in the mountains and turn to stone, rather than ever be apart.

The aboriginal trail system intersects through the Little John site, as shown in the figure below.

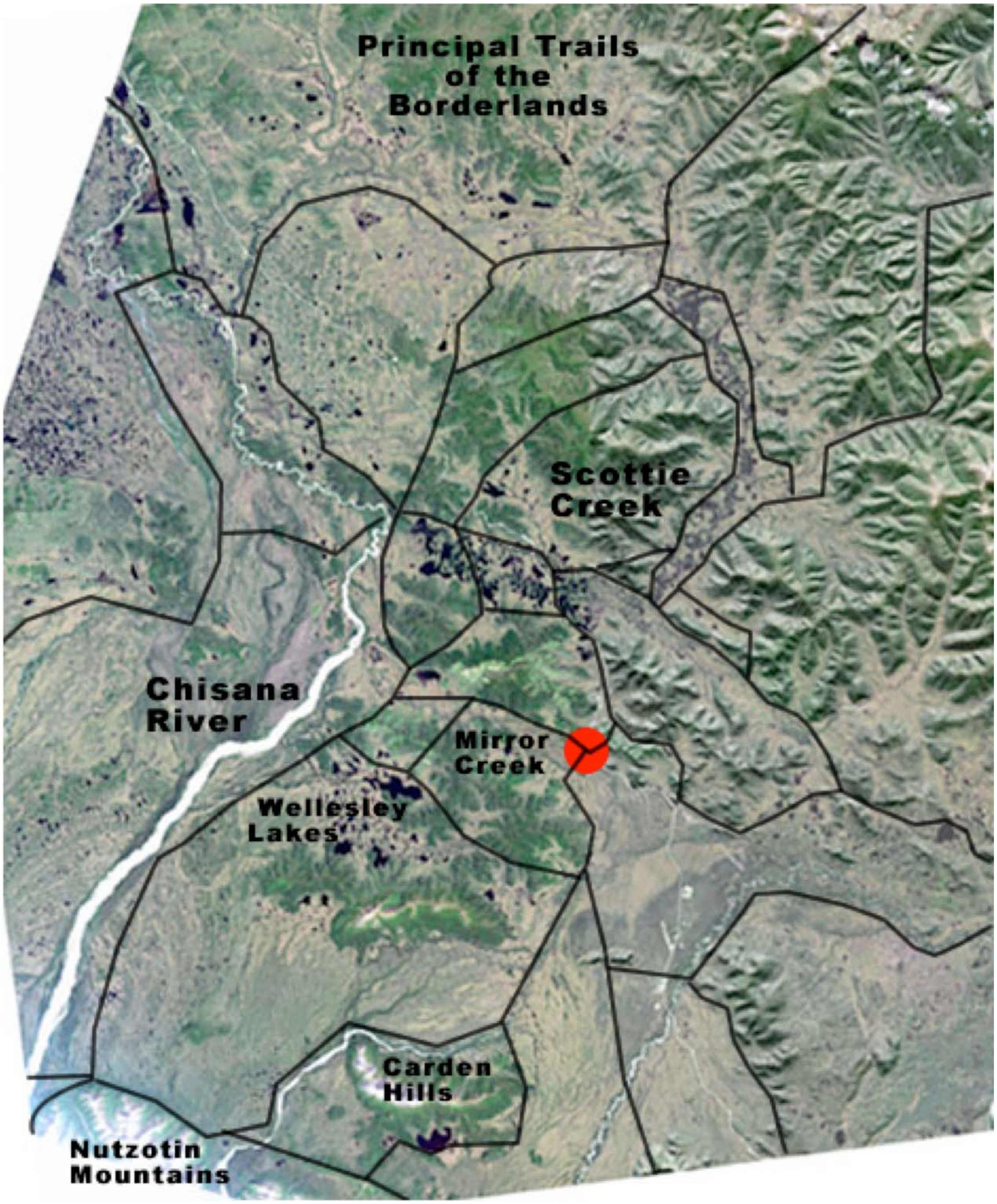


Figure 16. Aboriginal Trail System in the Region about the Little John Site.

REGIONAL ARCHAELOGICAL SEQUENCES

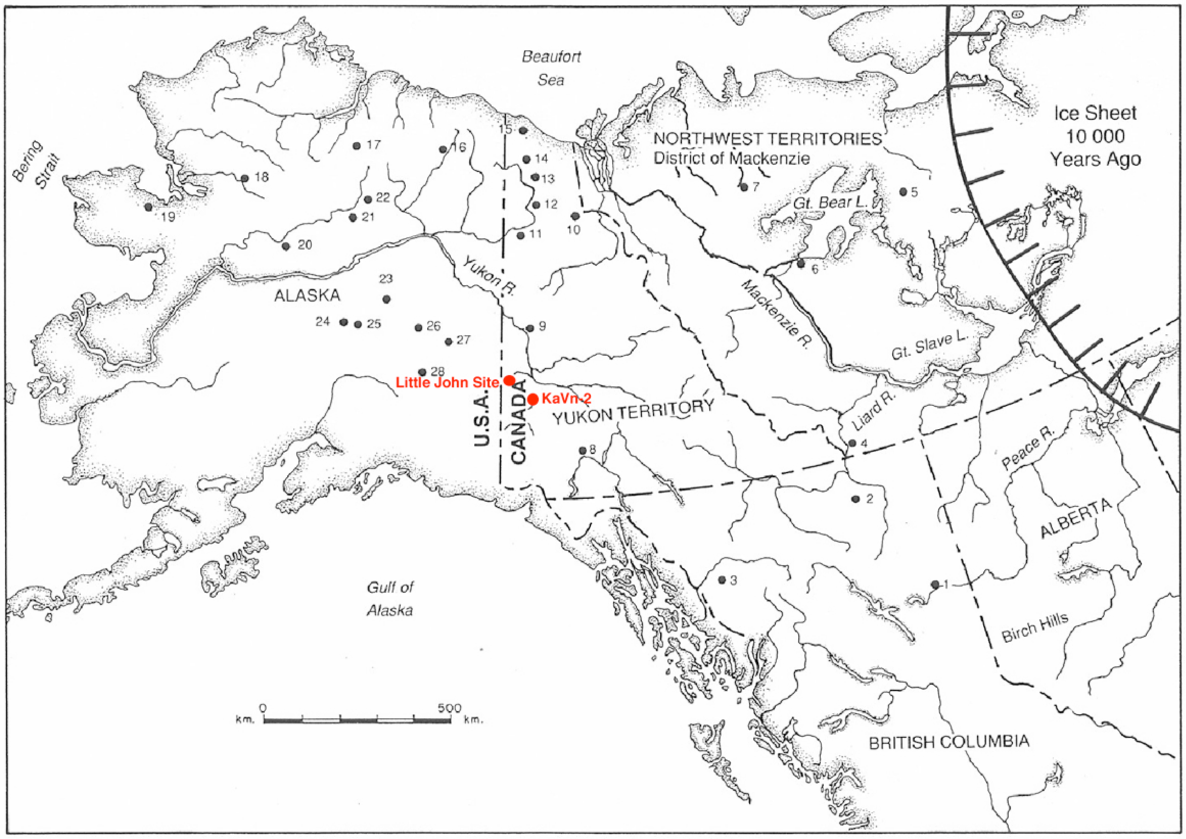
The ancient Beringian environment which prevailed in the Borderlands during the last glacial maximum, some 27,000 to 12,000 years ago during the late Pleistocene geological epoch, and the general environmental changes which occurred in the region over the past 11,000 years or so of the subsequent Holocene epoch was presented in a previous section. There is widespread agreement on the presence of human societies occupying eastern Beringia during the final millennia of the Pleistocene and the early Holocene Epochs. Currently there are two regional schemes, which prevail in our understanding. The first is one, which was developed to account for the prehistory of glaciated Yukon; the second is one, which was developed to account for the prehistory of unglaciated eastern Beringia (central Alaska and western Yukon). In order to provide a larger context to the material recovered from the Little John site, I present first the northwestern Canadian (Southwest Yukon) archaeological sequence,[10] followed by a presentation of the eastern Alaskan sequence, and then a comparative discussion of both archaeological sequences, which relates one to the other. Finally, I discuss specific archaeological sites within the local area of the Borderlands where the Little John site is located.

From a pan-regional perspective, it is clear that there must be some technological and cultural relationship between the Alaskan and Yukon sequences. Indeed, the Little John site, and others in the Borderlands area, are well placed geographically and chronologically to provide the archaeological data to link the two separate sequences, which to date have been geographically separated by hundreds of kilometers.[11]

The following map shows the general location of western subarctic archaeological sites of the late Pleistocene and early Holocene (from perhaps as early as 14,000 to about 8,000 years ago.

[10] I am leaving aside discussion of the proposed early (20,000 years +) cultural tradition based on a bone tool technology proposed by Richard Harrington, Jaques Cinq-Mars, and Richard Morlan (Cinq-Mars and Morlan 1982) for unglaciated northeastern Beringia in the Old Crow Flats of northern Yukon. The archaeological evidence for this early culture is equivocal at best and not generally accepted by the majority of archaeologists. The upper late Pleistocene – early Holocene (circa 11,000 years ago) microblade and burin component of the Blue Fish Caves assemblage in the Old Crow basin is variously assigned to the Paleo-Arctic, Denali, Beringian, or Dyuktai archaeological traditions which are discussed below (c.f. Fagan 1987:122-127; Dixon 1999:58-61).

[11] Interestingly, Carlson (2007) goes even further, linking the early Borderlands archaeological culture with that of the early Northwest Coast.



Map 4. Ancient Sites in the Northwestern Area, 11 500 to 7 000 Years Ago The sites shown belong to Clovis Palaeo-Indian, Palaeo-Arctic, and early Northern Cordilleran peoples. Microblade people of the Palaeo-Arctic tradition became established in Alaska around 10 700 years ago, and expanded eastwards, probably absorbing or displacing earlier inhabitants of the Cordilleran region.

1 Charlie Lake Cave, P-I
2 Pink Mountain, P-I
3 Mount Edziza, obsidian source
4 Fisherman Lake & Pointed Mountain, NC, P-A, HR
5 Acasta Lake, NC
6 Franklin Tanks, Gt. Bear R., HR
7 Airport, NC
8 Canyon Creek, NC
9 Dawson placer mines, P-I & Moosehide
10 Rock River sites, NC
11 Bluefish Caves, P-I, P-A
12 Old Crow River Flats, P-I
13 Dog Creek, P-I
14 Kikavichik Ridge, P-I
15 Engigstiack, NC, HR
16 Putu, P-I
17 Mesa, NC
18 Onion Portage, P-A, HR
19 Trail Creek Caves, P-A
20 Batza Téna, obsidian source, P-I
21 Island, P-I, P-A
22 Girls' Hill, P-I
23 Campus, HR
24 Walker Road, P-I
25 Dry Creek, P-A
26 Broken Mammoth, P-A, NC
27 Healy Lake sites, NC, P-A
28 Tangle Lakes, P-A

Abbreviations
P-I: Palaeo-Indian
P-A: Palaeo-Arctic
NC: Northern Cordilleran group
HR: Siginificant in history of research

Figure 17. Late Pleistocene - Early Holocene Archaeological Sites of the Western Subarctic
(from Clark 1991a)

The Northwestern Canadian (Central Southwest Yukon) Archaeological Sequence

Based on current knowledge, the archaeological sequence for the southwest Yukon first proposed by Workman (1978) has been refined by the recognition of a non-microblade Northern Cordilleran Tradition in the early Holocene (Clark 1983), a mid-Holocene

"Annie Lake" technological complex of small, deeply concave-based lanceolate points (Greer 1993; Hare 1995), and the combining of Workman's Aishihik and Bennett Lake phases into a Late Prehistoric period. Broadly speaking, then, the southwest Yukon chronology is as follows.

Northern Cordilleran Tradition

Lasting from at least 10,000 years ago to about 7,000 years ago, this tradition is characterized by large straight and round-based lanceolate point forms, large blades and flakes, and transverse notched burins. Significantly the assemblage lacks microblade technology (Clark 1983). The climate at this time shifted from the colder and dryer climate associated with the terminal glacial period to increasing warming throughout (from a mean July temperature of 5.5 to 7.2 degrees Celsius to 7.2 to 9.9 degrees Celsius), while the vegetation seems to have been dominated by shrub tundra. Representative site components of this tradition include the basal levels of the Canyon (JfVg-1) and Annie Lake (JcUr-3) sites, and the Moosehide (LaVk-2) site.

As discussed by Hare (1995), two possible sources for this tradition have been proposed. The first, following Clark (1983, 1992) is derived from populations of the Cordillera geophysical region, themselves derivative from late Paleoindian Plano peoples of the northern prairies, which co-existed with microblade making populations entering the Yukon from the northwest. However, Hare (1995:131) suggests that, "given the broad morphological similarities between blades from Annie Lake and those for the 11,000 BP Nenana Complex (discussed below) (Goebel et al. 1991) and the apparent dissimilarities with the Early prehistoric period, Clovis-like blades of northern Alberta (see Le Blanc and Wright 1990), it is unlikely that the Northern Cordilleran Tradition is derived from southern-based Plano influences. Instead, it is probable that the roots of Northern Cordilleran are to be found in the indigenous northwestern Paleoindian tradition."

Little Arm Phase or Northwest Microblade Tradition

Lasting from about 7,000 to 8,000 years ago to about 4,500 to 5,000 years ago, this tradition is characterized by composite tool production using small blades or microblades, multiple gravers and burins, round-based projectile points, and a variety of end and side scrapers (Workman 1978). The Little Arm site (JiVs-1) of Kluane Lake is the type site of this regional phase and sites of this type and period are found everywhere throughout the southwest Yukon, many of which might also include some notched points (although Workman would disagree with including such sites on that basis). The climate during this time continued to become warmer than today's average temperatures, while the vegetation shifted from shrub tundra to a spruce forest ecosystem.

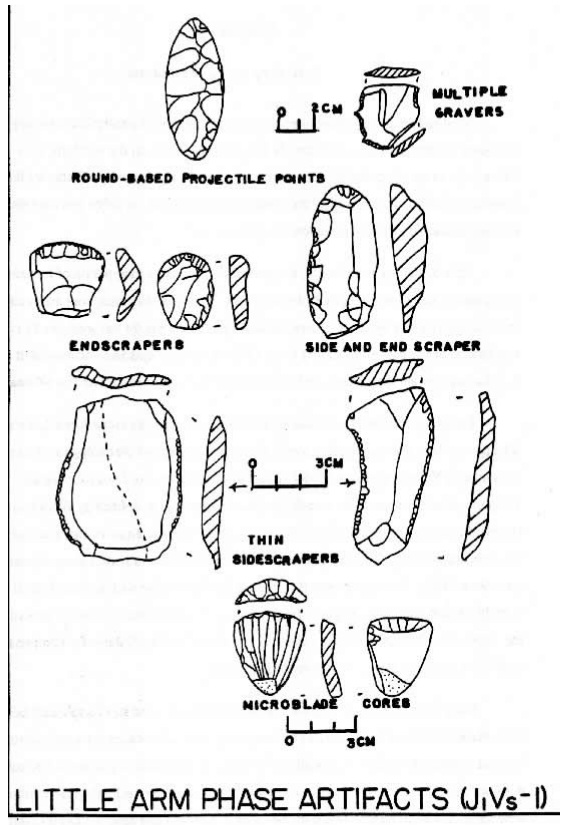


Figure 18. Little Arm Phase Artifacts

(from Workman 1978)

The Northwest Microblade Tradition (NWMt) as proposed by MacNeish (1964) included both wedge-shaped microblade cores and side notched points. It was seen by some as attempting to embrace far too many regional phases over too great a geographic area (from the Mackenzie River basin to Fairbanks) to have any great utility. More recently, its use has been resurrected by some in the Canadian northwest as representative of a merging of microblade technology diffused from Alaskan (and ultimately east Asian) origins and combined with the developing indigenous Yukon-Northwest Territoriesbased Northern Cordilleran tradition (Wright 1995; Clark et al. 1999). Clark et al. (1999:175) suggests that:

> The genesis of the Northwest Microblade Tradition, at least its microblade industry and possibly also its burins, lies in the spread of Denali culture to the Yukon about 7,000 or 8,000 years ago and its further, later spread into the District of Mackenzie and adjacent areas of British Columbia and Alberta . . . . [which] resulted in considerable heterogeneity. . . . The Northwest Microblade Tradition should be viewed as a frontier culture [in the Cordillera] vis-à-vis the Denali focal region.

Annie Lake Complex

Figure 19. Annie Lake Points

(N. A. Easton)

Lasting from about 6,900 to about 2,900 years ago, this complex is characterized by projectile points - called Annie Lake Points - which are relatively diminutive (3.5 to 4.25 cm), basally thinned (or "deeply concaved lanceolate" in Greer's (1993) morphological description), and additional lithics which are "characterized by thin, well made tools of high quality raw materials, with a debitage suggesting extensive curation and maintenance of tools (Hare 1995:132).

To date these points have been exclusively located in the Southern Lakes region around Whitehorse, Yukon. The Annie Lake Complex is found stratigraphically above microblade-bearing horizons of the NWMt and below Taye Lake Phase or Northern Archaic Tradition horizons. Temporally, however, it lies astride both the preceding and following tradition, leading Hare (1995:121-2) to suggest that it may represent “a small colonizing population...or, and perhaps more likely, the Annie Lake complex represents diffusion of early Northern Archaic traits into an indigenous microlithic tradition.”

Taye Lake Phase or Northern Archaic Tradition or Middle Prehistoric Period

Lasting from about 4,500 to 5,000 years ago to about 1,250 years ago, this archaeological culture is characterized by the introduction of a variety of side-notched and stemmed spear and atlatl points (Anderson 1968a, 1968b; Workman 1978), a variety of scraper forms, net weights, and a notable increase in the recovery of bone artifacts of a variety of functions (although this last attribute may be a function of preservation, and the percentages of bone artifacts within the entire assemblage is less than that found in the subsequent Late Prehistoric period). At some sites microblades are found as well (c.f. Clark et al. 1999). A cooling and moister climate begins this period, with a neo-glacial period at about 2,600 years ago, followed by a drier climate at its terminus. Vegetation was similar to that of today.

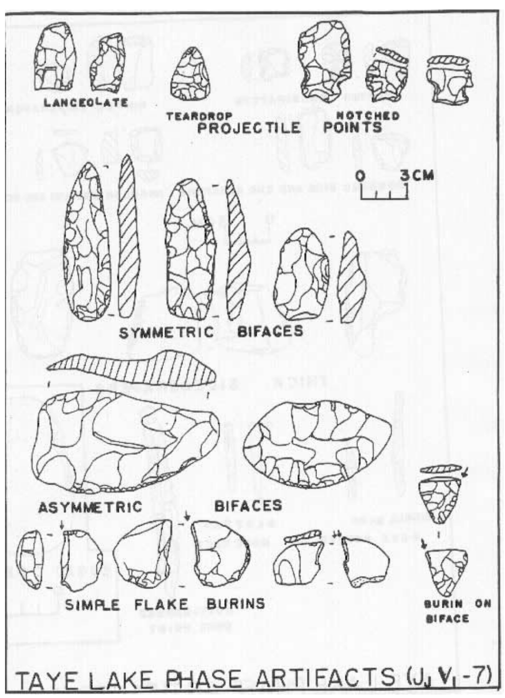


Figure 20. Taye Lake Phase Artifacts - Points, Bifaces, and Burins

(from Workman (1978))

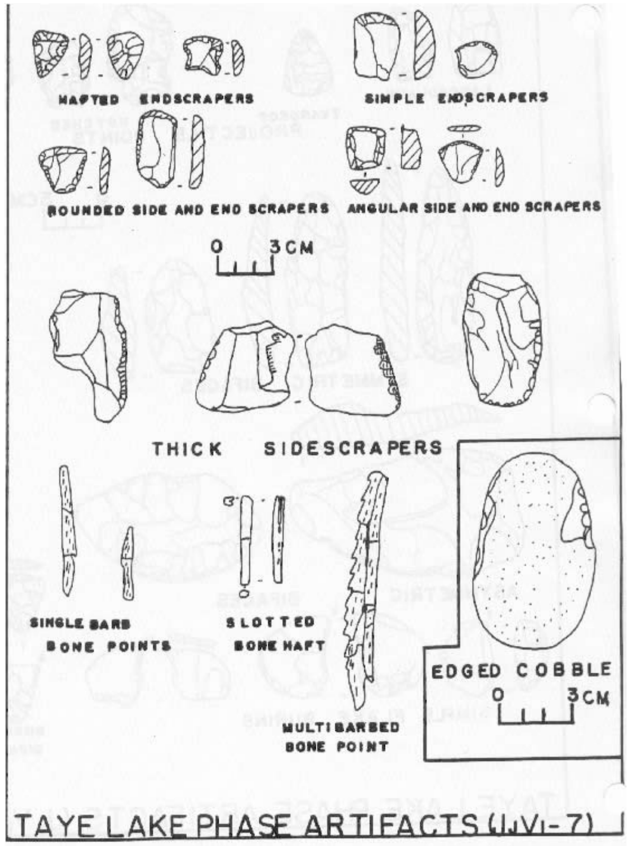


Figure 21. Taye Lake Phase Artifacts - Scrapers, Bone Points, and Net Weight.
(from Workman (1978)

Both Anderson and Workman noted that the lithic artifacts at this time become increasingly crude in their workmanship, with little retouch flaking and dominated by poor, coarse-grained materials. This fact, combined with the general expansion in the size and diversity of the overall toolkit is interpreted to represent a population, which has adapted and expanded its comfortable adaptation to the boreal forest landscape to include a wider variety of subsistence resources.

Aishihik Phase - Late Prehistoric Period

Lasting from about 1,250 to about 200 years ago, this archaeological culture (Workman 1978) is essentially Northern Archaic, but differentiated from the Taye Lake phase by its presence above the White River Volcanic ash fall - Taye Lake material is below the ash. It is characterized by increased use (or perhaps only archaeological recovery) of bone and antler tools, native copper implements, and small-stemmed arrow points (Kavik or Klo-kut points). While initially cooling and moist, the climate became warmer at the end of this period and the vegetation was not significantly different from today.

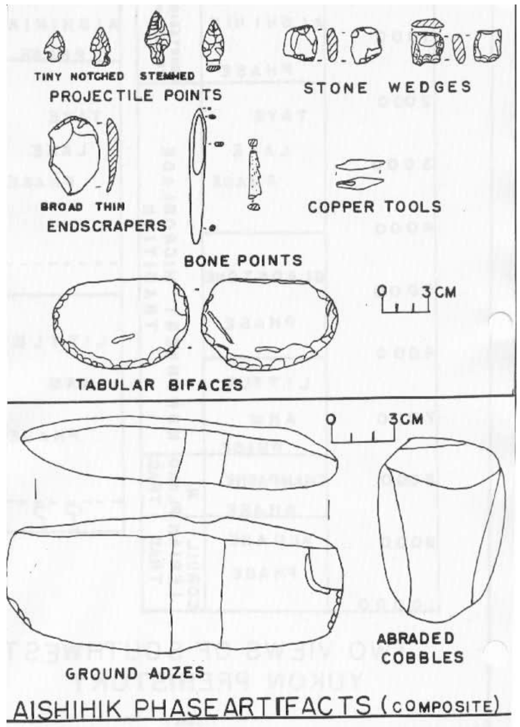


Figure 22. Aishihik Phase Artifacts.

(from Workman 1978)

Interestingly, recent dating of a large number of well-preserved atlatl darts and bow arrows found in melting ice patches in the southwest Yukon has revealed that the bow and arrow is exclusively a Aishihik Phase technology in this region (Farnell et al. 2005; Hare et al. 2004). Such a correlation between the second White River Volcanic ash fall and the introduction of the new bow and arrow technology replacing the longstanding atlatl is suggestive of a brief period of rapid population displacement and replacement, although undoubtedly of the same Athapaskan language family.

Bennett Lake Phase - Late Prehistoric

Lasting from about 200 years ago to this century, this archaeological culture (Workman 1978) is characterized by the introduction of European trade goods and their integration into aboriginal technology, and is prior to the full encapsulation and transformation of aboriginal technology into its modern form. Expedient lithic tools such as simple cobble scrapers (Upper Tanana=*Thi-chos*), choppers, and bipolar flakes are found along with scrapers made from bottle glass and strips of metal, fish-hooks made from nails, and bunting arrow points made from spent cartridges, and are common at sites such as those at Dawson-Tr'ondek and Fort Selkirk.

Discussion of Southwest Yukon Sequence

The Figure below presents a summary of the technological sequence of the southwest Yukon presented above. There is no doubt that there is direct historic continuity between the contemporary inhabitants of the southwest Yukon and the people of the Bennett Lake phase. Similarly there is a direct connection between the people of the Bennett Lake phase and the preceding Aishihik, since the only defining difference is the introduction of European trade goods. This connection is reflected in contemporary archaeologists' movement away from the use of these phase names towards a more regional and generalized Late Prehistoric categorization with clear affiliations to modern Athapaskan groups (c.f. Greer 1983; Gotthardt 1990; Hare 1995:125).

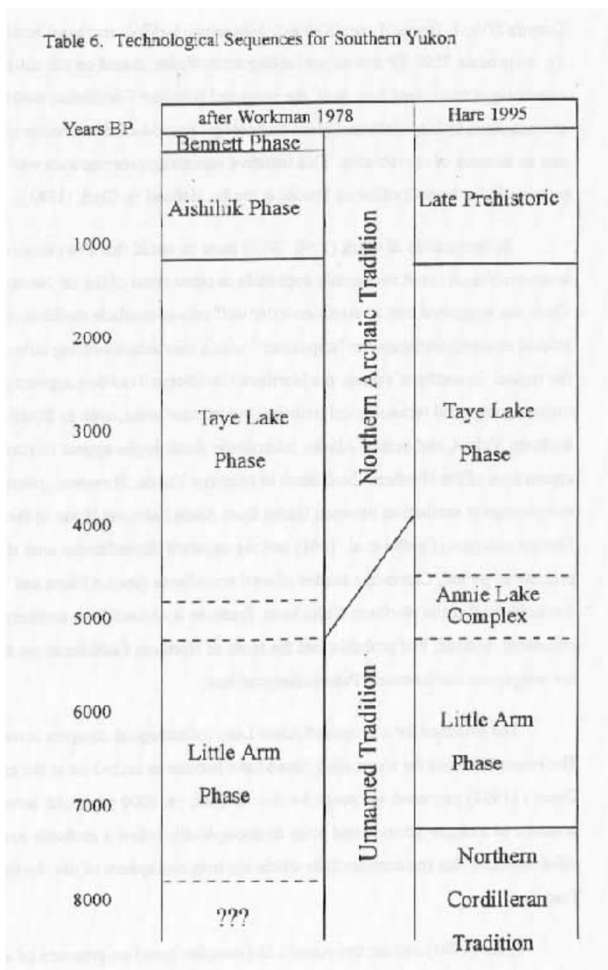


Figure 23. Technological Sequences for Southwest Yukon

(from Hare 1995)

The relationship between the Late Prehistoric period and the preceding periods is summed up in one of the most recent reviews of central southwest Yukon prehistory. Hare (1995:17) writes:

> As outlined by Workman, most researchers agree that the Northern Archaic and Northwest Microblade traditions gradually evolved into the Late Prehistoric Athapaskan Tradition and while there was considerable regional variability there is evidence for continuity in terms of technology, settlement and subsistence patterns.

In years past, some archaeologists had suggested that the changes in technology between the Microblade and Northern Archaic periods reflected the migration of new culture-bearing people into the region (see especially Anderson 1968 and Workman 1978).

However, many archaeologists now favour models of population continuity in this period as well and suggest the possibility that the principal factor in these changes has been necessary adaptations to changes in the environment or the result of indigenous populations adapting diffused technological elements of neighbouring cultures (see, for example, Clark and Morlan 1982; Morrison 1987; Clark 1992; Hare 1995:16-17). Furthermore, Hare and Hammer (1997) have shown that the temporal range of microblades within the Yukon has more components outside the proposed range of the Northwest Microblade tradition than within it (see also Clark et al. 1999). Thus, for example, Morrison (1987) prefers the use of the term *Middle Prehistoric period* over that of the *Northern Archaic Tradition* in the Mackenzie and eastern cordilleran regions, while Clark and Morlan (1982:36) view the Northern Archaic as the later *phase* of the Northwest Microblade Tradition.

In other words, it can be argued that the changes in material culture in the archaeological record do not imply a physical replacement of the people in a region. Consider our own material culture changes from the introduction of new technology - the archaeological remains of my family or any of my neighbours 25 years ago would not have included a personal computer, diskettes, cd-roms, or video-tapes. Today they do. To suggest, based on material remains alone, that the differences between the material remains of then and today reflects *the replacement of one resident population with another* is clearly wrong in this instance. It could be wrong in prehistory as well, and increasing numbers of archaeologists are considering this fact.

The notion of a Northern Cordilleran Tradition was first proposed by Clark (1983) in order to account for the presence of non-microblade archaeological components underlying microblade-bearing deposits throughout the Yukon. The application of this tradition is now generally accepted to account for early Holocene sites characterized by large straight and round-based lanceolate point forms, large blades and flakes, and transverse notched burins, but which lack microblades. However, even this tradition is increasingly regarded as having direct continuity with the subsequent Northwest Microblade Tradition (Wright 1995; Clark et al. 1999).

The Archaeological Sequence of Eastern Beringia (Central Alaska and Northwest Yukon)

F. H. West and his collaborators (West 1996c) have most recently summarized the prehistory of Alaska, which generally agrees with the Yukon sequence of technology but favours earlier dates and a slightly different terminology. The principal exception to this generalization is that the earliest components are variously classified as belonging to the Nenana Complex, the Denali Complex, or the Eastern Beringian Tradition.

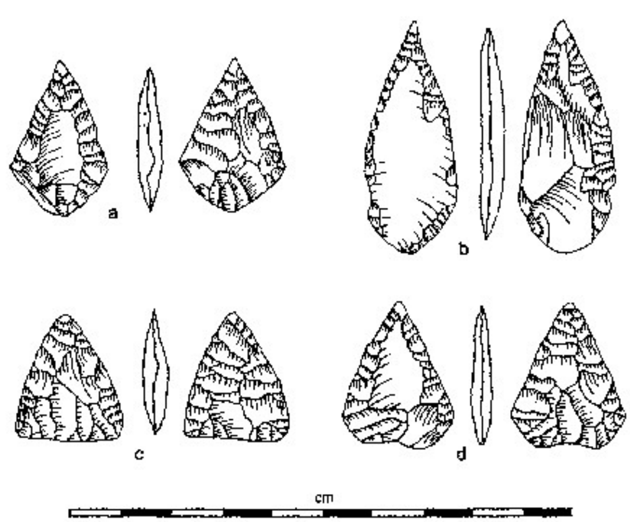


Figure 24. Chindadn ("Ancestor") points from Healy Lake.
(from West 1996c)

Nenana Complex or Chindadn Complex

This archaeological culture has been dated at the Broken Mammoth site on the Tanana River at about 12,00 years ago and possibly as late as about 9,500 years ago at Healy Lake. It is characterized by an emphasis on bifacial technology on blades and flakes, triangular and tear-dropped shaped (Chindadn) projectile points and / or knives, straight and concave-based lanceolate projectile points, perforators (including bone needles), endscrapers and sidescrapers, but is lacking microblades.

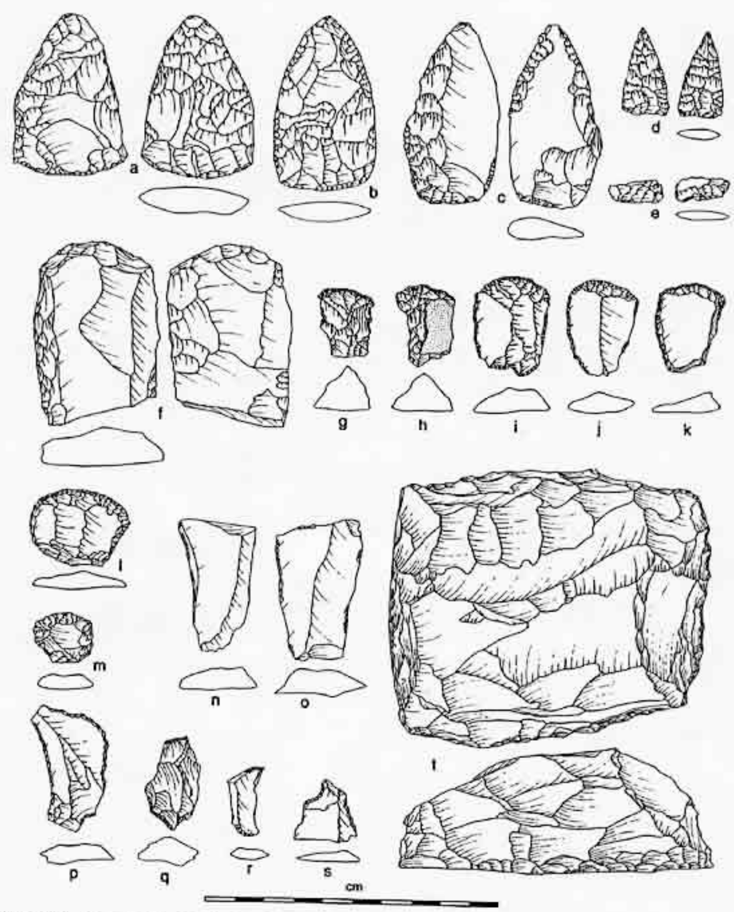


Figure 7–8 Component I of the Dry Creek site (Nenana complex): bifaces (*a–e*); side scraper (*f*); end scrapers (*g–m*); bilaterally retouched blades (*n, o*); retouched flakes (*p–s*); quadrilateral uniface or plane (*t*).

Figure 25. Dry Creek, Component I, Nenana Complex

(from West 1996c)

The type site is a set of sites on the Nenana River, namely Dry Creek, Walker Road, and Moose Creek (Powers and Hoffecker 1989; Hoeffecker, et al. 1993), but the Complex name has also been extended to include a series of sites along the Tanana River proper (Goebel and Slobodin 1999; Hamilton and Goebel 1999). This report documents a Nenana assemblage at the *Haah Tuuh Taiy* site (KdVo-6) overlooking Mirror Creek, the eastern-most tributary of the Tanana River.

Due to extensive coverings of wind-blown glacial silts known as loess, many of the Nenana complex sites have exceptional organic preservation of bone, antler, and mammoth ivory, the latter presumably scavenged from earlier Pleistocene deposits exposed along river banks, which has revealed in some detail the diet of these culture carriers (Dilley 1998). Besides the expected remains of larger game – bison, elk, and sheep - their diet clearly included significant proportions of small mammals, migratory waterfowl and their eggs, and fish (Yesner et al. 1992, Yesner 1996).

Denali Complex (American Palaeoarctic Tradition / Beringian Tradition)

This archaeological culture is found from about 11,000 years ago to about 9,500 years ago and is characterized by the presence of microblades, wedge-shaped microblade cores, and burins. The American Paleoarctic Tradition was originally defined by Anderson (1970a, 1970b) on the basis of excavations at the Akmak and Onion Portage sites near the Brooks Range. It has subsequently been applied to a great number of assemblages within a wide variety of environmental contexts (maritime, transitional, interior, montane, northern, central, and coastal Alaska and Yukon). West (1981, 1996) subsumes these assemblages into an even wider Beringian Tradition that extends geographically into eastern Siberia / western Beringia, and would include the Nenana complex assemblages as well, on the basis that the lack of microblades is explained by site function – they are not found where they are not used. The presence of wedge-shaped microblade cores (one of a number of alternative core forms from which microblades can be struck) is the common element, which unifies the designation. Some archaeologists (e.g. Dixon 1999, and myself), find the inclusion of such a variety of assemblages to reduce the utility of both constructs to little more than some indication of relationship between them; a more useful construct for the Tanana River valley is West’s earlier defined Denali complex.

West (1967) defined the Denali complex based on a suite of sites in the Fairbanks and Denali regions (Tangle Lakes, Donnelly, and Campus, and latterly components found above Nenana complex components at Dry Creek, Panguingue Creek, Healy Lake, and Broken Mammoth).

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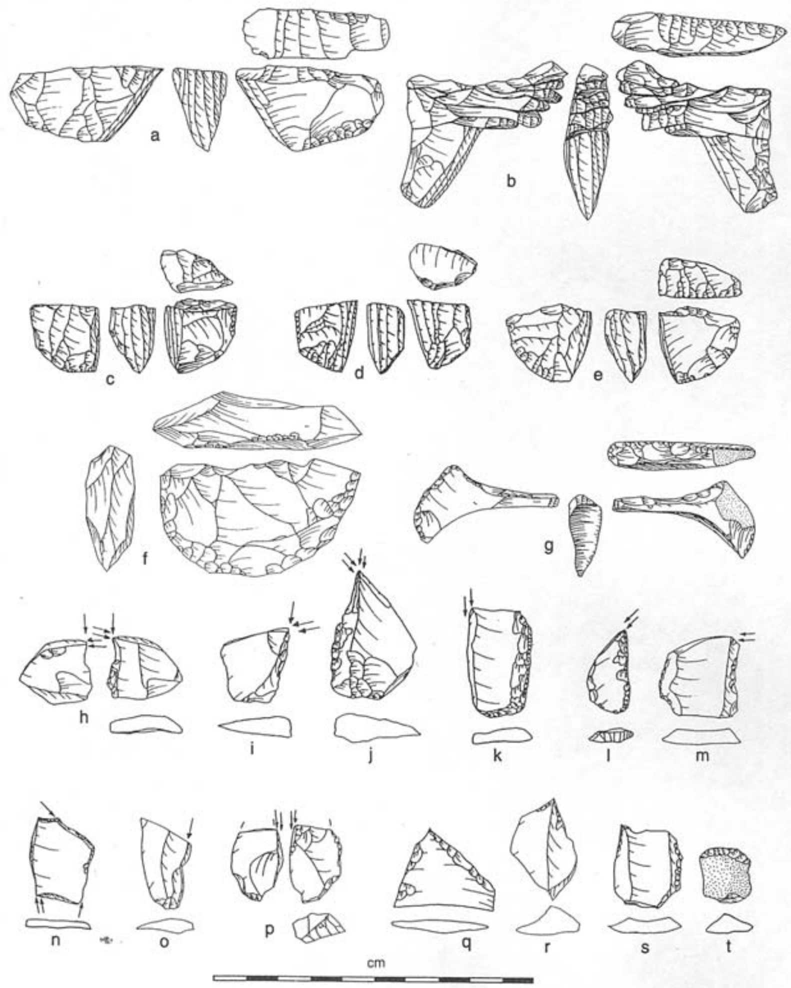

Figure 7–9 Component II of the Dry Creek site (Denali complex): wedge-shaped microblade cores (*a–e*, *b* with attaching core parts); wedge-shaped core preform (*f*); wedge-shaped core tablet (*g*); dihedral burins (*h–j*); angle burin (*k*); transverse burins (*l*, *m*); burins-on-a-snap (*n–p*); retouched flakes (*q–s*); end scraper (*t*).

Figure 26. Microblade Technology from Component II (Denali Complex), Dry Creek Site.
(from West 1996c)

The assemblage is typified by the presence of wedge-shaped microblade cores, core tablets, blades, bifacial biconvex knives, end scrapers, burins and burin spalls (particularly of the “Donnelly burin” form), and retouched flakes.

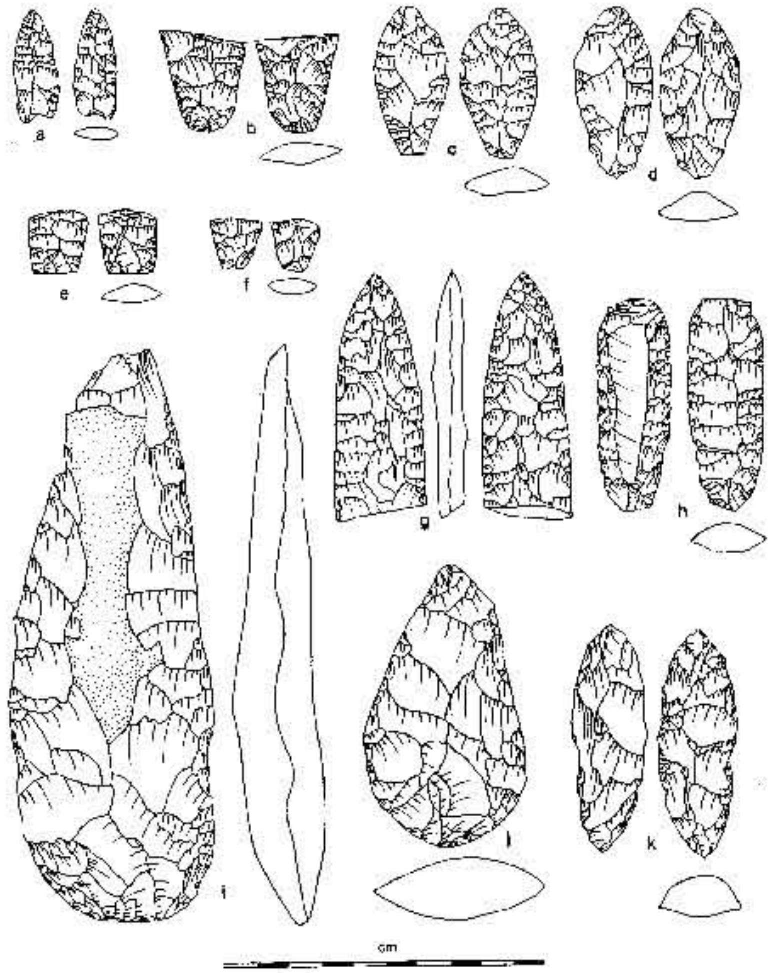

Figure 7–10 Bifaces from Component II of the Dry Creek site: complete projectile point and base fragments (a, b, e, f); biface knives and preforms (c, d, g–k).

Figure 27. Bifaces from Component II (Denali Complex), Dry Creek site
(from West 1996c)

Despite West's assertion that the Denali complex includes the assemblages I have referred to as belonging to the Nenana complex, with the exception of the Swan Point site ((Holmes, et al. 1996; Dilley 1998), non-microblade bearing Nenana complex components consistently lie both stratigraphically lower and radiometrically younger than Denali complex materials both within and between the sites where they are found. Further discussion of the relationship between the Nenana and Denali complexes are found below in this section and in our summary discussion at the conclusion of this report.

Northern Archaic Tradition

I have described this archaeological culture earlier. It is found from about 6,000 years ago to about 1,500 years ago in Alaska and is characterized by the appearance of small, side-notched projectile points, as well as high numbers of endscrapers, and the presence of notched pebbles, presumably used for net weights.

Late Denali Complex

The presence of wedge-shaped cores in the Campus site, as well as others, which have been subsequently radiocarbon dated to the late Holocene led to the notion of a “Late Denali complex,” circa 3,500 to 1,500 years ago. It is characterized by the presence (reappearance?) of microblades and burins, in components which otherwise are similar to the Northern Archaic (i.e., contain side-notched points, etc.).

Athapaskan Tradition

This archaeological culture is found from about 1,500 years ago to about 150 years ago and is characterized by a shift from lithic to chacolithic copper technology, stemmed projectile points, and the increased use of bone and antler arrowheads (although it is likely that this is a largely a function of better preservation of more recent organic material).

Euroamerican Tradition

This archaeological culture began about 150 years ago and is characterized by the introduction of European manufactured goods and materials

Comparative Discussion of the Interior Southeastern Beringian Archaeological Sequence

As can be seen, there are several direct correspondences to be made between the Alaskan and Yukon chronologies. For all intents and purposes the Euroamerican Tradition is equivalent to the Bennett Lake Phase and the Athapaskan Tradition to the Aishihik Phase. In combination, both of these Alaskan traditions are equivalent to the Lake Prehistoric Tradition. There is also a direct correspondence between the two regions' Northern Archaic Traditions.

The presence of a microblade bearing Late Denali Complex within the time of the Northern Archaic has correspondence as well. Recent analyses of the temporal range of microblade technology in the Yukon has suggested that in many local areas this method has persisted up until quite recent times (Hare and Hammer 1997; Clark et al. 1999). Grouping together both microblade and non-microblade sites with the more embracing Middle Prehistoric Period, or altering our definition of the Northern Archaic to include the presence of microblades, may be called for.

The distinguishing feature between the Denali Complex (c. 11,000 to 9,500 years ago) and the Northwest Microblade Tradition (c. 7-8,000 to 4,500-5,000 years ago) is time. Yet most researchers agree that the latter represents the migration of this technology eastward over space through this time.

Finally, there does seem to be some correspondence between the Nenana Complex and Clark's Northern Cordilleran Tradition with their emphasis on bifacially worked tools, the presence of blades, and the lack of microblades. However, we can also see distinctive differences including the presence of Chindadn type and basally thinned points in the Nenana Complex and their absence in the Northern Cordilleran Tradition.

Recent comparisons of the components associated with the Nenana and Denali Complexes has led some to suggest that these may all belong to a single over-arching tradition, which West has named the (Eastern) Beringian Tradition. West has put the case most strongly:

> There is no unique Nenana artifact. Every Nenana artifact form can be duplicated in Denali. The absence of microblades surely has simpler explanations than . . . calling upon another culture - and one without antecedents at that. This certainly suggests that Nenana is, at best, a Denali variant (West 2000:4, quoted in Heffner 2002:26).

Resolution of this question may well hinge on archaeological evidence within the Borderlands region. Heffner's (2002) excavation and analysis of the KaVn-2 site, not far south of Beaver Creek, brought to light an early component dated between 10,670 and 10,130 radiocarbon years before present, which was occupied within a few hundred years of deglaciation in the area. Heffner argues that the, "assemblage can be seen as intermediary between the Nenana Complex or Northern Cordilleran Tradition and the

Denali Complex or American Paleo-Arctic Tradition" (Heffner 2002:119). He goes on to state that this fact lends support to the Eastern Beringian Tradition as the most appropriate cultural historical classification for early sites in interior northwestern North America. As noted earlier, the Eastern Beringian Tradition posits that the Nenana and Denali Complexes of Central Alaska, and by extension the Northern Cordilleran Tradition and American Paleo-Arctic Traditions as well, are technologically related and that assemblage differences in early archaeological sites can be better explained by site location, site function, and site seasonality (Heffner 2002:120).

Given the facts that KaVn-2 was within the area of late Pleistocene glaciation, and that it was occupied about 500 years after deglaciation in the area, we might expect to find similarly early, or earlier, sites in the unglaciated lands of the borderlands to the west, which may make a further contribution towards resolving the ambiguities of this early period of human colonization of eastern Beringia. Indeed, this has been a guiding assumption in my own archaeological work in the region, an assumption that the Little John site seems poised to confirm.

Archaeological Sites within the Borderlands Region

Prior to the initiation of the Scottie Creek Culture History Project by Easton in the mid-1990s, the Borderlands area had received limited archaeological attention.

Johnson first conducted survey efforts in the area in 1944 and 1948, after the construction of the Alaska Highway, but he did not record any archaeological sites in our area of interest (Johnson 1946, Johnson and Raup 1964). A number of archaeological survey efforts passed through the area during environmental impact assessments for the Foothills natural gas pipeline project in the late 1970s and early 1980s and they are summarized in Damp and Van Dyke (1982). Only one site was recorded within our area of concern. Tests at KaVn-1 recovered a small collection of debitage flakes. Walde (1991) conducted survey along the Alaska Highway right-of-way in 1991 from the border to the White River, returning to undertake mitigation excavation at Borden sites KaVn-2, KbVo-1, KbVo-2, and KdVo-3 (Walde 1994). Easton conducted some survey in the area of Beaver Creek in 1994 (Easton 2002a). In 1999, Ty Heffner revisited KaVn-2 to complete the excavation and analysis of this site, as well as survey a number of localities around Tchawsahmon Lake (Heffner 2000, 2002). Easton has conducted additional surveys of the middle reach of Scottie Creek in 2001 and 2002 (Easton 2002), and the northern Mirror Creek drainage in 2003 and 2004 (Easton, this report). Just across the border in Alaska, a series of site surveys of historic native settlements and graveyards have been undertaken by the Bureau of Indian Affairs (BIA) on the upper Chisana and Nabesna Rivers. While several of these sites are presumed to hold additional evidence of prehistoric occupation, limited subsurface excavation undertaken in the course of the surveys did not uncover any artifacts and so do not bear directly on this current discussion (BIA 1993a, 1993b, 1995a, 1995b, 1996a, 1996b). Finally, Bob Satler, Tom Gillespie, and Easton conducted limited archaeological survey of several sites in the area about Northway and Tok, Alaska in 2006; two sites were discovered near the border, one of which, at the mouth of Mirror Creek where it meets the Chisana River, bears a similar stratigraphic profile to that found at the Little John site and consequently may be related, although no artifacts were recovered in the single test pit excavated there.

Table 2, below, presents summary information on most of the archaeological sites recorded to date on the Canadian side of the border eastward to about the White River. These sites reveal a culture history pattern similar to that of the regional archaeological sequences to the west and east of the study area.

In addition to archaeological remains related to the prehistoric occupation of humans, the Mirror Creek, Little Scottie Creek, and Big Scottie Creek basins have been the location of the recovery of Pleistocene-age paleontological remains, including mammoth, bison, caribou, horse, saiga, and unidentified feline spp. Several associated fragments of *Equus lambei* recovered during highway reconstruction in 1996 have been dated to 20,660 +/- 100 BP. Three juvenile mammoth tusks were found close to each other in the middle Little Scottie Creek basin (MacIntosh 1997, Easton, fieldnotes.). Both the horse and juvenile mammoth tusks were recovered less than two km from the Little John site.

Having set the larger archaeological context of the region, we now turn to a detailed discussion of the Little John site and its implications.

Table 2. Canadian Archaeological Sites of the Yukon - Alaska Borderlands.	
KaVn-1	S of Sanpete Creek and E of Ak. Hwy, S of a knob located between creek bottom and Horsecamp Hill. Original find was two dark silicified siltstone-like flakes on surface. Test pits yielded 53 blue-grey flakes of various sizes. As no prehistoric sites had been previously recorded in this region of S. Yukon, the site is considered inherently valuable.
KaVn-2	Moose Lake. On a sand ridge on E side of Ak. Hwy at NW base of Horsecamp Hill overlooking Moose Lake. Archaeological site excavated during Alaska Highway realignment. The basal component is dated to be about 10,400 years BP, making this the oldest known site in southwest Yukon, the second oldest in the territory (Walde 1991, 1994; Heffner 2002)
KbVo-1	Km 1918.550, N side of Ak. Hwy on a knoll on the top of a ridge at the edge of the highway cutbank, overlooking Enger Lakes to SE. Scatter of lithic debitage, artifacts and burnt bone. Second excavation uncovered unformed tools projectile points, microblade core fragment, hide scrapers, hammerstone and eight pieces of copper. Dated at approx. 1800 years before present.
KbVo-2	N side of Ak. Hwy, km 1918.5, on top of ridge at edge of the highway cutbank overlooking Enger Lake. Initial test pits included obsidian flakes, basalt flakes and burned bone fragments. 1993 investigation included lithics and faunal material.
KbVo-3	About 320 m east of KbVo-2 on n side of Ak. Hwy. Large burnt mammal bones collected.
KcVo-1	*Taatsan Tôh* - Red Hill. On W side of Ak. Hwy, N of Beaver Creek, km 1983. Historic lookout site of the WRFN. Five lithic scatters identified; subsurface testing recovered material related to Late Prehistoric, Northern Archaic, and microblades possibly related with Workman's Little Arm phase / NWMt. Site subject to continued destruction from quarry operation.
KdVo-1	Along Little Scottie Creek trail, ca. 1 km east of Ak. Hwy, on E side of Sourdough Hill. Prehistoric scatter.
KdVo-2	East side of Ak. Hwy, km 1949.3, approx. 150 m east of highway on the north shore of a small lake. Probably a prehistoric campsite.
KdVo-3	S side of Ak. Hwy, km 1950 at an YTG rock quarrying location. Near Mirror Creek. Prehistoric scatter of tools and bones. Dated at 810 +/- 80 BP.
KdVo-5	*Nii-ii* - Hunting Lookout associated with nearby traditional village site. Late Prehistoric and Northern Archaic occupations reported by Easton (2002a) and MacKay (2004).
KdVo-6	Large multi-component site containing stratified components of the Historic, Later Prehistoric, Northern Archaic, Denali / NWMt, and Nenana complex. Strata sequence ranges from several cc to over a m across the site. An undiagnostic component associated with culturally altered bones of a variety of taxa is dated to 8,900 BP and is presumed be related to the Denali component (This Report and Easton, et al. 2004, 2005).
KdVo-7	Small multi-component hunting lookout on the Mirror Creek plain 2 km to the south of KdVo-6. Side-notched points of the Northern Archaic and round-based lanceloate point within loess similar to the Nenana stratum at KdVo-6 (Easton, et al. 2004).
KeVo-1	*Naagat Káiy* - Traditional village site on middle reach of Scottie Creek containing Historic, Late Prehistoric, Archaic, Denali components, and possibly an earlier occupation within buried paleosols located in test pits 80 cm + below surface (Easton 2002b).
KeVo-2	Contemporary trapline cabin of Mr. Joseph Tommy Johnny and traditional campsite of his great-grandfather, *Tsay Suul*. Early Historic remains include musket balls and beads, and undiagnostic, presumably Late Prehistoric flakes and debitage (Easton 2002b).
KeVo-3	*Ta' ah* - Historic hunting lookout containing modified flakes, hammerstone, and flake core (Easton 2002b).
KeVo-4	Historic hunting lookout containing microblades and flakes (Easton 2002b).
Not yet designated	*Taatsan* - Raven Village - Traditional village site on the upper reach of Snag Creek near the international border, containing Historic, Late Prehistoric / Archaic components, based on limited testing in 2006. A similar stratigraphy with that of KdVo-6 suggests that earlier components may be present.
	Table data adapted, with modification and additions, from Dobrowolsky (1997).

SITE STRATIGRAPHY

In general terms the geological stratigraphy of the site consists of a basal regolith overlaid with sparse glacial till representing a glacial maximum known locally as the Mirror Creek glacial advance, variously dated to the Late Illinoian - MIS 6, c. 140000 BP (Bostock, 1965; Krinsley, 1965) or the Early Wisconsin – MIS 4, c. 70000 BP (Denton 1974; Hughes et al., 1989). Above this are found loess sediments varying in thickness from a few to over sixty centimeters, and then ten to twenty centimeters of Brunisols typical of the boreal forest in the region. In most areas this B horizon is intersected by a volcanic ash layer of several centimeters which radio-carbon dates suggest is a tephra deposit of the second White River volcanic eruption, c. 1200 BP (West and Donaldson 2002; Lerbekmo and Westgate, 1975). A thin (1 – 2 cm) A/O horizon caps the sequence.

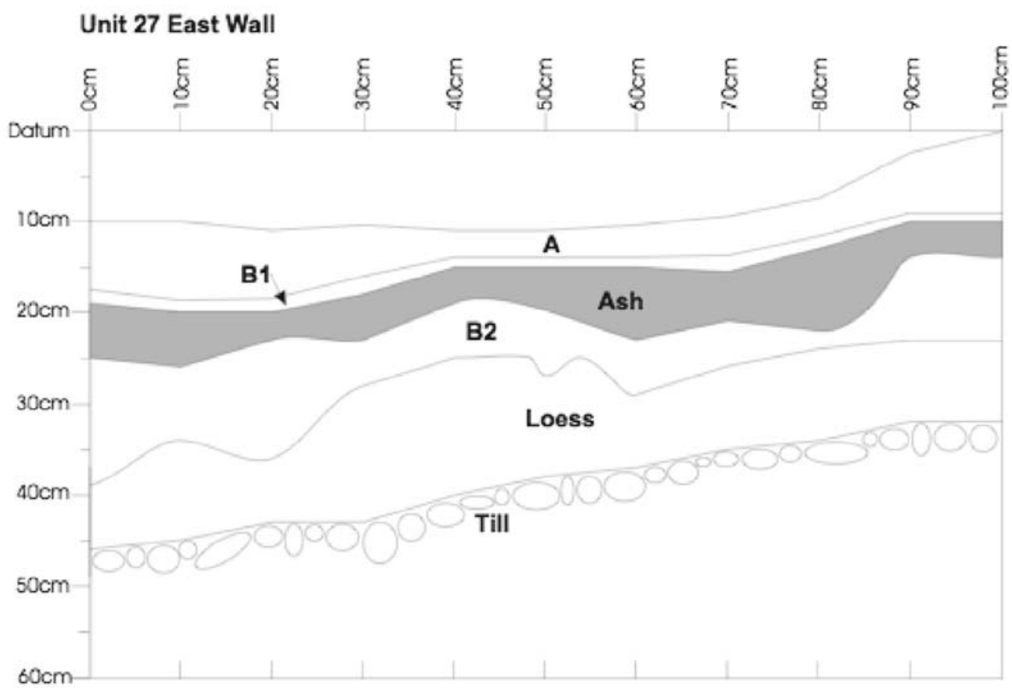

Figure 28. Representative Stratigraphic Profile, West Lobe.

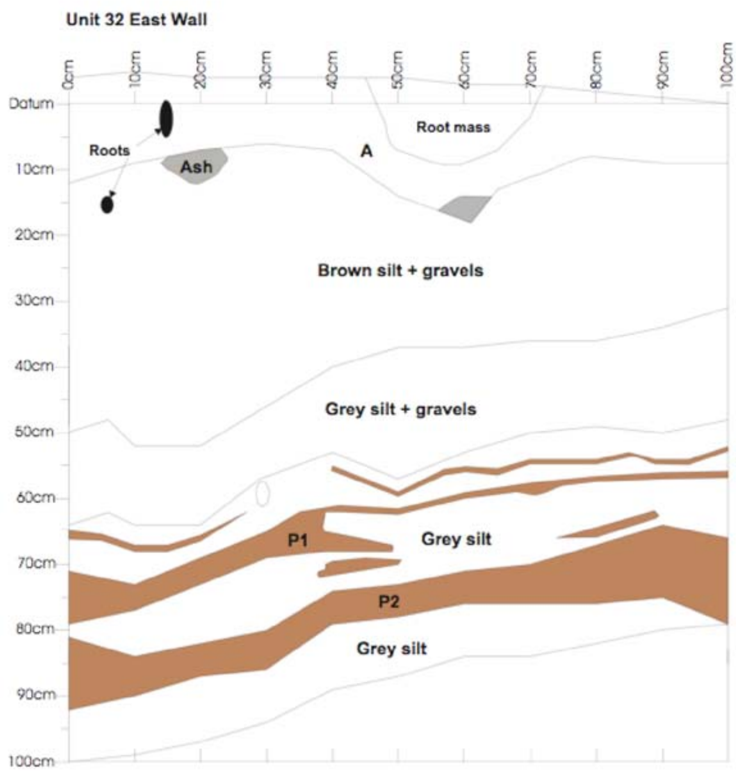

Figure 29. Representative Stratigraphic Profile, East Lobe.

The discontinuous depth of these strata is accounted for by the undulating topography of the site, which ranges from over meter deep basins to eroding hillsides. The stratigraphy is also complicated by the action of both ancient and contemporary permafrost, solifluction, and what seems to be a mass wasting event (probably a colluvial deposit) over a portion of the site. Because of this differentiation in depth and nature of strata we have divided the site into four initial zones.

The West Lobe, where the strata are most shallow, occupies the southwestern hillside on which deposits range from five to thirty centimeters. The Permafrost Lobe, where frozen ground is encountered mere centimeters from the surface, occupies the north-facing slope of the knoll. The Rockfall lobe, where large boulders lie through the brunisol and loess deposits, runs roughly through the centre of the site on a north – south axis.

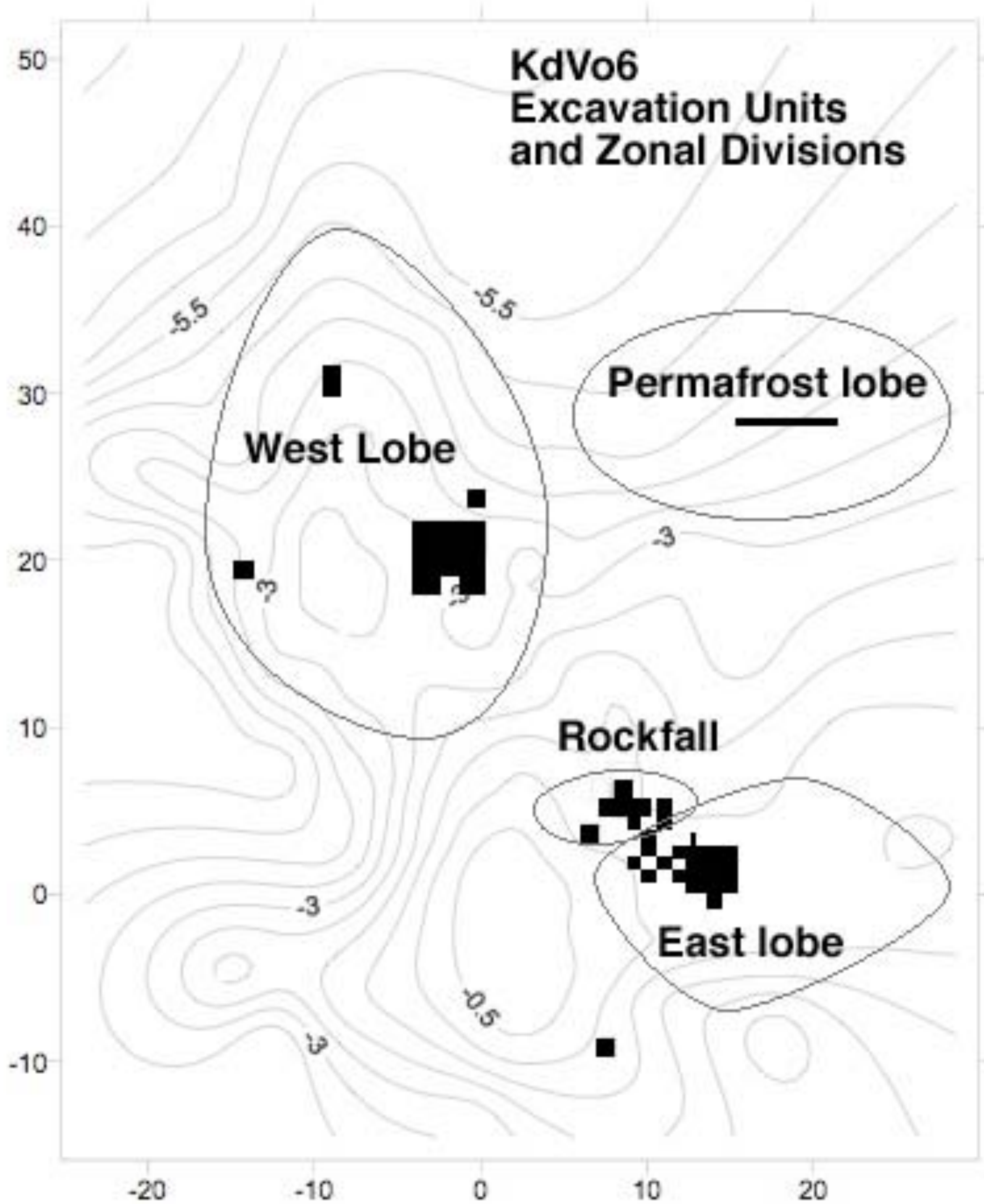

Figure 30. Zonal Divisions of the Little John Site.

The final area is the East Lobe, a large basin that troughs east from the site, and which contains the deep sedimentary deposits of one hundred centimeters and more and at least one, and perhaps two, paleosol strata near the bottom of the sequence. Capped by forty to sixty centimeters of loess below the B horizon, this paleosol complex contains a well preserved, culturally deposited faunal assemblage, in direct association with lithic artifacts.

Figure 31. Photo of Representative West Lobe Strata.

Figure 32. Photograph of Representative East Lobe Strata

Two sediment columns, one from the West lobe and one from the East lobe, have been analyzed for texture and organic content. In sum they confirm the gross visible morphology presented above.

Figure 33. Sediment Sample Column Removed, Unit 03, NW Quadrant.

Figure 34. Sediment Sample Column Removed, Unit 20 West Wall.

The samples were collected in 2003 from Unit 3 in the West lobe and Unit 20 in the East lobe. Grain size analysis and measurement of total organic content by Loss on Ignition were undertaken following standard analytical procedures detailed in Lewis and McConchie (1994b) by Baker as part of his Honours requirements at Laurentian University, supervised by Anne Gallie and Alicia Hawkins of that institution; Easton has incorportated these data here and extended their interpretation of the origins and diagenesis of these sediments based on comparative geomorphology.

West Lobe Sediments

The West lobe lies on a gentle slope trending northerly away from the steeply eroded southerly face of the apex of hill. Sediment accumulation above fractured regolith rarely exceeds 50 cm in depth. Four lithofacies can be distinguished in this section of the site.

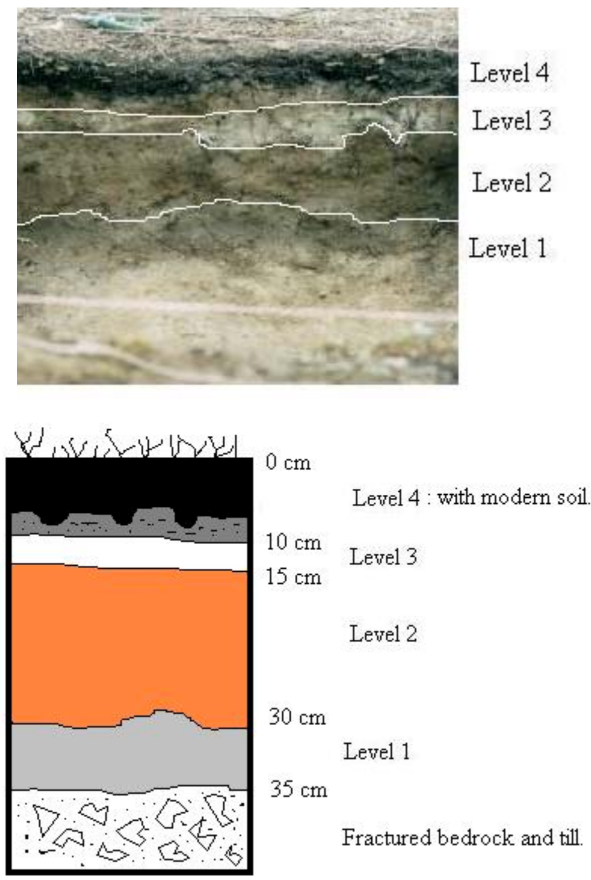

Figure 35. Analyzed Sediment Horizons, West Lobe, KdVo-6

Level 1 - Basal Loess (L horizon)

The level 1 loess, when freshly exposed, is reddish grey in colour (5 YR 5/2, moist). The matrix consists of 43.5 % sand, 54 % silt and 2.5 % clay with 24% clasts larger than 4mm. This unit is poorly sorted, as expressed in Figure 4, and is classified as a silt loam. Large angular clasts are found to consist primarily of bedrock fractured by periglacial processes. Loss of ignition analysis indicated 1.14 % organic carbon.

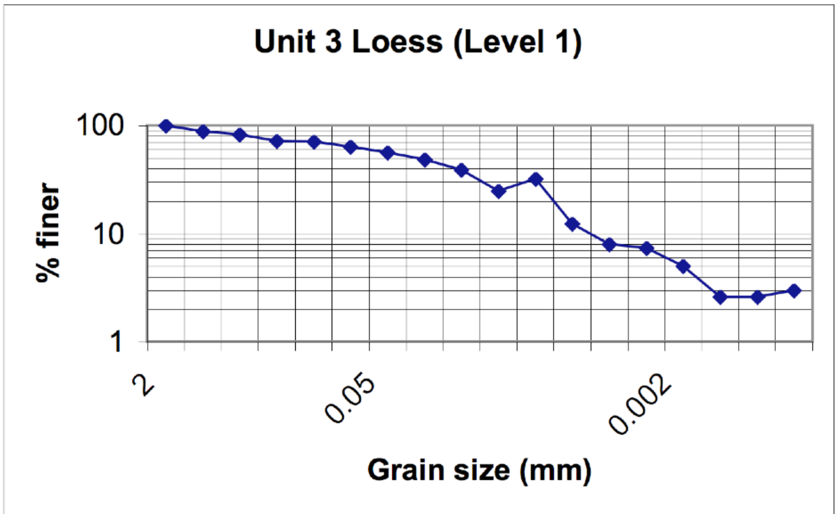

Figure 36. Grain Size Distribution, Level 1, West Lobe.

Level 2 - Brunisols (B1 and B horizons)

Level 2 overlays the loess, and is reddish brown in colour (2.5 YR 4/3, moist). Very few clasts are found within this level. The matrix is moderately sorted silt with 30 % sand, 65% silt and 5 % clay (figure 6). Loss on ignition shows 3.05% organic carbon. This level varies in depth from 6- 18 cm with the upper portion representing the deepest penetration of roots, which therefore had a higher organic carbon measured at 6.95 %. Angular clasts found in Level 1 were absent in Level 2.

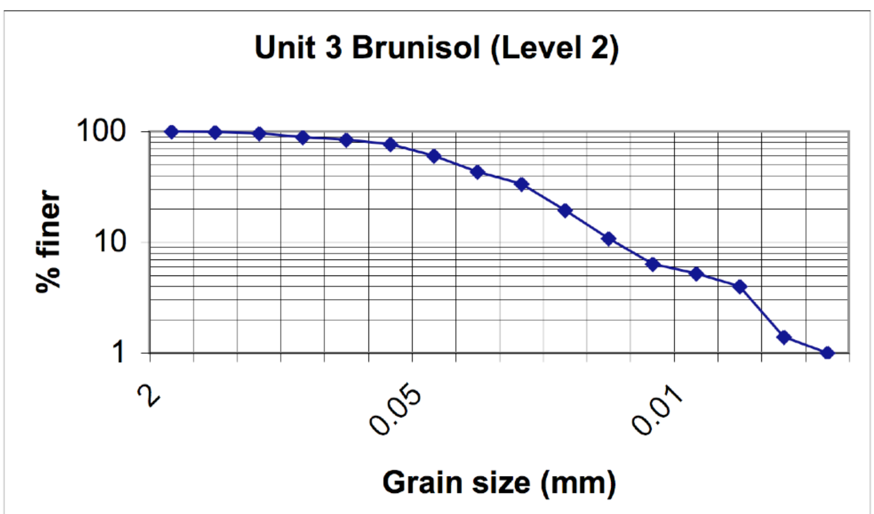

Figure 37. Grain Size Distribution, Level 2, West Lobe.

Level 3 - White River Ash (Ash horizon)

Level 3 consists of an inconsistent layer of remnant tephra from the White River volcanic eruption. Its presence is eroded in some areas and reaches a thickness of up to 10 cm in others. Currently we believe the tephra relates to the second eruption of the Mount Churchill complex, radiocarbon dated to c. 1200 years ago. A comparative analysis of the tephra to confirm this is underway.

Level 4 - Organic Mat (A/O horizon)

Level 4 is the most recently formed soil layer, and is composed of some eluviated material towards the bottom of this level. The eluviated material is slightly lighter in color than the rich dark organic material located directly under the top surface material. This organic layer is a reddish black (2.5 YR 2.5/ moist), and is high in organic carbon measured at 19.7 %. This can be attributed to the decomposing surface material and tree roots which extend into this portion of soil.

East Lobe Sediments

The East lobe of the site lies within a basin in which deeper sediments have accumulated; excavated depths to fractured regolith have reached depths greater than 1.5 meters.[12] As a result the area has a much more complex sedimentary profile than the West lobe; a total of nine distinguishable lithofacies can be identified, including a thick loess deposit overlying a buried paleosol complex.

Level 1 - Basal Loess (L2)

Level 1 is located 70 cm below surface, and extends to 1.1 meters where it meets with permafrost. This level is composed of a wide variety of clasts, with the lower most portions being comprised of clasts 4mm or larger. Level 1 is poorly sorted loess and gray in colour (7.5 YR 5/1, moist). The loess is composed of 17 % sand, 78% silt and 5 % clay and has 1.73 % organic carbon content. Large gravel and pebble- sized clasts were

[12] In several units the fractured basal regolith was excavated by pick and shovel below what appeared to be the extent of pedogenic deposits into the parent material; structurally it was similar to East Lobe - Level 1. Due to permafrost conditions we were unable to reach true bedrock.

found throughout this level one component, which are associated with glacial till. The depth of the bedrock base is unknown.

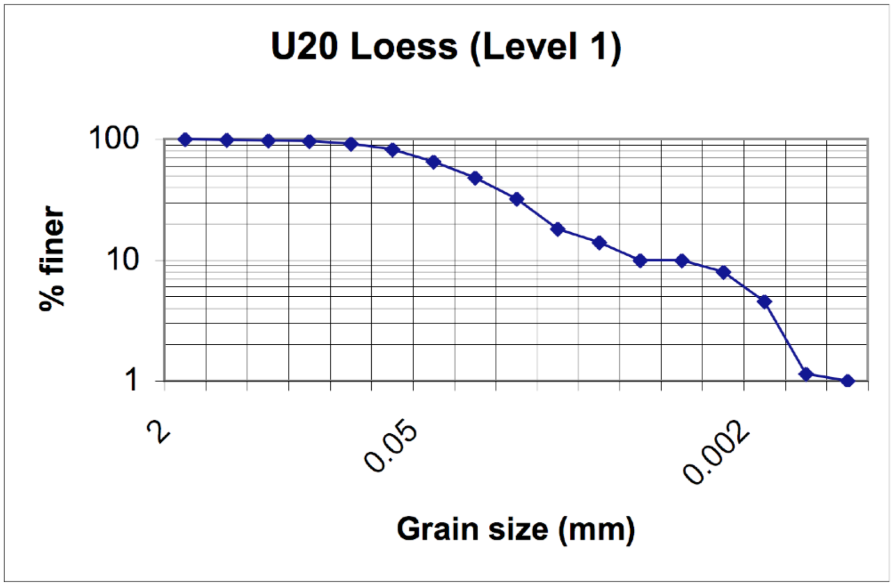

Figure 38. Grain Size Distribution, Level 1, East Lobe.

Level 2 - Paleosol (CP2)

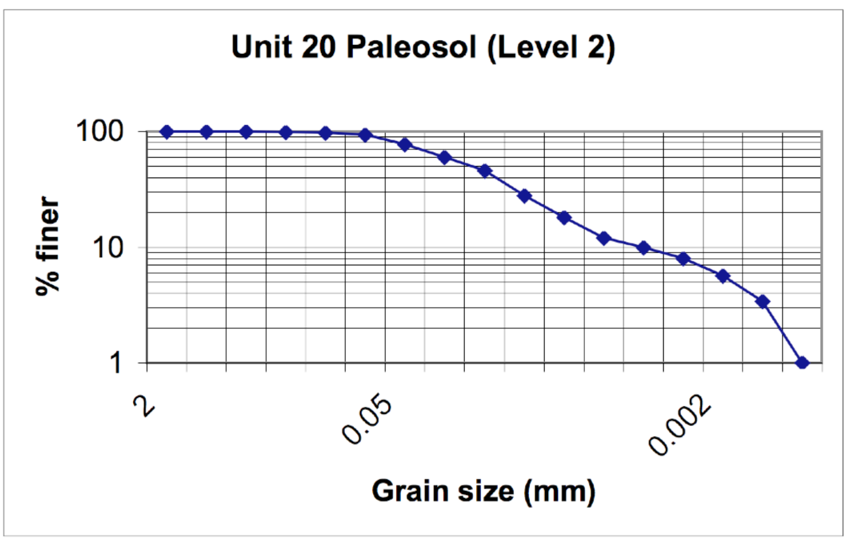

Figure 39. Grain Size Distribution, Level 2, East Lobe.

Level 2 is dark brown in color (7.5 YR 5/1, moist). Its texture is 15% sand, 79.2% silt and 5.8 % clay (figure 12), categorized as a poorly sorted silt loam. Its distinguishing feature is its composition, which includes an organic carbon content of 4.95 %, allowing it to be identified as a paleosol.

Level 3 - Loess

Level 3 lies between the paleosols and some evidence of mixing are present. The color is brown (10 YR 4/3, moist) and the matrix is composed of 20 % sand, 77 % silt and 3% clay; the high percentage of fine-grained clasts allows it to be recognized as loess, wind blown sediments deposited during the early post-glacial period.

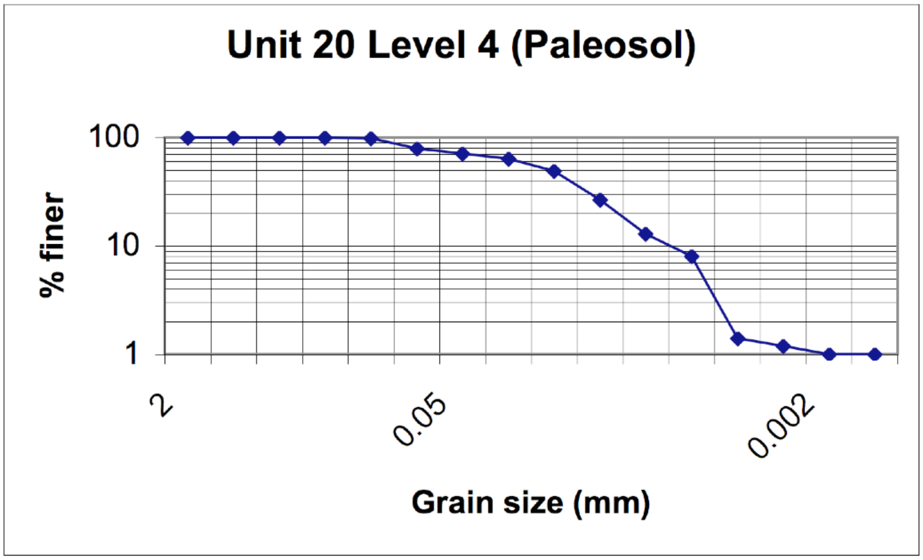

Figure 40. Grain Size Distribution, Level 4, East Lobe.

Level 4 - Paleosol (CP1)

Similar to Level 2, Level 4 is dark brown in color (7.5 YR 5/1, moist), with a texture of 25% sand, 73.5 % silt and 1.5% clay, similarly categorized as a poorly sorted silt loam. Organic content in Level 4 reaches as high as 6.91%.

Levels 5 and 6 - Loess with Colluvium

Levels 5 and 6 are both silt loams, with textures of 17% sand, 73 % silt and 10 % clay. They are distinguished here on the basis of colour and slight differences in pebble (> 4 mm) clast content. Level 5 is categorized as grey in colour (7.5 YR 5/1, moist) with more than 20% pebble clast content, while Level 6 is dark gray in color (5 YR 4/1) with less than 20% pebble clast content.

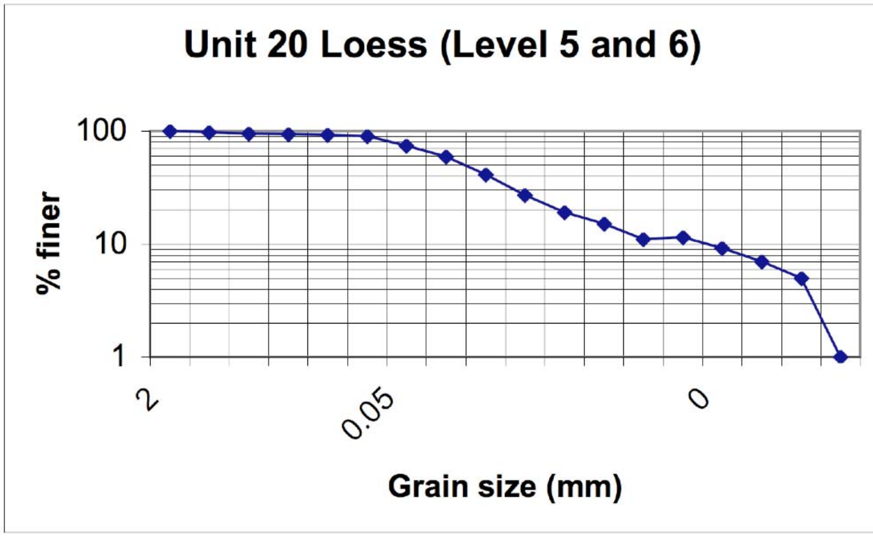

Figure 41. Grain Size Distribution, Levels 5 and 6, East Lobe.

Levels 7, 8, and 9

Level 7 consists of poorly developed Brunisol, intersected by a discontinuous tephra deposit (Level 8). Level 9, an organic A/O horizon representing the contemporary forest floor, completes the sequence.

Comparative Geomorphology of the Little John Sediments

These data and the visible stratigraphy of the East lobe of the Little John site can be fruitfully compared to the geomorphology of several other early Tanana valley Paleo-Indian sites, thanks to the excellent analysis of the Broken Mammoth, Mead, and Swan Point sites undertaken by Thom Dilley (1998). These are three of the earliest sites in Alaska, located within kilometers of each other along the lowest reaches of Shaw Creek, a stream flowing from the north into the Tanana River about 32 kilometers northwest of Delta Junction. Cultural deposits as early as 11,800 years before present are found in this area. More importantly, while our current analysis lacks the detailed geochemical data integrated into Dilley's work, the stratigraphic sequence closely corresponds to that of the Little John site.

Dilley undertook a detailed geomorphological study of these three sites, along with two non-cultural sections in the area for control of possible anthropogenic variables.

The results of his analysis of the five sections are remarkably uniform. The following is a praesis of his findings, which we believe is applicable to the Little John site as well.

The evidence of glacial history in the Shaw Creek Flats area is similar to that found at Little John. At least three Pleistocene piedmont glacial advances can be identified, locally labeled the Darling Creek, the Delta, and the Donnelly Glaciations. The Darling Creek glacial episode is of early Quaternary age. The Delta Glaciation was originally thought to be of early Wisconsin age; however, Pewe (1975), and others, have subsequently correlated the Delta to an Illinoian age. Of the three, only the most recent Donnelly Glacial episode is reasonably dated, beginning about 25000 BP and ending by 9500 BP (Pewe and Reger 1983).

In the region of the Little John site a similar glacial history is documented. Pleistocene glacial advances in the region were thin piedmont glaciers extending from the Nutzotin – Wrangel – St. Elias Mountain chain, which begin forty kilometers to the southwest of the site. Three have been documented: a poorly mapped and dated Pre-Reid episode; the Mirror Creek glacial advance, variously dated to the Late Illinoian - MIS 6, c. 140000 BP (Bostock, 1965; Krinsley, 1965) or the Early Wisconsin – MIS 4, c. 70000 BP (Denton 1974; Hughes et al., 1989); and the McCauley glacial advance, which began at about 26000 BP and began a rapid recession at about 13500 BP - by 11000 BP the region was ice-free to at least the White River, some 150 kilometers to the southeast of the Little John site (Rampton 1971), while the maximum McCauley advance ended at McCauley Ridge, some fifty kilometers to the southeast of the site.

In both areas, the principal time of concern is the late Pleistocene. In the Shaw Creek Flats area during this time "At the bedrock contact . . . there is evidence for older, periglacial weathering cycles. Frost-shattered, oxidized bedrock occurs at all of the sites. Overlying [this] . . . are sand wedges, rubble filled gullies, and colluvial solifluction layers . . . . [reflecting] at least several glacial / interglacial weathering cycles. . . . . Extensive frost shattering, wind deflation and ventifact formation probably occurred . . . . The area was probably an extreme periglacial environment during the Delta Glaciation with the ice front only about 10 km away. Extensive frost shattering, wind deflation and ventifact formation probably occurred. Wind erosion removed any older loess deposits and soils from the exposed bedrock bluffs these sites occupy" (Dilley 1998:206).

These periglacial geomorphological effects likely occurred at the Little John site during the corresponding Mirror Creek Glaciation, although with even greater severity, since the proposed ice margin was at the edge of the site. This would explain why during our excavations true bedrock was never exposed; the basal regolith of the site is a solidly compacted amalgamation of larger clasts of frost-shattered, fractured bedrock and loess sediments, which has subsequently been incorporated into the permafrost zone.

During the most recent glacial advance (Donnelly at Shaw Creek, McCauley at Little John), the sites would have been subject to further deflation and ventifact formation. "By Birch period time, 12,000 to 14,000 yr B.P., the sites were all experiencing blufftop deposition of gray eolian sand. . . . Loess deposition began at all of the sites about 12,000 yr B.P. Surfaces soon stabilized, and the Lower Paleosol Complex formed. . . . Beginning about 11,000 yr B. P., the sites received increased loess deposition and the Lower Paleosol Complex became buried. Surfaces stabilized again about 10,800 yr B.P. and the Middle Paleosol Complex formed from about 10,800 to 10,000 yr. B.P. Radiocarbon dates from the Broken Mammoth site suggest the Middle Paleosol Complex may have been a surface until about 9300 yr B.P." (Dilley 1998:208-209).

The associated dates of the formation of the Middle Paleosol Complex at the Shaw Creek sites correspond quite well with those of the East lobe paleosols found at the Little John site; three AMS radiocarbon samples on preserved fauna from this paleosol complex returned dates of 8890 +/- 50 BP, 9530 +/-40 BP, and 9550 +/- 50 BP.[13]

Another significant indication in support of this proposed correlation between the East lobe paleosols at the Little John site and the Swan Creek Middle Paleosol Complex is the correspondence of their gross morphology. "All of the paleosol complexes have cumulative A horizons consisting of several thin, discontinuous organic-rich buried A horizons. The Middle Paleosol Complex is usually the best expressed in the field and commonly occurs as two closely-spaced organic stringers forming a couplet that can be traced for tens of meters" (Dilley 1998:210-211).

[13] Full details on the samples follow. The first, on an unidentified large mammal fragment, probably *Rangifer*, was dated at 8890 +/- 50 BP (Beta 182798; 2 ∂ calibrated results range from Cal BP 10190 to 9865). The second, on *Rangifer*, was dated at 9530 +/-40 BP (Beta 217279; 2 ∂ calibrated results range from Cal BP 11090 – 10930 and 10880 - 10690). The third, on *Cygnini*, was dated at 9550 +/- 50 BP (Beta 218235; 2 ∂ calibrated results had two intercepts at Cal BP 11080 – 10940 and 10870 – 10720). All the bones from which these samples were drawn displayed cultural modification in the form spiral fracture and associated lithic debris; the swan bone was directly associated with a microblade fragment.

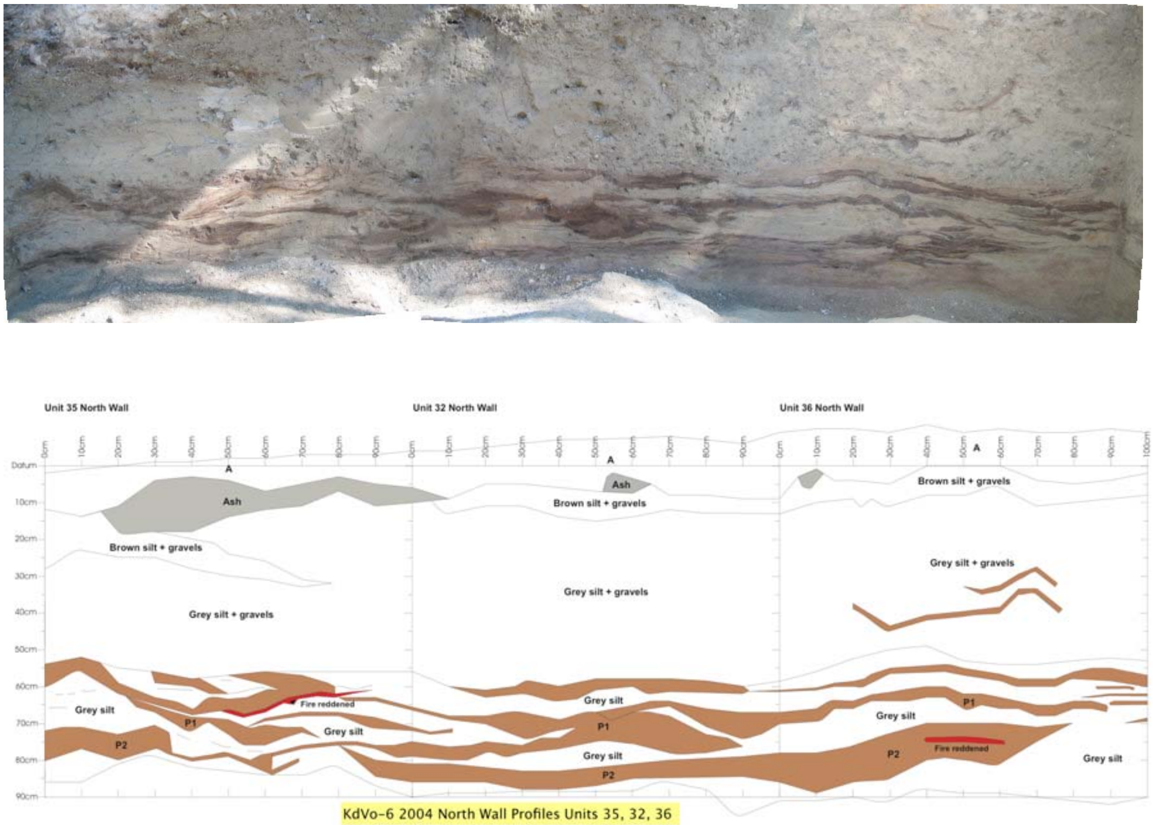

Figure 42. Photograph and Profile of East Lobe Strata, North Wall, Units 35, 32, and 36.

As the figure above illustrates, this accurately describes the East lobe paleosol complex at the Little John site, which also seems to include the poorly developed Upper Paleosol Complex found at the Swan Creek Flats (illustrated by the two isolated stringers in Unit 36 at about 30 cm below datum). At the Swan Creek sites the Lower and Middle Paleosol complexes are separated by up to 30 cm of loess; at the Little John site the about 10 cm of loess separates what is here designated as P1 and P2, similar to the Middle Paleosol Complex at the Swan Point Flats sites.

If this correlation is correct, then what explains the absence of the Lower Paleosol Complex found at the Swan Creek? We can suggest that it was deflated during the intervening period of high winds and loess deposition, or perhaps never formed at all at this site due to its closer proximity to the glacial advance?

On the other hand, we need to at least entertain the notion that the East lobe paleosols do contain a stratum, which corresponds to the Lower Paleosol Complex of the Shaw Creek Flats area. If we examine the gross morphology of the strata in the figure above, we might discern three separate paleosol bands in the lower levels, and suggest that P2 represents a proxy of the Shaw Creek Flats Lower Paleosol Complex. Arguing this interpretation, however, are the Little John radiocarbon dates, none of which even approach the age of the Shaw Creek Flats Lower Paleosol Complex which have been securely dated to between 12000 to 11000 BP.

The absence of encountering any paleosol whatsoever in the West lobe to date is more easily explained as a probable function of slope angle; deposits on the West lobe lie on a much steeper slope than the East lobe, and a combination of wind erosion, seasonal snow melt runoff, and gravity may well have denuded what little soils had a chance to develop in the West lobe. Even today differences in depths of the soil horizons are notable, with the West lobe seldom exceeding 35 to 40 cm. If this interpretation of the West lobe geomorphology is correct, then we might expect to encounter accumulated paleosols, and perhaps associated transported materials, further down the slope of the West lobe to the northwest. Testing this hypothesis would be difficult, however, due to the presence of permafrost within centimeters of the surface.

After about 9300 BP another period of rapid loess deposition occurred along the northern face of the upper Tanana valley. The Shaw Creek sites were abandoned at this time. Heavy loess deposition continued until about 7700 BP, slowing after this point. We find a similar heavy deposition of loess above the 9000 to 9500 BP paleosols at the Little John site (East Lobe Levels 5 and 6, Loess with Colluvium), the larger pebble clasts being explained as colluvial deposits initially eroded from the hillside to the north of the site (since graded away by the building of the Alaska Highway) by the high winds of this period and subsequently gravity-transported into the basin which the East lobe occupied.

Dilley's work also explains the remarkable preservation of organic fauna in the East lobe paleosols at the Little John site. It is a function of their rapid burial during the period c. 9,000 to 7700 BP. "This rapid burial during a warm dry interval sealed the paleosol complexes, and their associated cultural remains, in the Lower Loess. Pedogenic carbonate precipitation during this time caused the abundant faunal remains left by the Paleoindian occupations to be well-preserved" (Dilley 1998:209).

Dilley notes that by 4500 BP loess deposition had slowed to the point that the modern Bw horizon began to form under conditions of increased carbonate leaching by acidic soils typical of boreal spruce forests, in which Brunification is the dominant soil formation factor, which may also provides a proxy date for the initiation of this process at the Little John site. At the present time we have processed only one radiocarbon date for the B2 Horizon, which returned a date of 1740 +/- 40 BP (Beta 182799); two further dates from this level are currently being processed.

In conclusion, there is differential deposition and history of sedimentary structures across the Little John site, representing distinctive micro-geomorphological processes conditioned by the general topography and aspect of the site. Despite this, however, there is also evidence that the Little John site experienced similar gross geomorphological development as that of the neighbouring upper Tanana River valley. Additional analysis, particularly of the geochemistry of the sedimentological strata, at the Little John site may provide further support for this working hypothesis.

IDENTIFIED ARCHAEOLOGICAL COMPONENTS

For the purposes of our analysis of the material remains recovered at the Little John site, we have divided the assemblage into seven archaeological components. Their identification is tentative to the extent that a full suite of radio-carbon dates and detailed artifact analysis is not yet complete. However, they do allow an initial chrono-stratigraphic organization of the assemblage.[14]

From earliest to youngest these components are the Nenana and Denali complexes of late glacial Beringia; the Little Arm Phase of post-glacial Yukon; the Northern Archaic Tradition (or Taye Lake phase) of mid-holocene age until the White River volcanic eruption, c. 1,900 – 1,200 years ago, the Late Prehistoric Period (or Aishihik phase) which post-dates this eruption, the Transitional Contact Period (Bennett Lake phase), and the Historic (20th century) Period, which includes occupation of the site by non-native builders of the Alaska Highway. An eighth component might be identified as the Contemporary, as the site is still used today by the local aboriginal *Dineh* as a hunting lookout and campsite.

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[14] For the late glacial components we use terminology developed and applied within southeastern Beringia, while for post-glacial components we use the southwest Yukon cultural chronology developed by Workman (1978) and refined by Hare (1995).

For purposes of excavation and analysis we have assigned recovered artifacts based on their horizontal provenience using the following strata:

West Lobe

- Loess - Nenana complex
- B2 - L - Denali complex
- B2 - Middle (below ash) - Northern Archaic
- B1 (above ash) - Late Prehistoric
- A (humic layer) - Transitional Contact
- Surface - Historic

East Lobe

- Loess 1 (below paleosols)
- Paleosol - Denali complex[15]
- Lower L 2 (above paleosols) - ?
- Upper L 2 (above paleosols) - ?
- B2 - Middle (below ash) - Northern Archaic
- B1 (above ash) - Late Prehistoric
- A (humic layer) - Transitional Contact
- Surface - Historic

Representative artifacts of each of these components will be described below.

[15] Based on recovered artifacts and associated AMS radiocarbon dates; see below.

FAUNAL REMAINS

One of the features of the Little John site is the degree of faunal preservation found within the paleosol strata of the East lobe.

Figure 43. Faunal Remains *in situ*, East Lobe Paleosols.

This preservation is likely a result of the deep alkaline loess deposits overlying and interdigitizing the paleosols, which Dilley (1998) has argued neutralize the chemical decomposition of buried fauna common to boreal forests environments, which are typically highly acidic soils, as well as the fact that most of the skeletal material (> 90%) is burned to some extent.

Figure 44. Charred Rodent Mandibular Fragment, East Lobe Paleosols

Identified fauna from these paleosols include Caribou - *Rangifer*, Wapiti - *Cervus*, possibly Moose - *Alces*[16] , Hare - *Lepus*, Swan - *Cygnini* and other unidentified *Aves*, and *Rodentia*.[17] A single *Canis* humerus was also recovered; unfortunately attempts to date and identify the species of this specimen failed due to a lack of preserved collagen in the bone sample.

Figure 45. Caribou Leg Fragments from the East Paleosol.

Figure 46. Caribou Tooth Fragments from the East Paleosol.

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[16] Based on stable isotope data obtained from one sample, which indicates a diet dominated by lacustrine sedges and grass (Paul Matheus, pers. com., Dec. 2006).

[17] Identification of faunal elements was undertaken by comparison with known species held in collections at Yukon College and the Yukon Heritage Branch, as well as by reference to standard publications on identification of skeletal remains

Figure 47. Small Mammal Remains from the East Paleosols.

Faunal preservation above the East lobe paleosols is typically poor, which is the more common case in boreal forest sites. Identified recovered fauna from the B Horizon are exclusively moose, principally teeth fragments, all of which were recovered from the Mid-B Horizon. Based on associated artifacts in this horizon, which include microblades and small obsidian points, we currently assume these remains to reflect a mid-Holocene occupation of the Northern Archaic archaeological culture. Two radio-carbon samples of this horizon are currently being processed.

Finally, interspersed across the surface and humic layers of the site are fauna remains related to hunting activities undertaken at this locality over the past century. Other than noting their presence, we have not collected or analyzed these remains, since they relate to ongoing occupation and use of the site by local *Dineh* hunters, many of who hold spiritual values towards the animals that they hunt. These remains consist exclusively of moose and hare.

The collected fauna have been examined for evidence of cultural modification and other attributes by the principal investigator and several collaborators.[18] Based on this examination we can summarize the extant collection as follows.

We have already noted that the paleosol fauna is generally well preserved and that the majority of the material is to some degree burned. Indeed, over 99% of the extant fauna is from the East lobe of the site, and of that subsample 95% of faunal remains are from the lower paleosols and loessic interfaces.

[18] In addition to Easton, Vance Hutchinson played a major role in assessing the fauna; Paul Matheus, David Yesner, Roy Carlson, and James Dixon have also contributed to this analysis.

In addition, there is a high level of abrasion on surfaces of some of the burnt bone; possibly due to exposure during alternating periods of slow soil deposition and eolian loessic deposition. As well, many specimens exhibit a highly polished, patinated surface.

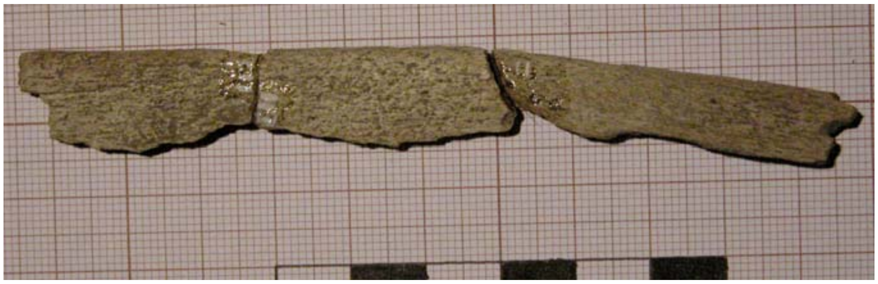


Figure 48. Heavily Abraded Rib Fragment, East Lobe Paleosols.

Skeletal elements represented in the collection are remarkably uniform, with over 80% of the specimens appearing to derive from ungulate long bones, mostly medial shaft fragments. Cranial material is conspicuously absent, as are any distal limb segments such as digits or hooves, or antler. Axial elements are present, but uncommon; they are dominated by rib fragments and three separate vertebrae sections; this may be due to the thinner cortex of both of these elements.

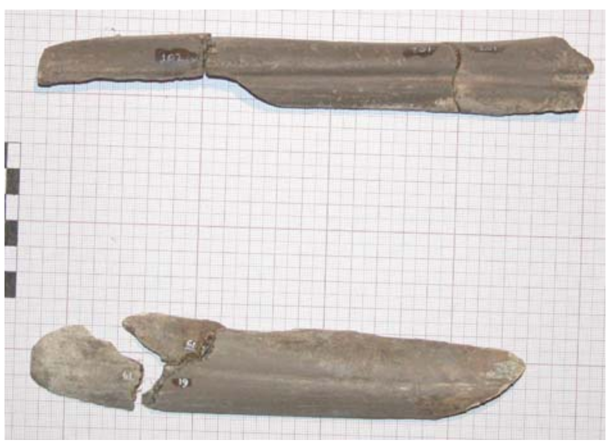


Figure 49. Highly Patinated Long Bone Fragments, East Lobe Paleosols.

The size gradients of extant specimens is skewed towards smaller fragments; nearly 80% of the fauna have maximum dimensions of less than 5 cm. This may be related to combination of multiple burnings within hearth and fracture from marrow extraction (which may also be the cause of so many pointed pieces – the spiral fracture of fresh bone during hammer-and-anvil crushing for marrow extraction).

More specifically regarding specimen taxonomy:

- 95%+ of faunal remains derive from large ungulate species, most likely one or more species of *Rangifer*; *Alces* is considered less likely at this time based on general size of remains, although one radiometric sample suggests moose;
- however, few specimens retain taxonomically identifiable morphology; antler is also absent as is any ivory;
- ovi-caprids are apparently absent; horn and horn cores absent, no identifiable specimens for this group;
- at least two specimens of Aves are extant; a larger specimen may represent a species of *Cygnus*; the smaller tibio-fibula seen in the slides may derive from some smaller species of water fowl;
- at least one rodent mandibular fragment is extant, likely from a gopher; this specimen is heavily charred.

With some exceptions, noted below, the fauna show little direct evidence of cultural modification. While there is a preponderance of pointed bone fragments in the assemblage this is a bit misleading. The majority of them are likely the result of spiral fracture, possibly for marrow extraction, since these specimens, other than being pointed, show no other characteristics of manufacture or use.

Figure 50. Representative Spiral Fractured Bone Fragments.

Cutmarks are absent, for example. Although striations are apparent on the broken edges of the pointed bones, they are not the result of use-wear but from separation of the lamellar bone. However, the overall absence of cut marks in this assemblage may simply be a sampling issue related to the absence of large articular surfaces where butchering marks tend to be most common.

Four specimens show more distinct evidence of cultural modification and use. One displays evidence of deliberate flaking along both longitudinal edges. The other three display evidence of a combination of flaking, grinding, and polished use wear. Two of these specimens are remarkably uniform in shape, perhaps representing the same tool form in two different sizes.

The first specimen is illustrated below.

Figure 51. Flaked Bone Fragment from the East Lobe Paleosols.

Figure 52. Detail of Flake Scars Along the Top of the Bone in Figure 51.

Figure 53. Detail of Flake Scars Along the Bottom of the Bone in Figure 51.

Although it is possible that these scars are the result of gnawing by some other animal, based on the rather uniform and apparently deliberate flaking of the edges, we consider this unlikely. The functional purpose of this working is unknown.

The second possible bone tool is illustrated below. It is a large mammal ulna fragment that displays an extremely high level of polish along its lateral edges and distal pointed end. Morphologically it is similar to ulna awls common in the toolkit of the Paleolithic.

Figure 54. Utilized Bone from the East Lobe Paleosols - Ulna Tool.

The remaining two bone tools are so similar in their morphology that they may well have served a similar functional use. Both are formed on ungulate tibia fragments. Each has also been flaked on both sides of their distal ends, creating an acute angled edge. The larger of the two also displays considerable additional wear along one of its distal edges, creating an arcing concavity along the surface. It is not difficult to imagine their use as chisels of softwood, such as birch, although I am not aware of any ethnographic or archaeological examples that demonstrate an analogic form.

Figure 55. Utilized Bone from East Lobe Paleosols - Large Tibia Chisel?

Figure 56. Utilized Bone from East Lobe Paleosols - Small Tibia Chisel?

Figure 57. Closeup of Modification and Usewear on Utilized Tibia Fragments.

In sum, the Little John site contains a remarkably well-preserved assemblage of Late Glacial fauna. A detailed comparison to that found at the few other sites in the Tanana Valley which preserved fauna of a similar, and older age, has not been conducted, but a cursory comparison with published summaries (see, for example, Holmes 2001; Yesner and Pearson 2002) shows general agreement that the people of this time period were hunting caribou and supplementing this primary diet with a fairly broad spectrum of additional faunal resources.

A full inventory of collected fauna, including provenience and identification, is found in the accompanying Electronic Appendix.

RADIO-CARBON DATES

Six radiocarbon dates have been processed from the Little John site to date:
Four AMS radio-carbon dates on bone from the paleosol complex, and two from the B2 horizon. In addition, two further samples from the B2, mid-holocene horizon, are currently being processed. Table 3 summarizes the radiocarbon dates.

Table 3. Radiocarbon Dates from the Little John Site.

Site	Lab #	RCBP	2 S CALBP	Intercept BP	1 S CALBP	Level	Unit	DBS	Material	13C/12C	15N/14N	Comments
KdVo6-04-CP1 AMS date	Beta 217279	9530 +/- 40	11090 – 10930 and 10880 – 10690	10750	11060 – 10950 and 10780 – 10720	Upper Paleosol	U 32	70	Bone, *Rangifer*	- 19.8 o/oo	- 1.0 o/oo	
KdVo6-0604Aves AMS date	Beta 218235	9550 +/- 50	BP 11120 – 10690	11050 10970 10760	11080 – 10940, and 10870 – 10720	Paleosol	31	54.5	Bone, *Cygnini*	19.1 o/oo	2.2 o/oo	
KdVo6-SC2003-11 AMS date	Beta 182799	1740 +/- 40	1725 – 1545	1685, 1660, 1625	1705 – 1585	B2 low	U5NE	11.5 ??	Charred material	- 25.6 o/oo		Indicates tephra is 2nd White River Volcanic Ashfall
KdVo6-SC2003-20 Normal date	Beta 181485	130.44 +/- 0.86 pMC							Wood	- 25.0 o/oo		Radiometric Result indicates material was living in last 50 years (post 1950)
KdVo6-SC2003-F01 AMS date	Beta 182798	8890 +/- 50	10190 – 9865 and 9855 – 9780	10130, 10060, 9945	10160 – 9910	Lower Paleosol	U20SE	67 cm	Bone collagen *Rangifer*?	- 19.7 o/oo		

Of the radiocarbon samples submitted from the East lobe paleosol, the first, on an unidentified large mammal fragment, was dated at 8890 +/- 50 BP (Beta 182798; 2 ∂ calibrated results range from Cal BP 10190 to 9865). The second, on *Rangifer*, was dated at 9530 +/-40 BP (Beta 217279; 2 ∂ calibrated results range from Cal BP 11090 – 10930 and 10880 - 10690). The third, on *Cygnini*, was dated at 9550 +/- 50 BP (Beta 218235; 2 ∂ calibrated results had two intercepts at Cal BP 11080 – 10940 and 10870 – 10720). All the bones from which these samples were drawn displayed cultural modification in the form of spiral fracture and associated lithic debris; the swan bone was directly associated with a microblade fragment. A fourth sample from a *Canis* spp. humerus, recovered from below the paleosol strata, was found to be lacking any collagen suitable for dating, suggesting greater antiquity and post-depositional taphonomy than the upper paleosol fauna.

Of the remaining two samples, only one returned a date of merit. Analysis of charred material from the West lobe B2 horizon, from a depth of 11.5 cm, generated a date of 1740 +/- 40 BP (Beta 182799; 2 ∂ calibrated results range from Cal BP 1725 – 1545), suggesting that the tephra above this represents ash deposited from the second White River Volcanic explosion. The second sample provided a result consistent with material that was living in last 50 years (post 1950), and is interpreted as the buried remains of a post associated with the use of the site as campsite in the historic era.

Figure 58. Canis humerus. Recovered from Lowest Loess Level Below East Lobe Paleosols. The lack of datable collagen in a submitted radiocarbon sample suggests that it predates c. 9500 BP (see discussion above).

Figure 59. Wapiti (*Cervus* spp.) Vertebrae Recovered from Lowest Level Below East Lobe Paleosols.

SUMMARY OF RECOVERED ARTIFACTS

The Electronic Appendix provides a full listing of artifacts recovered to date from the Little John site within a set of Excel data tables. This section will present some summary data on the occurrence and distribution of all formed artifacts by type and stratum, as well as the distribution of raw material by stratum. The next section will provide descriptions of a representative selection of the formed artifacts by class and assigned site component.

Formed Artifacts by Type and Stratum

The following four tables present the distribution of formed artifact types recovered from the Little John site by their stratigraphic level. The East lobe distribution is presented separately, while the West lobe tables, below, incorporates West and Rockfall lobe materials together.

The raw counts suggest that site use intensified during the middle Holocene Northern Archaic period. As well, it is interesting to note the Bell Curve-like distribution of the microblade category across the strata. However, when we examine the same data as percentages of each strata, presented in the next table, a different pattern emerges, in which microblade technology remains well represented across all three strata above the loess.

In complimentary apposition to the importance of microblades in occupations above the loess stratum, as reflected in their percentile distribution, the non-microblade loess stratum shows a heavy reliance on modified flake tools; edge retouched and utilized flakes combined account for about 42% of the total loess assemblage, compared to their occurrence at about 20% in the two B2 levels above, while in the uppermost B1/Ash stratum, this category increases to about 30%.

Bifaces, in the form of Chindadn points, points, and large bifaces, account for a further 32% of the loess level component assemblage of formed tools. Within the two B2 levels they account for less than 10% of the proposed component assemblage, and are completely absent in the B1/Ash.

Burin technology is found in all three lower strata and absent in the B1/Ash level.

Table 4. Numerical Distribution of Artifacts by Type and Stratum, Non-Paleosol Units.

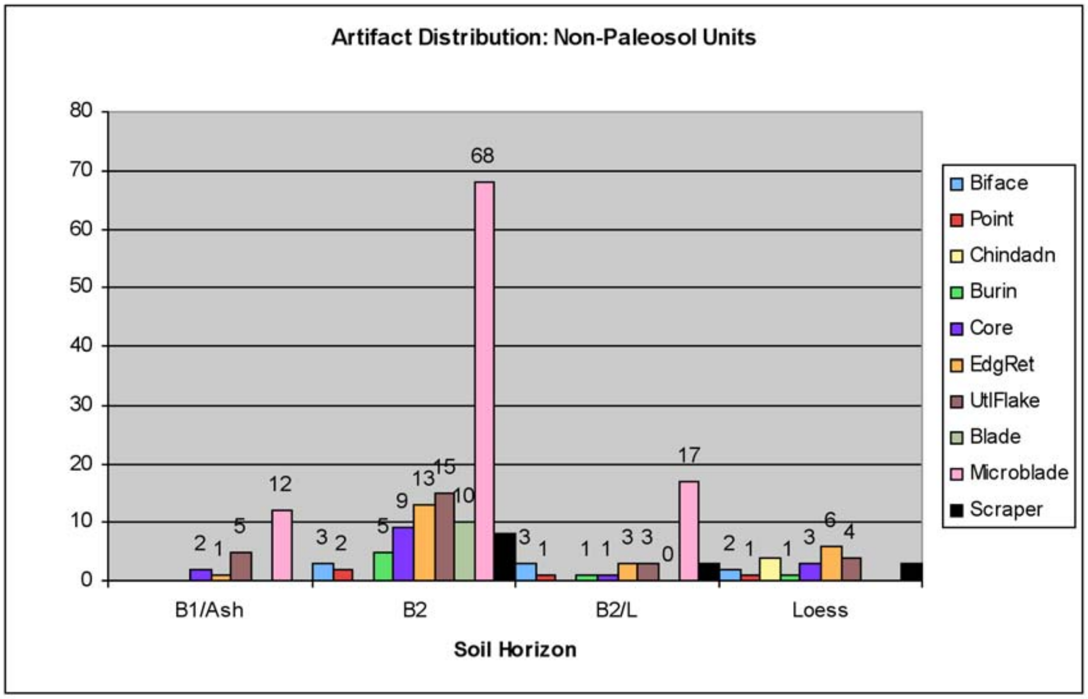
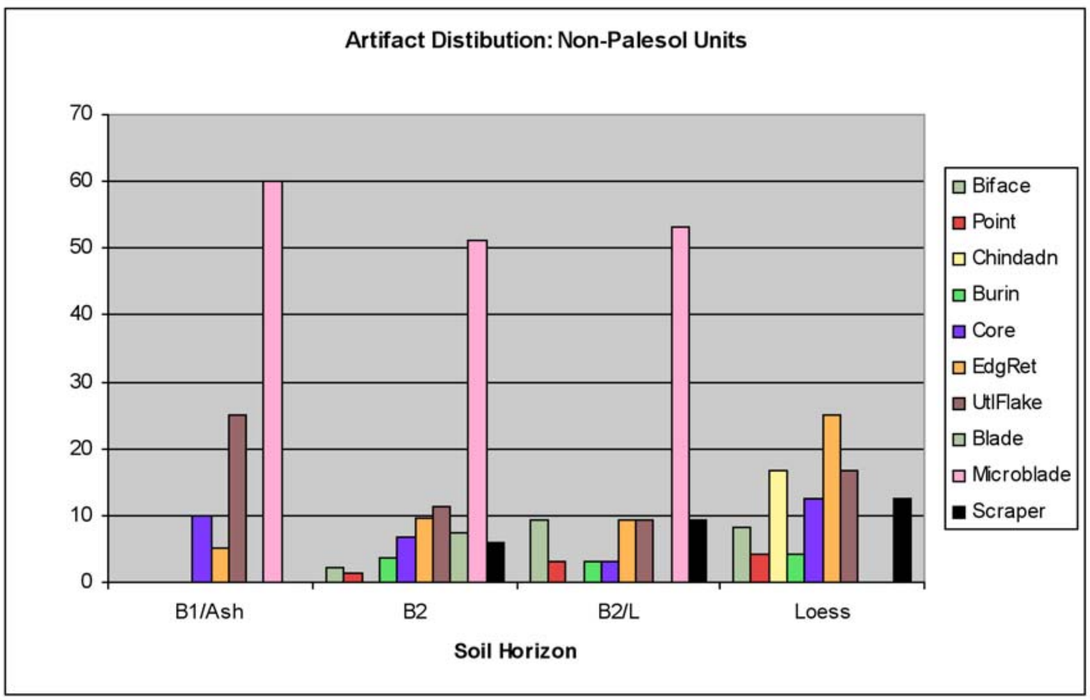


Table 5. Percentage Distribution of Artifacts by Type and Stratum, Non-Paleosol Units.



Similar tables representing the East Lobe artifact distributions are presented below.

Table 6. Numerical Distribution of Artifacts by Type and Stratum, East Lobe.

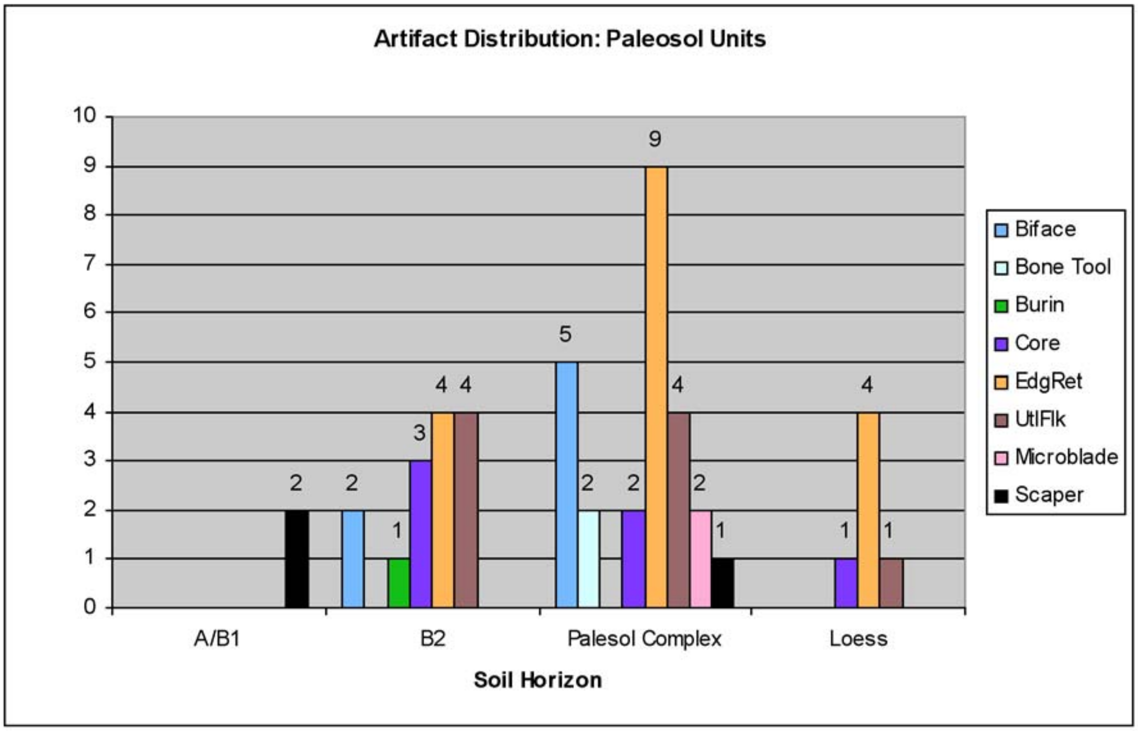
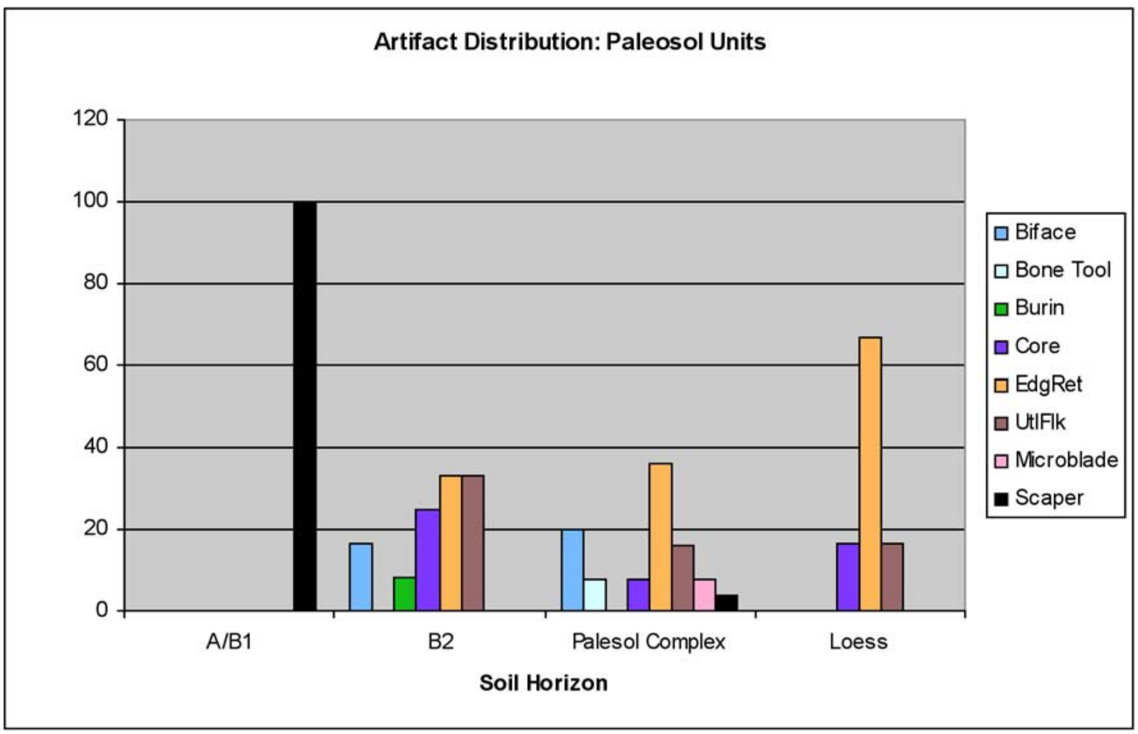


Table 7. Percentage Distribution of Artifacts by Type and Stratum, East Lobe.



The most immediately notable feature of artifact distribution in the East lobe deposits is the relative decrease in types of artifact forms found there; microblades are absent in both upper levels and, though present, rare in the paleosol complex. Instead, the paleosol complex assemblage is dominated by Modified Flakes and Bifaces, which together account for about 75% of the formed artifacts within this stratum.

Nevertheless, we believe the presence of microblades in this level to be significant. Combined with the radiocarbon dates of this level, and the fact that the bifaces seem to all represent the particular form variously categorized as “bifacial biconvex knives” (West 1967), “bipoints” (Hare 1995), “leaf-shaped” (Hefner 2002), and “foliate bifaces” (Carlson 1996a; see also our summary discussion below), their presence suggests that this component represents a Denali complex occupation, and is unrelated to the Nenana complex assemblage identified in the loess component of the Western lobe.

We are uncertain, at this point, whether the lowest loess stratum below the paleosol complex represents an earlier occupation or if these artifacts more properly belong combined with the cultural material above it. The raw number count is too small for any degree of statistical comparison, but we can note that it too is dominated by Modified Flakes, and lacks any evidence of microblade technology, which might suggest an affiliation with the earlier Nenana component. Highly degraded faunal material is found in this lower loess level; its preservation is distinctively different from that found in the paleosols above, suggesting that this is indeed a separate and earlier geo-stratigraphic stratum. Only further excavation and recovery of a larger assemblage will resolve this question.

The raw number counts also suggest, contrary to the West lobe data, that the heaviest use of this area was during the early post-glacial, and that use of this portion of the site decreased in the middle and late Holocene. As well, the percentile distribution of artifact forms also suggests that there were differences in activities undertaken in the East and West lobes during this time.

Distribution of Artifact Raw Material

The tables below present percentages of raw material used in artifact manufacture by stratum for the West and East lobes.

Table 8. Artifact Raw Material by Stratum, West Lobe.

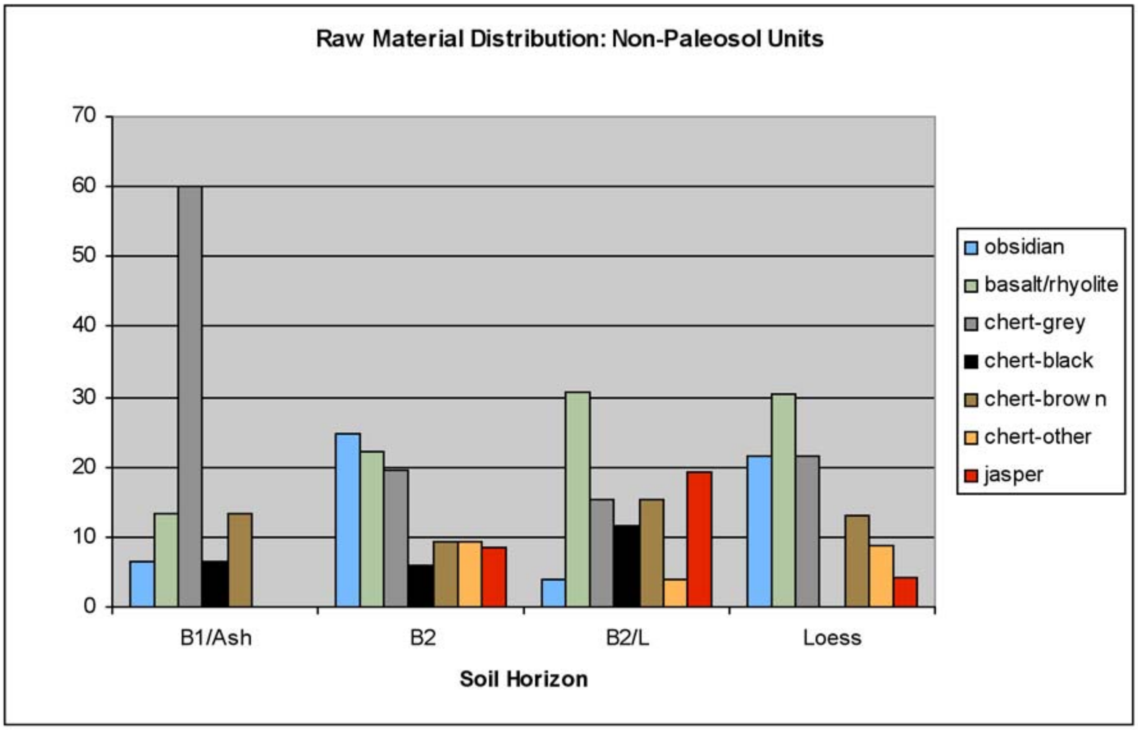
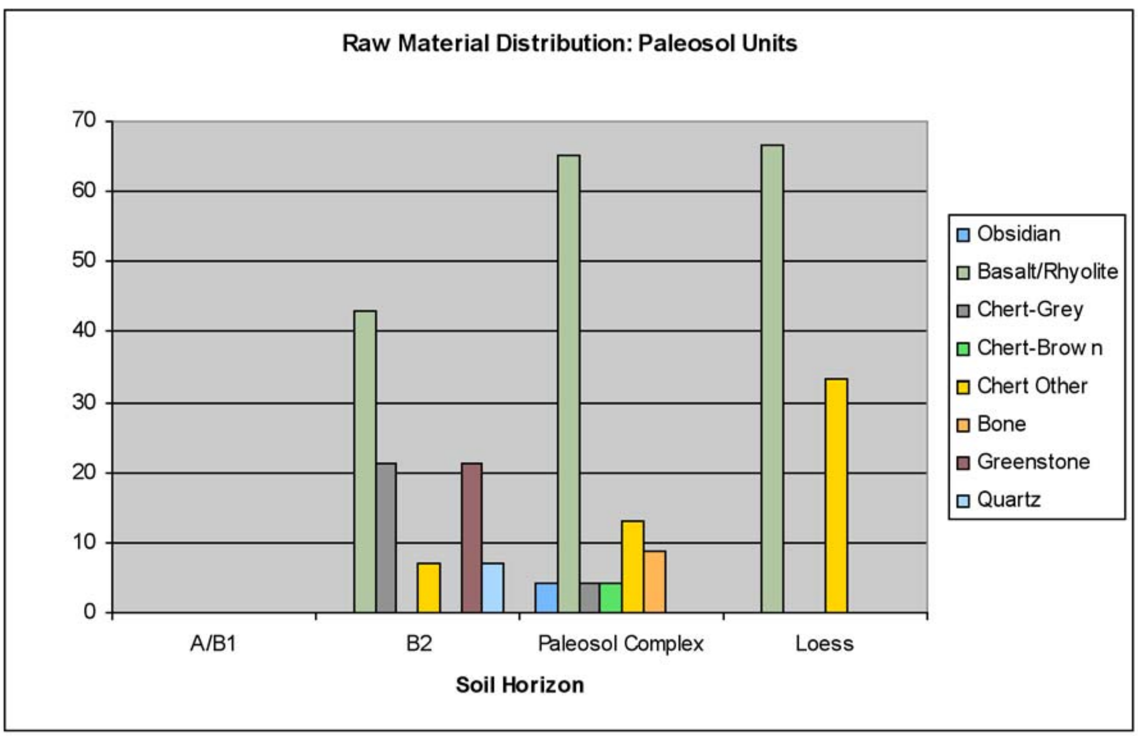


Table 9. Distribution of Artifact Raw Material by Stratum, East Lobe.



The distribution of raw materials used to manufacture artifacts show some interesting variations through time.

We have combined the basalt and rhyolite categories based on hand lens examination by members of the Yukon Geological Survey; further classification would require thin-sectioning.[20] For general descriptive purposes we distinguished dark to black material as “basalt” (i.e. less quartz or maphic) and light to tan material as "rhyolite" (i.e., more quartz or felsic); in terms of their origin, however, both would be expected to be found at any one of the several identified volcanic outcrops in the neighbouring upper Tanana valley between the Chisana and Nabesna Rivers. In addition, samples of our "grey chert" category examined by hand lens show a very close similarity to the Stanley Creek Chert Formation of the Shakwak Trench, a discontinuously exposed geologic stratum found from the south end of Kluane Lake to the international border along its southwestern edge at the foot of the Kluane-Wrangell-St. Elias Mountain range; although not identified across the border, it seems reasonable to assume that additional outcrops of this material are present there as well. Finally, while we are certain that at least several different sources of obsidian are represented in our recovered material, we have not yet undertaken the spectral analysis required to demonstrate this or distinguish different source expressions of this material through time.

Nevertheless, we can make the following observations of the distribution of raw material used through time at the Little John site.

First, we can note that there is a decrease in the reliance on basalt/rhyolite through time. This holds for both the West and the East lobes. In the West lobe, this category accounts for 31% in both the lower loess and B2/L strata, 22% in the B2 stratum, and 12% in the B1/Ash level, while in the East lobe the earlier loess and paleosol complex levels used this material for about 65% of their artifacts and just over 40% for B2 artifacts.

Second, in the West lobe, Stanley Creek Chert is present in all strata, but there is a dramatic increase in its use in the late prehistoric period represented by the B1/Ash

[20] Specifically, Grant Lowey, Charlie Roots, Tammy Allen, and Steve Isreal of the Yukon Geological Survey, Yukon Territorial Government, Whitehorse.

stratum, although we note that due to the lower number of artifacts in this stratum this could reflect a sampling error.

Third, more clearly there is a relative increase in the use of various cherts (which can include our Jasper category) in the B2/L stratum at the expense of reliance on obsidian in the preceding and subsequent levels.

Besides noting the apparent decrease in the reliance on basalts and rhyolites during the middle Holocene deposits of B2 in the East lobe, which mimics the trajectory of the West lobe, and the fact the variation in the type of raw material present is clearly lower (i.e., the West lobe exhibits a greater number of different raw materials in its assemblage than the East lobe), the size of the sample does not allow us to make any comfortable generalizations about raw material use in this section of the site.

The interpretation of these apparent differences in raw material use through time generally remains opaque to us. We could suggest that the dramatic increase in Stanley Creek chert in the later prehistoric period represents the discovery of a local outcrop along the base of the Wrangell-St. Elias mountain chain to the south of this locality, access to one of the mapped outcrops to the southeast exposed after deglaciation of that region. In addition, the low reliance on obsidian during the proposed Denali complex occupation of the B2/L may reflect a more recent migrant population unaware of local sources and/or lacking established trade relationships for this material. Both of these interpretations remain highly speculative, however.

Detailed Distribution of Artifacts in the East Lobe Paleosols

Detailed representation of artifact distribution by level has only been undertaken for those recovered in the East lobe paleosol complex in 2003-04, which the figure below illustrates. Figure 60 includes all lithic material, and so its raw counts are different from those illustrated in the formed artifact tables presented above.

In terms of patterned distribution we can note that the northern units (35, 32, 36) exhibit a higher concentration of lithics and fauna. As well, two roughly circular areas, on the border of Units 28 and 20 and within Unit 23, contained no artifacts or fauna, clearly indicating some mechanism interfering with deposition in these areas, though we are unable to discern any particular explanation for this pattern at this point. Additional distributional analysis incorporating subsequent season's data and more detailed correlation with stratigraphic records may clarify the nature of these lacunae.

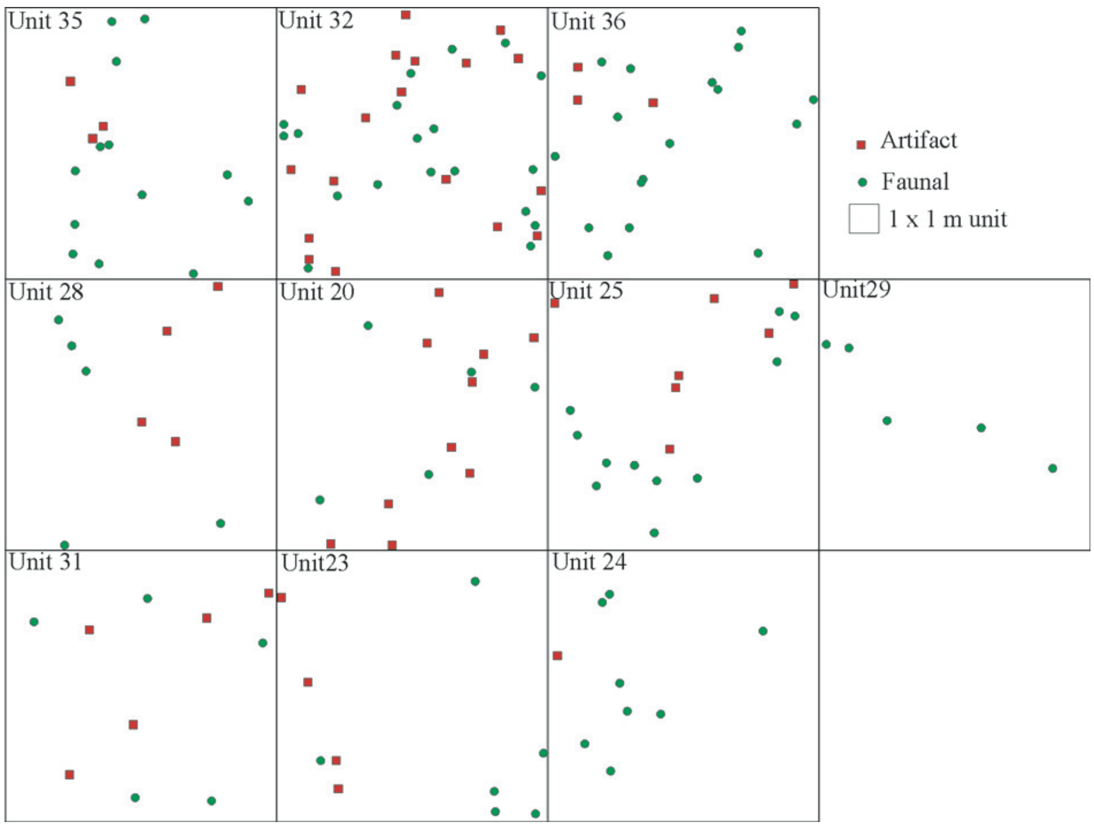


Figure 60. Detailed Distribution of Recovered Lithics and Fauna, East Lobe, 2002-03.

SELECTED DESCRIPTIONS OF ARTIFACTS BY COMPONENT AND TYPE

In this section we provide description of major formed artifacts by proposed component and type.

Table 10. Metric Attributes of Nenana Complex Bifaces Discussed in the Text.

Artifact #	*Length (mm)*	*Width (mm)*	*Thickness (mm)*	*Weight (gr)*	*Material (cf Fn 3)*	*Stratum*	*Comment*
KdVo6: 96	67	40	13	31.86	Basalt	Loess	Chindadn form, complete
KdVo6: 542	45	30	09	10.90	Rhyolite	Loess	Chindadn form, complete
KdVo6: 95	38	27	05	5.19	Chert	Loess	Chindadn form, incomplete
KdVo6: 97	23 (30)	20	04	2.03	Basalt	Loess	Chindadn form, incomplete
KdVo6:716	25	24	04	4.42	Basalt	B2 - L	Thinness suggests possible Chindadn or triangular point form; outline inconclusive
KdVo7:1	70	32	09	22.61	Basalt	Loess	Projectile point, convex margins, straight ground base
KdVo6:123	38	31	07	10.84	Rhyolite	Loess	Projectile point base, convex margins, straight thinned base
KdVo6:121	100	41	15	68.3	Rhyolite	Loess	Bipoint form but crudely flaked, – geofact?
KdVo6:129	83	59	11	62.55	Rhyolite	Loess	Made on flake from prepared core
KdVo6:139	226.6	16.2	7.2	1	Basalt	Loess	Large backed biface knife?

Artifacts of the Nenana Complex Component

Due to a lack of suitable organics, the Nenana complex component present at the Little John site is currently undated. Formed tools include large bifaces, scrapers, large blades, burinated flakes and blades, and teardrop shaped Chindadn points, by which the complex is characteristically identified. Its unequivocal distribution to date is within the loess deposits immediately above the regolith in the shallower Western lobe and extending east to the middle Rockfall lobe. Table 10, above, presents the basic metrics of the bifaces we discuss here.

Chindadn Points of the Nenana Complex Component[21]

Four clear Chindadn points have been recovered and are described below. A pointed biface fragment (KdVo6:716) may represent the distal end of a thin Chindadn or triangular point, but there is no certainty in this; because of its recovery within the B2/L interface it is described later with Denali complex component biface fragments.

In order to provide some comparative context the table below provides metric data for a selection of Chindadn points available in West (1996a) and Pearson (1999).

Table 11. Comparative Dimensions of Chindadn Points.

Site	L	W	Source
Chugwater 1	1.4	2.0	Lively 1996, Fig. 6-4a
Healy Lake	3.1	2.2	Cook 1996, Fig. 6-11a
Healy Lake	4.8	1.9	Cook 1996, Fig. 6-11b
Walker Road	3.7	2.0	Goebel et al. 1996, Fig. 7-14a
Walker Road	4.0	2.7	Goebel et al. 1996, Fig.7-14b
Walker Road	4.4	2.5	Goebel et al. 1996, Fig. 7-14c
Moose Creek	3.3	2.5	Pearson 1999

KdVo-6:96 is a complete Chindadn biface on a black basalt flake. It is from the West lobe of the site from the bottom of the loess deposit immediately above or on the till surface, 20 cm below surface. While its dimensions and mass make it the largest complete specimen of this form recovered that we are aware of, KdVo-6:96 is similar to the general shape and dimensions of two of the Type 1 Chindadn fragments from Healy Lake (Holmes 2001:164 presents scaled photographs of these artifacts). Viewed proximal to distal it is highly symmetrical, but asymmetrical in plan view, with a relatively flat ventral surface and a high and rounded dorsal surface (i.e. plano-convex). While flake

[21] With the exception of KdVo-6:95, all of the artifacts described from the Chindadn and Denali stata share the same hand-lens lithology of aphanitic volcanic origin; further classification would require thin-sectioning. For general descriptive purposes we identify the dark to black material as “basalt” (i.e. less quartz or maphic) and the light to tan material as "rhyolite" (i.e., more quartz or felsic). KdVo6:121 is classified as rhyolite but differs from the others by having a very poorly developed lamination and the quartz and feldspar phenocrysts are much larger. Artifact KdVo-6:95 is a chert very similar to the Stanley Creek chert formation of the Shakwak Trench, a discontinuously exposed band found from the south end of Kluane Lake to the international border along its southwestern edge at the foot of the Kluane-Wrangell-St. Elias Mountain range (Grant Lowey, pers. com.).

removal is visible on both surfaces, the ventral surface is much more heavily and consistently worked. As well, the proximal lateral edges are more heavily and finely retouched than the distal lateral edges, suggesting that the rounded proximal end may in fact be the working edge.

Figure 61. KdVo6:096, Chindadn Point.

Figure 62. KdVo6:542, Chindadn Point.

KdVo-6:542 is a complete Chindadn biface on a green-tan rhyolite flake. It was found in the West lobe from within loess sediment at 30 cm below surface. It has been worked into a roughly symmetrical form from both perspectives. The striking platform of the original flake is pronounced and present on the left lateral edge. It has finer retouch along the lateral edge opposite the striking platform, suggesting this is the working edge, consistent with its use as a knife.

Figure 63. KdVo6:095, Chindadn Point.

KdVo-6:95 is a Chindadn biface on a grey-blue chert flake. Found in the middle Rockfall lobe of the site, it is from a cryoturbated loess stratum, 30 cm below surface. Thin in plan view, relative to the two previous specimens, it seems to have much finer retouch along the right lateral edge, although certainty is precluded by the fact that much of the left distal lateral edge is missing; below this, on the dorsal surface, is a strip of heavily patinated cortex.

Figure 64. KdVo6:097, Chindadn Point.

KdVo-6:97 is a small Chindadn biface on a dark black basalt flake. It was recovered from the West lobe from the top of the loess at 30 cm below surface. It is broken perpendicular to its long axis, missing the distal end. Measuring 2.6 cm in length it is estimated that complete it would be about 3.0 cm. Both lateral edges hold fine bifacial retouch, while the proximal base has been thinned by flake removal on both sides, suggesting its use as a projectile point.

Pointed Bifaces of the Nenana Complex Assemblage

In addition to the above, one pointed biface and two pointed biface fragments have been recovered at KdVo-6 and the nearby KdVo-7 site,[22] which bear description and some discussion based on their recovery from early strata.

Figure 65. KdVo7:01, Pointed Biface from the Nenana Complex (note: photo shows incorrect artifact label).

[22] KdVo-7, *Cheejil Niik Naakeeg* / Graying Creek hunting lookout / in the Upper Tanana language, is located on a drumlin formation which overlooks the Mirror Creek plain, about two kilometers south of the Little John site. A well-established trail runs to this hunting lookout across the muskeg and atop the drumlin to the southeast prominence at which the site is located. Like many such sites in the region it remains in use to this day by local *Dineh*.

Artifact KdVo-7:1 is a straight-based biface made on grey basalt. This artifact was recovered from a basal loess stratum similar to that of the sediment matrix of the Nenana assemblage at KdVo-6. It has slightly convex lateral margins and the distal end is snapped, though whether this is due to use or the result of an attempt to thin this end is unclear. The straight base has been heavily ground. Generally the larger flake pattern is random, but the artifact is finely retouched along both lateral margins.

Figure 66. KdVo6:123, Point Base Fragment from the Nenana Complex.

KdVo-6:123 is a round-based thin bifacial fragment made from tan rhyolite, recovered from the loess sediments in the Rockfall lobe, 45 cm below surface. It exhibits slightly convex lateral margins, and a random flake scar pattern. It is also basally thinned by the removal of several flakes on both sides of the proximal margin. The transverse break evident on this piece likely occurred during manufacture, which is suggested by the bifurcated pressure flake scar parallel to the break on the right lateral margin of the ventral surface.

Finally, we report on KdVo-6:121, which is a large edge modified piece, roughly foliate in outline, made from brown-grey rhyolite. While attempts at flaking are evident on both lateral margins, the manufacturer did not achieve flake removals that cover the faces of the artifact, and this was probably not even possible given the quality of the material. Given its state we imagine the piece to have been abandoned.

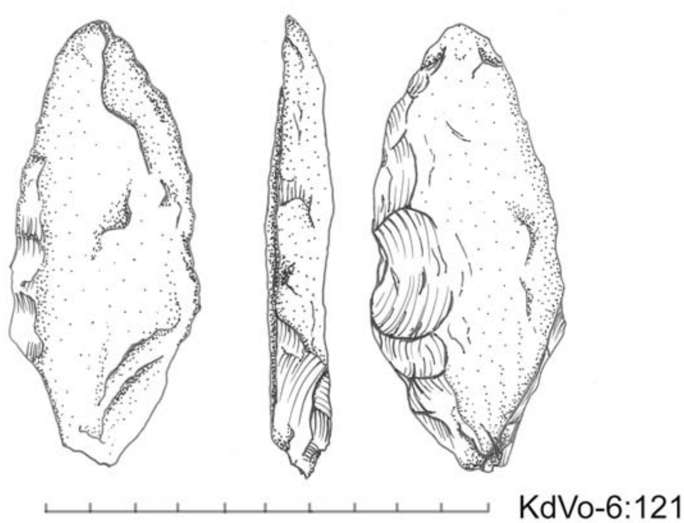


Figure 67. KdVo6:121, Foliate Bipoint(?) from the Nenana Complex.

Frankly, we are not convinced that this is a human artifact. The raw material and crude workmanship suggests that it may be a geofact. However, it does hold numerous flake fractures along its circumference and it was recovered in close association with other indisputable human artifacts within the loess stratum in the West lobe. Finally, we must consider the fact that some proportion of every assemblage likely contains material made by children or others of limited technological capacity. In this context we note that during a public tea, at which we displayed this and other finds of the season to our Upper Tanana *Dineh* hosts, this particular piece was picked up by an Elder who opined without encouragement, “You know what this is? It’s a kid’s piece. Practice.” The ambiguity of this piece is increased when we note that, to our knowledge, this is the first apparent bipointed biface found in direct association with Chindadn points.

Large Bifaces of the Nenana Complex Assemblage

Two large bifaces were recovered from the loess deposits of the West lobe. The first, KdVo6:139, is made on a large flake of fine-grained basalt. It is asymmetrical in form and exhibits large thinning flake removal on both sides, as well as unifacial pressure flake scars along much of its dorsal margins.

Figure 68. KdVo6:139, Large Basalt Biface, Nenana Complex.

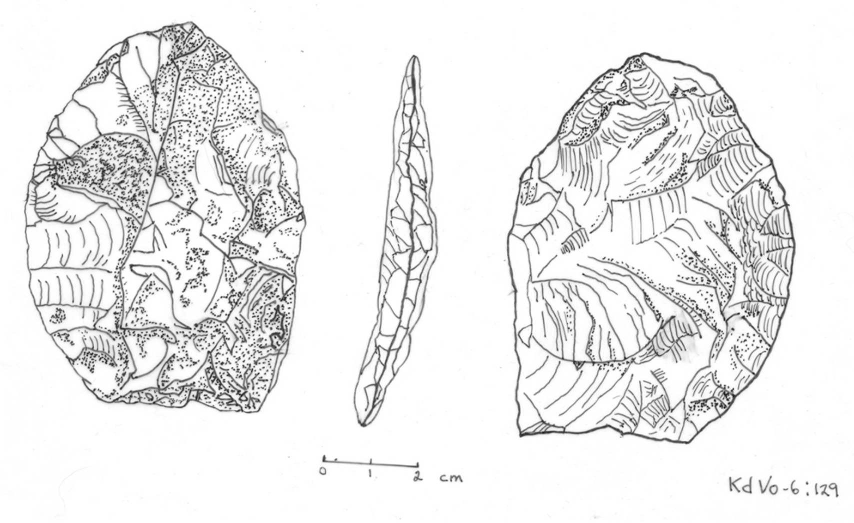


Figure 69. KdVo6:129, Large Chert Basalt Biface, Nenana Complex.

The second large biface, KdVo6:129, is made on a gray-brown chert flake. Its general morphology conforms to a flake struck from a prepared core; in other words we find it "levalois-like", exhibiting classic tortoise-shell morphology. Although bifacially retouched along all margins, the dorsal and ventral surfaces of the left margin exhibit consistent parallel and invasive retouch, while the other margins are scaled and short.

Modified Flake Tools of the Nenana Component

As noted above, modified flake tools - edge retouched and utilized flakes - combined account for about 42% of the total loess assemblage. Several examples are illustrated below.

Figure 70. Modified Flake Tools of the Nenana Component.

- KdVo6:348 is a utilized flake on grey chert; it has been retouched on the left dorsal margin and displays edge damage along the distal and both lateral margins.
- KdVo6:640 is a utilized flake on basalt that shows edge damage along the distal and both lateral margins.
- KdVo6:655 is a flake that has been burned, which probably caused the flake to break into several pieces; this photo shows two refitted pieces. It has been retouched on the left ventral edge, while both lateral margins show edge damage.
- KdVo6:746 is a broken flake on obsidian which shows retouch along the dorsal lateral margins, as well as extensive edge damage along these margins on both surfaces.

- KdVo6:509 is a flake from a split pebble that shows extensive edge damage along the right margin.

Additional Formed Tools of the Nenana Component

In addition to the above we note the presence of the following formed tool types within the assemblage attributed to the Nenana Complex: blades, burins, endscrapers, and hammerstones. Examples of each are presented below.

Figure 71. KdVo6:258, Obsidian Blade from the Nenana Component.

Figure 72. KdVo6:127, Burinated Jasper Flake from the Nenana Component.

- KdVo6:258 is a proximal blade fragment made on obsidian with extensive edge modification along both margins. Unifacial retouch is evident along both margins as well; along the left dorsal margin and along the right ventral margin. The angled medial edge seems to have been made intentionally, as evidenced by a crushed impact point just to the left of the central aris.

- KdVo6:127 is a jasper flake which has very fine edge modification along its distal end and a burinated facet along its left dorsal margin.
- KdVo6:146 is an endscraper made on a long basalt flake; the dorsal surface is about 75% cortex. While crude (and remnant of KdVo6:121), it bears a number of flake scars along its left dorsal and distal edges.
- KdVo6:287 is a broken hammerstone on a basalt pebble. One end has broken off and the entire surface is punctuated.

Figure 73. KdVo6:146, Endscraper on Basalt from the Nenana Component.

Figure 74. KdVo6:287, Broken Hammerstone on a Pebble from the Nenana Component.

Artifacts of the Denali Complex Component Assemblage

The Denali complex component is found over the entire extent of the site explored thus far. Formed tools are dominated by microblades. Several core tablets and irregular core fragments with microblade removal scars have been recovered but thus far no wedge-shaped core ubiquitous to this complex. Scrapers and burins are present, as well as two bifaces of a form alternatively categorized as “bifacial biconvex knives” (West 1967), “bipoints” (Hare 1995), “leaf-shaped” (Hefner 2002), and “foliate biface” (Carlson 1996a). Based on the radiocarbon dates, and the presence of bipoints, as well as two microblades, we have provisionally assigned the buried fauna-rich paleosols present in the Eastern lobe to the Denali complex. The two bipoint bifaces, described below, were recovered from the paleosol complex in direct association with culturally modified fauna dated to c. 9500 - 9000 BP. We also offer descriptions in this section of a selection of additional formed artifacts from the B2/L strata of the West lobe that we have tentatively assigned to the Denali Complex as well. The table above provides basic metric attributes of the artifacts described in this section.

Bifaces of the Denali Complex Component

Table 12. Metric Attributes of Denali Complex Bifaces Discussed in the Text.

Artifact #	*Length (mm)*	*Width (mm)*	*Thickness (mm)*	*Weight (gr)*	*Material (cf Fn 3)*	*Stratum*	*Comment*
KdVo6: 530	80	33	05	20.15	Basalt	Paleosol	Bipoint form, two pieces
KdVo6: 140 / 531	90	28	10	24.26	Basalt	Paleosol	Bipoint form, two pieces
KdVo6:122	49	25	12	19.30	Basalt	B2 - L	Projectile point, medial fragment, thick, lenticular, straight margins
KdVo6:125	44	30	18	9.90	Basalt	B2 - L	Projectile point, medial fragment, thick, lenticular, straight margins
KdVo6:124	40	27	19	8.60	Basalt	B2 - L	Bipoint form fragment?

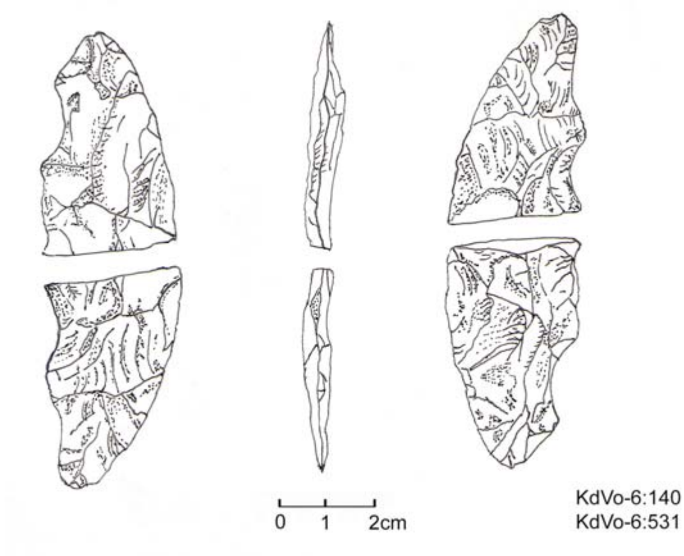


Figure 75. KdVo6:140 & 531, Foliate Biface from the East Paleosol Complex.

KdVo6:140 / 531 are two pieces which refit to form a biface made on black basalt. It was found at the same level (appx. 64 cm below surface) in separate but contiguous units (Units 25 and 32). While this piece appears semi-lunate in outline, significant damage along one of the lateral margins indicates that its original shape tended more towards foliate. Like its counterpart (KdVo-6: 530), this biface displays crude flaking, evidenced by random flaking on both faces, which likely relates to the low quality of the raw material. This artifact was broken by a transverse fracture.

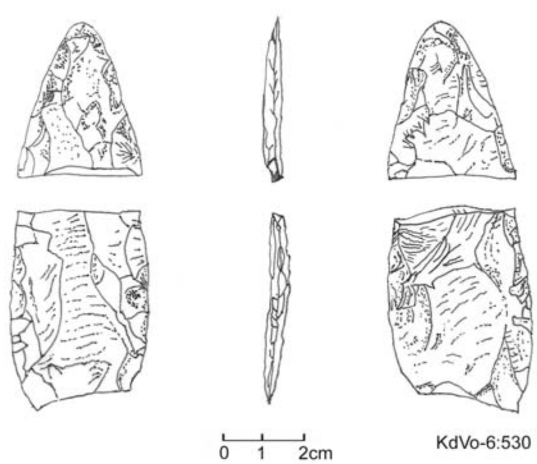


Figure 76. KdV06:530, Foliate Biface from the East Paleosols.

KdVo6:530 is an incomplete biface consisting of two re-fitting pieces made on black basalt separated on a transverse fracture. The pieces were found next to each other in the same unit at a depth of 64 cm below surface. While one end of this biface is missing, the convex curvature of the lateral margins towards the missing end suggests a foliate outline and thus indicates that this artifact was probably bi-pointed. Exhibiting randomly oriented flake scars on both faces and several step terminations, this artifact – though remarkably thin – appears crudely worked, likely owing to the low quality of the raw material.

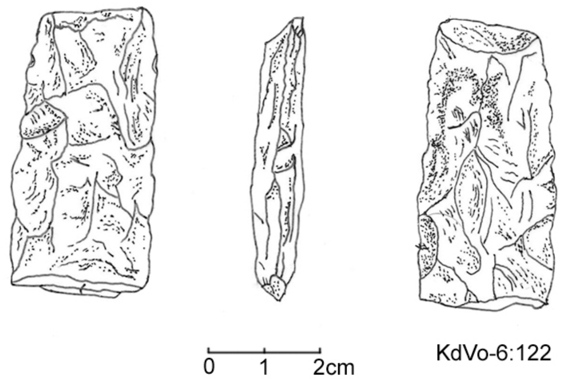


Figure 77. KdVo6:122, Projectile Point Fragment, Denali Complex, West Lobe.

KdVo-6:122 is the medial fragment of a projectile point made from grey basalt, recovered from the interface between the Brunisol below volcanic ash (B2) and Loess stratum (hereafter designated B2 – Loess). This artifact is relatively narrow, with a thick lenticular cross-section and straight edges. The flake scar orientation is random and while the lateral margins have bifacial retouch, it is coarse and irregular. Numerous flake scars with step terminations reflect the low quality of the raw material. Transverse breaks are evident at both the distal and proximal ends on this point, and thus the base morphology is unknown.

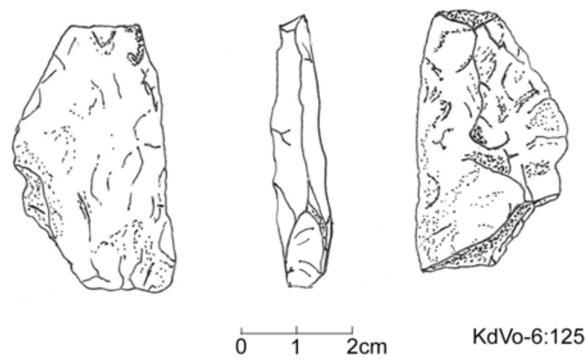


Figure 78. KdVo6:125, Projectile Point Fragment, Denali Complex, Rockfall Lobe.

KdVo-6:125 is the medial fragment of biface made from grey basalt, recovered from the B2 - Loess interface in the central Rockfall lobe. The flake scar orientation is random but there is fine bifacial retouch along both lateral edges. There are several step terminations evident on both surfaces, one of which snapped on a thinning flake removal, separating the proximal portion. The distal point is also missing, but the general form of the existing fragment is asymmetrical, and suggestive of an original bipoint form.

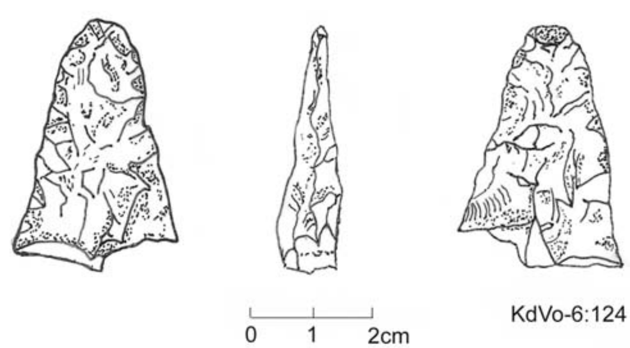


Figure 79. KdVo6:124, Projectile Point Fragment, Denali Complex, West Lobe.

KdVo-6:124 is the distal end of a bifacially worked projectile point, made from grey basalt, recovered from the B2 - Loess interface in the Western lobe. Besides its expanding margins below the distal point, little can be said of its overall morphology. Although the general formal pattern of flaking is irregular, there does seem to be an attempt to achieve a parallel flaking pattern on the left lateral edge.

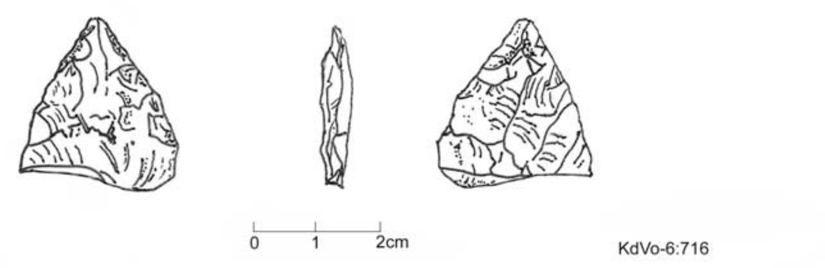


Figure 80. KdVo6:716, Point Fragment, Denali Complex, West Lobe.

KdVo-6:716 is the tip of a distal fragment of a projectile point made from grey basalt, recovered from the B2 - Loess interface in the Western lobe. There is a transverse break on a step fracture along its base. However, there is also slight damage to the tip suggesting some use. The flake scar orientation is random, and edge retouch is present but inconsistent. It's thinness alone suggests the possibility of its missing proximal end to be tear-dropped or triangular, however besides this there is no other compelling reason not to imagine it as a bipoint or the business end of a lanceolate projectile point, an interpretation buttressed by its stratigraphic context in the B2/L horizon.

Modified Flake Tools of the Denali Component, East Paleosols

Edge modified flakes are found throughout the East lobe paleosols; several of these are illustrated below.

- KdVo6:234 is a basalt flake that exhibits extensive edge damage along the distal and both lateral margins.
- KdVo6:F06-127 is made from basalt; it may represent the proximal end of a microblade, since it exhibits a single arris along its center margin. The piece shows edge damage along its right margin.
- KdVo6:524 is a broken chert thinning flake which exhibits edge damage along three margins.
- KdVo6:734 is a split pebble flake with extensive edge damage along all margins.
- KdVo6:621 is a split cobble basalt flake with moderate retouch along the distal and upper left margins, as well as edge damage along the distal and left lateral margin.

Left Row: KdVo6: 234, 127, 524. Right Row: KdVo6: 743, 621

Figure 81. Edge Modified Flakes of the Denali Complex, East Lobe Paleosols.

Blade Technology of the Denali Complex, West Lobe

Blade technology recovered from the B2 - Loess interface in the West Lobe consists of microblades, a split core face, and a blade rejuvenation spall.

KdVo6:744 is a mesoblade core rejuvenation spall on grey chert. It displays two full facets across its medial section and portions of two more on each of its lateral margins.

KdVo6:534 is a microblade core face that has been split from the core as a flake. It also displays at least three, and perhaps four, potlid fractures, suggesting that it was burned. Included in the figure are several microblades of similar material, though none fit any of the core's facets. The microblades, two proximal fragments on the left and two medial fragments on the right, all show edge modification along their margins.

Figure 82. KdVo6:744 Mesoblade Core Rejuvenation Flake, West Lobe, Denali Component.

Figure 83. KdVo6:534, Microblade Core Face, and Related Microblades, West Lobe, Denali Component.

Scraper / Burin Technology of the Denali Complex, West Lobe

A number of scraper forms have been recovered from the B2 - Loess level of the West lobe.

- KdVo6:141 is a small steep-edged Endscraper made on obsidian. It is unifacially retouched along the distal and right dorsal surfaces.
- KdVo6:750 is a small shallow-edged Sidescraper made on obsidian. It has unifacial retouch along the left dorsal and right ventral margins as well as edge

damage along both margins; the right proximal dorsal surface bears heavily patinated cortex.

Figure 84. KdVo6:141, Steep-Edged Endscraper, Denali Component, West Lobe.

Figure 85. KdVo6:750, Shallow-Edged Sidescraper, Denali Complex, West Lobe.

Figure 86. KdVo6:030, Steep-Edged Endscraper (w/ Burin Facet?), Denali Component, West Lobe.

Figure 87. KdVo6:358, Shallow-Edged Sidescraper, w/ Notch, Denali Component, West Lobe.

- KdVo6:030 is a steep-edged Endscraper made on thick jasper flake. It is broken along its left lateral margin, though whether this is was snapped or a deliberate burin spall removal is unclear. The whole artifact is heavily retouched on all margins and both surfaces.

- KdVo6:358 is a shallow-edged Sidescraper made on obsidian. It has been bifacially retouched on its left margin, and unifacially retouched on its lower right dorsal margin and distal end. In addition, it has a notch on the upper left margin.
- KdVo6:F06-039 is a thick flake of jasper which has had spalls removed from both dorsal lateral margins, which may represent burin facets. In addition the right margin has received fine pressure retouch.

Figure 88. KdVo6:F06-039, Steep-edged Sidescraper, Denali Component, West Lobe.

Figure 89. KdVo6:F06-220, Chert Core, Denali Component, West Lobe.

Finally, a fairly large chert core (KdVo6:F06-220) was recovered from the B2/L interface of the West lobe; illustrated above, it bears flake scars on all surfaces.

Artifacts of the Northern Archaic Component

Prehistoric artifacts found in the middle to upper B2 horizon have been placed within the Northern Archaic archaeological culture. This technology represents occupations in the southwest Yukon and Alaska from about the middle Holocene to the fall of the White River volcanic ash.

Bifaces from the Northern Archaic Component

Although diminutive notched points are a hallmark feature of the Northern Archaic, we have not yet recovered such a based point at the Little John site. The only possible candidate is a bifacially worked obsidian point fragment, KdVo6:070, which based on its dulled end could represent a convex basal fragment, as much as a distal point; its size, however, is in general agreement with those commonly found in the middle to late Holocene.

Figure 90. KdVo6:070, Diminutive Point Fragment, Northern Archaic Component.

Scraper Forms from the Northern Archaic Component

Another of the features of the Northern Archaic culture is an expansion in the variety and size of scraper forms and the Little John scraper assemblage from the middle and upper B2 horizon conforms to this pattern, as illustrated below.

Left Row: KdVo6: 142, F06-015, 145
Right Row: KdVo6: F06-081, 732, 749

Figure 91. Scraper Forms From the Northern Archaic Component.

Blade Technology from the Northern Archaic Component

Similar to the Denali complex component below it, the upper B2 horizon of the Northern Archaic component holds both microblade and larger blade technology, which may reflect continuity between these prehistoric cultural traditions at the Little John site.

Figure 92. Microliths from the Northern Archaic Component.
Left to Right: KdVo6: 114, 115, 118, 133, 138, 154, 157.

Left: KdVo6:078. Right: KdVo6:538

Figure 93. Blade Core Fragments from the Northern Archaic Component.

The majority of microblades are edge modified by retouch or use. KdVo6:118 (3rd from left in the figure above) has a spall removed to form a 90 degree angle perpendicular to the long axis and retouch along its distal edge. KdVo6:133 exhibits a potlid fracture on its left dorsal surface, suggesting it was burned. Of the two core fragments, KdVo6:078 is a microcore fragment of grey chert with a concavity and edge damage, while KdVo6:538 is a mesoblade core fragment of a darker gray chert similar to that of the tabular core fragment described above, but there is no obvious refit between them. In addition, this fragment, like the other, exhibits edge damage along its margins.

Above:
KdVo6: 734,
F06-230
Right: KdVo6: 086, 072

Figure 94. Edge Modified Blades / Spalls from the Northern Archaic Component.

KdVo6: 734, F06-230, and 086 are three bladelets which due to their high angled central arris may better be classified as burin spalls; indeed, due to their retouch along their working end it seems that this was their function. All three are made on variously coloured chert.

KdVo6:072 is the distal portion of a larger mesoblade made on obsidian. It carries extremely fine unifacial dorsal retouch and edge damage along both margins.

KdVo6: 747/653 refit KdVo6:132/533 refit

Figure 95. Refitted Large Blade and Core Fragments, Northern Archaic Component.

KdVo6:747/653 consists of two fragments of a large blade struck from a jasper core that has been heavily modified along both of its lateral margins and distal end to form what seems to be a scraping tool of variable angles.

KdVo6:135/533 might perhaps be better categorized as two refitted fragments of a chert flake core, however both surfaces bear long, roughly parallel flake scars typical of a blade core; for this ambiguity we include it here.

Additional Formed Tools of the Northern Archaic Component

Figure 96. KdVo6:128, Burinated Flake of the Northern Archaic Component.

Figure 97. KdVo6:002, Graver / Scraper of the Northern Archaic Component.

Figure 98. KdVo6:821, Hammerstone of the Northern Archaic Component.

KdVo6:128 is a burinated flake made on tan banded chert, with extremely fine retouch along the left margin.

KdVo6:002 may be a biface fragment, based on numerous thinning flake scars on both of its surfaces, but its present form presents a engraving point at its distal left margin, below which it forms a steeply retouched edged suitable for use as a small steep-angled scraper.

KdVo6:821 is one of several hammerstones recovered from the middle to upper B1 horizon. Consisting of a basalt pebble which sits comfortably in the hand, it is deeply punctuated over much of one of its surfaces, particularly so along its marginal edges.

Left Row: KdVo6: 360, 440, 561, 656 **Right Row: KdVo6: F06-141, 819, 003**

Figure 99. Edge Modified Artifacts from the Northern Archaic Component.

Edge modified artifacts are commonly found within the Northern Archaic component; several examples are illustrated above.

- KdVo6:360 an obsidian thinning flake that has been unifacially retouched on its dorsal surface on its left margin near its distal end to form a notch. Below this runs two flake scars along which there is extensive edge damage.
- KdVo6:440 is a broken chert flake with a steep-angled notch on the right margin which seems to have been formed by combining a flake scar on the dorsal surface with an intentional snap on the ventral surface. In addition, the distal portion is bears extensive edge damage.
- KdVo6:561 is a complete obsidian flake which bears bifacial retouch along the lower left margin and edge damage along the right margin.
- KdVo6:656 is an edge modified chert flake showing regular retouch along its dorsal proximal margin and several additional pressure flake removals in the same area on its ventral surface. In addition, much of its right margin exhibits edge modification.
- KdVo6:F06-141 is a flake on a split pebble that also bears four major flake scars on its proximal -dorsal surface. There is edge modification along most of its margins, but it is heaviest in the area of the flake scars.
- KdVo6:819 is a basalt flake that has been unifacially worked on the left dorsal surface in order to increase the angle of the entire margin - it may better be classified functionally as a scraper or knife. The remaining dorsal surface has additional, but irregular flake scars, although there seems to have been an attempt at something more regular along the distal right margin. Most significantly, this was the first formed artifact found by Derrick Peters during his initiation into archaeology during the field season of 2006.
- KdVo6:003 is an incomplete flake made on light grey chert. The presence of two arris-like ridges running along its long axis on its dorsal surface suggest it may be a blade fragment, but additional flake scars at the proximal end tend to negate this. In any event, the proximal and lateral margins bear heavy edge modification; some of this may be pressure retouch, including a major concavity distal on the right margin. However the artifact also bears several potlid fractures and the

concavity may be a result of the artifact being burned. Finally, the dorsal surface is heavily patinated.

Artifacts of the Late Prehistoric and Historic Periods

To date the Little John site exhibits reduced use in the Late Prehistoric and Historic periods. Undoubtedly this can be explained, at least for later portion of its use in the 18th through 20th centuries, by the dramatic depopulation suffered by most populations in North America by the influx of pandemic and epidemic diseases which afflicted Native American populations subsequent to the arrival of Europeans. For the earlier Late Prehistoric, which follows the massive White River volcanic eruptions of the 1st and 9th centuries, we can expect that these phenomena also effected the population demography in this period as well. In any event, recovered artifacts show that the Little John site continued to be used throughout the Late Prehistoric, perhaps by a smaller population which left a smaller imprint on the archaeological record or, alternatively, occupying a portion of the site not yet excavated.

KdVo6: 005, 754 KdVo6: F06-037, 756

Figure 100. Edge Modified Flakes and Obsidian Core, Late Prehistoric Component.

At this point in the investigation of the Little John site, the Late Prehistoric material record consists largely of microblades and modified flakes, hammerstones, and several flake cores; several examples are illustrated above and described below:

- KdVo6:005 is a broken flake that has been snapped or broken down the medial axis, with irregular bifacial edge modification along its distal margin.
- Kdvo6:754 is a basalt thinning flake that has retouch along its left and right margins, as well as additional edge damage along the distal and both lateral margins.
- KdVo6:F06-37 is a chert reduction flake with bifacial retouch along both the right and left margins, and possibly unifacial dorsal retouch along the distal edge. Both lateral margins hold a notch at a point roughly equidistant form the proximal end. The margins also hold additional edge damage.
- KdVo6:756 is an exhausted obsidian flake core. Small flake scars cover its entire surface, although one face bears heavy patination, distinctive from all others.

KdVo6:758 KdVo6:753

Figure 101. Biface on a Flake and Hammerstone, Late Prehistoric.

- KdVo6:758 is a basalt flake that bears two heavily patinated flake scars on the dorsal surface and two others, including one on the ventral surface, which bear no patination. The lower right margin shows edge damage, while the upper left margin and distal portions seem more abraded or ground.
- KdVo6:753 is a basalt pebble hammerstone which displays a heavy and continuous punctuated surface on one side, along with several flake scars, and a much reduced pattern of use evidenced by its dimpled surface on the obverse side.

In addition to lithic material, the A/B1 Horizon contains scattered evidence of use of the Little John site during the Historic period. Much of this has not been collected or provenienced, consisting of recent beverage containers, candy wrappers, shotgun shells, and other material culture related to the continued occupation and use of the site during the 20th century. Notably, however, south of the paleosol bearing East lobe there seems to be a historic occupation related to the period of the building of the Alaska Highway. This is evidenced by the recovery of two talcum cans, several Budweiser beer bottles of undetermined but clearly mid-century age by their shape, and a burn zone in the A Horizon containing additional melted bottle glass, in an area at which local *Dineh* occupants do not recall a campsite.

KdVo6:Uncatalogued KdVo6:051

Figure 102. Historic Remains: Melted Bottle Glass, Spent .22 Shell.

Figure 103. Historic Remains: Talcum Flasks - Alaska Highway Army Occupation?

The importance of this historic occupation should not be under-rated. The Alaska Highway period occupation represents a major historical event in the lives of the *Dineh* people who used the Little John site for millennia. In addition, it is a clear fact that for contemporary *Dineh* the relevancy of archaeological material evidence increases as it becomes more recent and able to evoke memories, of their own or those passed to them in their oral history, which they hold personally. This is not to say that the ancient past holds no interest to contemporary *Dineh*, only that it exists within a different context. By way of illustration, when I show a *Dineh* a trade bead or a musket ball they become intensely interested, invariably wondering if the item was something that their recent ancestors - a grandmother or a great-grandfather - held. When I show them a Nenana complex Chindadn point, most *Dineh* admire the ingenuity of their ancient ancestors, but feel a much less direct attachment. But let me clear on this point, it is not because they do not recognize the makers of such objects - as one *Dineh* observed, "Well, when Norman shows me a stone point and tells me it is 10,000 years old, what am I supposed to think? I mean, it's not as if I don't already know that my people have lived here a long time."

REGIONAL CONTEXT OF THE EARLY COMPONENTS AT LITTLE JOHN SITE

We can make the following unequivocal statements about the two principal complete biface forms we have described from the early strata of the Little John site (the Loess and B2/L Horizons of the West lobe and the Paleosol Complex material). The biface fragments are more equivocal, but based on their apparent morphology we can compare several of them to other regional expressions.

Chindadn Biface Form[23]

Over fifteen years ago, Goebel and Pontti (1992:2) asserted, “Chindadn points occur exclusively in Late Glacial premicroblade contexts. Nowhere have they been found in

[23] Our literature review clearly revealed that some analysts categorize small, thin, triangular shaped bifaces of the Terminal Pleistocene as variants of the Chindadn form, sometimes to the extent of referring to them as such (e.g. Yesner, et al. 1992) – and they undoubtedly are right – but in the following discussion we restrict our comparisons to biface forms of the classic tear-drop shaped Chindadn point.

direct primary association with microblades. Repeated discoveries in both Alaska and Northeast Asia demonstrate their importance as the first 'type fossil' of the premicroblade Paleolithic of Beringia." Based on our literature review, their assertion holds true today. Chindadn biface forms are found in early levels associated with the Nenana complex west of the Little John site in the Tanana and Nenana valleys. There are also several reported from the Yukon and the Pacific coast. We note, but do not further discuss here, the occurrence of teardrop biface forms in western Beringian components in Asia (c.f. West 1996a).

The Chindadn form was first described by Cook (1969) based on their occurrence at the Healy Lake Village site, where they are found in the early levels (6 to 10). Cook (1996:325) notes "some are definitely projectile points, while others are larger, and not so pointed, knives." Associated artifacts in these levels include small triangular points, a basally thinned concave-based point, a variety of endscraper forms, and gravers. And while "nearly 100 microblades and two cores" are found in levels 6 - 8 as well, Cook believes that these are separate from the Chindadn component. Others have suggested that "some post depositional mixing of artifacts may have occurred at the village site", in order to account for the microblades (Hamilton and Goebel 1999:169), which is supported by the steady decline in their occurrence at the lower levels, with none in levels 9 and 10 (see Table 6-7, Cook 1996:326). Dates obtained ranged from 11410 to 8210 BP and averaged 9,700 BP (Cook 1996:327).

At the Walker Road site four complete Chindadn bifaces and three performs, which "may represent Chindadn points in a preliminary stage of manufacture", were recovered from loess levels 1 and 2, and dated to 11300 – 11010 BP. The 218 associated artifacts comprise the largest Nenana assemblage yet recovered, nearly fifty percent of which are retouched flakes and blades. Endscrapers (of seven distinct forms) and sidescrapers (of eight distinct forms) make up the next largest category (18.3% and 9.2% respectively). Cobble tools, the majority of which are plano-convex "planes", wedges / *pièces ésquillées*, gravers, perforators, notches / spokeshaves, denticulates, and knives, complete the tool assemblage (Goebel, et al. 1996; see also Goebel, et al. 1991).

The Chugwater site contains at least one complete Chindadn biface in its Component I (Nenana) assemblage; a second basal biface fragment may also belong to this class (see Lively 1996:310, Fig. 6-4b). The remaining formed tools include a bifacial knife fragment and seven small endscrapers. There is no associated date for this component, but it predates Chugwater Component II (identified as Denali), dated to 9500 – 9000 BP.

Initial excavations at the Moose Creek site revealed two components dated to the terminal Pleistocene – earliest Holocene, circa 11700 - 8,000 BP, but lacked clear diagnostic artifacts; based on the dating alone, the lower component was provisionally assigned to the Nenana complex (Powers and Hoffecker 1989). Pearson's later excavations at this site clarified this ambiguity by confirming two components, a microblade-bearing stratum overlying a non-microblade stratum. This lower level, dated to 11190 BP, also contained a single diminutive Chindadn point and a sub-triangular point (Pearson 1999).

In the Yukon, MacNeish (1964:407, see Fig. 88-3, 4) identifies five tear-drop points from a site near Carcross, recovered from above the 1200 year old White River ashfall, and in association with diminutive side-notched points; he designated this form "Catan", a term no longer used in Yukon. Beyond this, we can say little more.[24]

Workman (1974: 209-210) assigned "tear-dropped points" to his P5 category of projectile points of Yukon and identified six such points from the Chimi site (JjVi-7) near Aishihik village at the north end of Aishihik Lake and one from JhVf-5, a site at the south end of the lake. The Chimi specimens were recovered from below the 1200-year-old White River ashfall. Examination of a photograph of one of the Chimi specimens shows it to be decidedly straight-based and thus more triangular in outline than the classic Chindadn form, which almost invariably have a much more rounded base. Greg Hare of the Yukon Heritage Branch (personal communication January 2007) notes, "regarding teardrop or p5 points, there are any number of short round based things that might be called tear drop shaped. Not sure how temporally sensitive they are and probably some of them are short because of re-working." Based on their form and late Holocene dating, we

[24] Our enquiry for more information on these materials revealed that "Both provenience and frequency data was partially lost during the original cataloguing of this collection. Frequencies in MacNeish's publication are inconsistent with one another, with the catalogue and with the existing collection. . . . Two projectile points (MacNeish 1964: Figure 88, Nos. 3,4) are missing. This is the history for a lot of the MacNeish sites." (G. Hare, pers. comm. Jan 2007). However, our query did identify a tear-dropped form from the JhVf-1 site near Otter Falls in the Aishihik valley (the falls once illustrated the Canadian 5 dollar bill), but there is no recorded provenience.

believe that these latter central-southwest Yukon points are neither technology nor temporally related to the much earlier Chindadn form found in the Tanana River drainage, including those from the Little John site.

Finally, Cinq-Mars and Gotthardt (1998) have reported the recovery of a Chindadn point at the Poulton Station site (MbVn-1) in 1997 from the northwest Olgilvie Mountains of Yukon, near the Yukon – Alaskan border. The point was found on the surface “in a zone that was full of mixed workshop debris . . . . [and] other artifacts (large end scrapers made on blade-like supports) that also have a definite "Nenanoid" flavour” (J. Cinq-mars, personal communication, Dec. 2005). No further information has been provided on this specimen.

Outside of the Beringia region, tear-drop shaped points are found in the early (c. 9 - 9.7 K BP) levels at Namu (Carlson 1996b), and perhaps in other early components from the northern Northwest Coast. We are not aware of their occurrence within a relevant time period outside of the distribution we have discussed above.

Based on these data it seems clear that there is a definite association between Chindadn points and occupations of eastern Beringia during the Terminal Pleistocene assigned to the Nenana complex. The discovery of this technological form at the Little John site, lying geographically at the southeastern extent of Beringia extends the geographic distribution of the Nenana complex eastward into Canada and supports a Late Glacial age for the lower component in the Western lobe.

Bipoint Biface Form

The bipoint biface form has a much wider geographical distribution than the Chindadn form, being found in late Pleistocene and early Holocene components of sites in eastern Beringia (the Denali complex), as well as the early post-glacial northwest interior (the Northern Cordilleran Tradition), the coastal northwest (the Pebble Tool Tradition) and the Fraser Valley (Old Cordilleran Tradition). We also note, but do not further discuss here, the occurrence of the bipointed biface form in western Beringian components in Asia (c.f. West 1996a).

West (1967:372) included “bifacial biconvex knives, randomly flaked and of variable size” in his original construction of the Denali complex. This is based on their association with microblade / wedge-shaped core technology at the Donnelly Ridge, Teklanika River (East and West), and Campus Sites (the latter was later determined to be late Holocene in age and should thus be removed from considerations of the Denali complex; see Moberly 1991).

At Donnelly Ridge “four specimens, of which only one is complete, were recovered. The proximal ends of two of the illustrated specimens are missing, and the assignment to this category is therefore a matter of probability only. None is perfectly symmetrical, and the term biconvex, like knife, is a matter of convenience” (West 1967:365).

Two biconvex bifaces are illustrated in West’s (1967) paper for Teklanika West and two for Teklanika East. Later, West (1996b:335 and Fig. 7-2) notes that at Teklanika West “the dominant form [of biface] is the lenticular or biconvex (two segment) biface found in virtually all Denali assemblages.” The accompanying illustrations make clear that what he is assigning to this category include both symmetrical and asymmetrical forms.

Bipoint bifaces of more symmetrical form are present in Component II of the Dry Creek site in the Nenana River valley (see Hoffecker et al. 1996:351, Fig. 7-10-k). Found in association with wedge-shaped microblade cores, microblades, and polyfacetted (Donnelly) burins, Component II is assigned to the Denali complex; the component has associated dates ranging from 10690 to 8915 BP (Powers and Hoffecker 1989; Bigelow and Powers 1994).

Component I of Panguingue Creek contains two “lenticular bifaces”, which in fact is meant to describe bipoints of the form we discuss here, based on the illustrations accompanying the site description (see Goebel and Bigelow 1996:370, Fig. 7-18- b, c). The site analysts note that the “small size of the assemblage precludes firm assignment to a defined complex, although it appears to fall within the time range (roughly 10,000 BP) generally prescribed for the Denali complex” (Goebel and Bigelow 1996:369). On the other hand, Yesner and Pearson (2002:139) suggest that Component I of Panguingue Creek “represents a late manifestation of the Nenana Complex, with dates and technologies similar to those from Component III at the Broken Mammoth site.”

Finally, the lower component at KaVn-2, south of the Little John site just off the Alaska Highway and about 10 kilometers west of the White River, contains two complete bipointed bifaces, and three biface fragments which may have also shared this form (see Hefner 2002:111, Fig. 4.19 – A, B, C and E, F). They are stratigraphically between constraining dates of 10,670 – 10,130 BP, although neither date is on cultural material. Hefner draws a similarity between these bifaces and those of Dry Creek, Component II, linking them to the Denali complex. Hefner also draws a link between a lanceolate biface in the lower component at KaVn-2 with a similar biface base fragment in the lower (Nenana complex) component at the Moose Creek site, leading him to classify the lower component at KaVn-2 within West's (1996a) Eastern Beringian Tradition, which combines Nenana and Denali complex sites as seasonal or functional variants of a single population. On the other hand, Hare (1995:110) links the early KaVn-2 component to Clark's (1983) construct of a Northern Cordilleran Tradition based on the early date for the site and his view that the lanceolate biface has an affinity with "Agate-Basin like" points.

Outside of the Beringia region, bipointed bifaces, characteristically referred to as "foliate", seem ubiquitous to the earliest components of British Columbia, including the early period at Namu on the central coast, c. 9 - 9.7 K BP (Carlson 1996b), the pre-microblade levels at Richardson Island, Haida Gwaii, dating approximately 9300 to 8900 BP (Fedje et al. 2005), the Bear Cove site on northern Vancouver Island, c. 8000 BP (C. Carlson 1979), the Milliken component at the Milliken site in the Fraser River valley, c. 9000 – 8150 BP (Mitchell and Pokotylo 1996), and the Old Cordilleran component at the Glenrose Cannery site on the Fraser River delta, c. 8000 BP; they are found widespread in the southern British Columbia interior, though few have early dated contexts (Stryd and Rousseau 1996).

Based on this review, it seems that this biface form has, as Hefner (2002:87) notes, "been included in every major early cultural historical classification in northwestern North America . . . . [and] it would appear that this artifact originated in the north and diffused southward."

Biface Fragments

Of the biface fragments described two pieces (KdVo6:123 and KdVo7:1) were indisputably recovered from within basal loess sediments; KdVo6:123 is from the West lobe of the Little John site, while KdVo7:1 was recovered from similar sediments at a nearby hunting overlook. Based on this we include them within the Nenana complex assemblage. Morphologically they are similar: thin, nearly identical in width, randomly flaked, with a flat base gently curving upwards towards the lateral margins. The principal difference between them is that the base of KdVo6:123 is bifacially thinned, while the base of KdVo7:1 is ground.

These biface fragments appear to be unique to the Little John Nenana component. While they may bear some resemblance to several bifaces in the Dry Creek Component I assemblage (see Hoffecker et al. 1996: Figure 7-8 *a-c*), which are relatively broad and exhibit straight to round bases and convex margins, this identification is tenuous at best. Alternatively, KdVo6:123 may be a preform or broken remains of the typically thin Chindadn points (though we note that the KdVo6:96 Chindadn point is not thin by any imagination).

The points recovered from the B2 - Loess interface in the West lobe deposits are assigned to the Denali complex assemblage of the site based on their co-occurrence with numerous microblades in this stratum. Two (KdVo6:125 and 716) may be tip fragments of bipoints, but there is no certainty in this assumption. We note again that KdVo6:716 is extremely thin and thus reminiscent of the small Chindadn form and that its outline does not preclude this possibility.

The medial fragment (KdVo6:122) and remaining point tip (124) share a similar morphology in terms of thickness, lenticular cross-section, and maximum width, and on this basis seem to be the same technological form. We also note that the medial fragment (KdVo-6:122) seems to represent a lanceolate form, which is not foreign to Denali assemblages, such as Dry Creek Component II (Hoffecker et al. 1996).

SUMMARY DISCUSSION OF THE EARLY COMPONENTS OF THE LITTLE JOHN SITE

There are two opposing positions regarding the relationship between assemblages of the Nenana type and assemblages of the Denali type. The first, held by the original proponents of the Nenana Complex (Powers and Hoffecker 1989) and others (e.g. Goebel and Ponnti 1992; Pearson 1999), is that the Nenana complex represents the first inhabitants of the Nenana and Tanana Valley basin by a non-microblade producing people and that assemblages containing microblades and other assigned Denali assemblage material (including bipointed bifaces) represent a subsequent migrant population or diffusion of this technology into the basin about one to two thousand years later. This position is based on the documented stratigraphic and temporal separation of *most* assemblages representing the two complexes, with Nenana material being consistently older and underlying the younger and stratigraphically higher Denali material at *most* sites in the region.

In opposition to this view, West (1996a) and others (e.g. Holmes 2001; Hefner 2002), maintain that the two complexes represent separate tool kits of the same over-arching techno-complex, known variously as Denali, the Eastern Beringian Tradition, or the Beringian Tradition. This position is based on *some* temporal overlap between the later occurrences of Nenana sites and the earlier occurrences of Denali sites, as well as the evidence from one site, Swan Point (Holmes, et al. 1996), at which it is clear that a well-defined microblade assemblage <u>underlies</u> a non-microblade bearing “Nenana” stratum.

This view creates a distinction between short-term hunting camps with a limited range of hunting activities - thus lacking microblade technology for functional reasons - and longer-term village sites, where microblade technology was mobilized to perform a wider diversity of activities. Yet, as Yesner and Pearson (2002) aptly point out, the Broken Mammoth site (Holmes 1996), lacks microblade technology in its early components, but does contains evidence of a longer-term encampment, including "[T]ool manufacture and resharpening, caching behavior for both artifacts and meat sections, both primary and secondary butchering, and both hide preparation and skin sewing are reflected by the tools and fauna…"(Yesner and Pearson 2002:152, sic), which does not support explaining the difference between Nenana and Denali complex assemblages on the basis of functional distinctions created by short-term occupation.

Consistent with this argument, in his recent analysis of the radiocarbon chronology of late Pleistocene Alaska, Bever (2006) reaffirms the point that microblade technology and artifacts diagnostic of the Nenana complex, and in particular Chindadn points, have never been found in association. While he acknowledges that the Healy Lake site may be a possible exception, he notes that inextricable mixing of the lower levels of this site due to cryoturbation renders the apparent association between microblades and Chindadn points suspect. This prompts Bever (2006) to develop a third scenario for the relationship between the Nenana and Denali complexes. Contrary to Yesner and Pearson (2002), Bever argues that the basal components of the Broken Mammoth and Mead sites, which lack diagnostic lithic artifacts but are often placed in the Nenana complex based on dates comparable to the well-defined Nenana components in the Nenana Valley, are not necessarily Nenana components. Holmes (2001: 165) had previously made the same point: “Despite the lack of any microblades from this time period at the Mead and Broken Mammoth sites, I would not assign these components to the Nenana complex on negative evidence alone.” What Bever proposes is that these two components could be related to the microblade component at Swan Point:

> Like Swan Point, Broken Mammoth also contains an earlier occupation (Component IV, dated between 11,300 and 11,400 cal B.C.) underlying the Nenana component. The older basal component at Broken Mammoth produced a small assemblage that, while containing a large assemblage of organic tools, lacks known diagnostic types and cannot be assigned to a particular complex. However, it dates to the latter portion of the earliest Swan Point microblade component, and since it is located only about 20 km away, probably represents a related occupation. The nearby site of Mead also contains two occupations layers in sync with those at Swan Point and Broken Mammoth, but none contain diagnostic materials (Bever 2006:606).

Based on this interpretation, Bever goes on to describe a possible reversal in the archaeological record of late Pleistocene Alaska. While stratigraphic separation between the Nenana and Denali complexes is apparent in both the Nenana and Tanana Valleys, in the Tanana Valley the Denali complex underlies the Nenana complex; in the Nenana Valley the opposite is the case. Indeed, the Nenana complex of the Nenana Valley overlaps in time with the Denali complex of the Tanana Valley. This leads him to the general conclusion that:

> Clearly, there is no straightforward relationship between Nenana and Denali complexes when the evidence from both the Nenana and Tanana Valleys are considered together. The only clear pattern is that both coexisted side by side for at least two thousand years (Bever 2006:606-607).

All told, the culture-historical patterns evident in the Nenana and Tanana Valleys of interior Alaska, which provide the context for the interpretation of the Nenana and Denali components at the Little John Site, likely represent a complex suite of causes – perhaps relating to shifting economic adaptations, population movements and/or technological diffusion and expressions of cultural identity - yet to be fully unraveled. The influence of the accompanying Younger Dryas climatic event during the latter portion of this period in late glacial Beringia also needs to be taken more fully into consideration but we do no more than note this here (but see Hoffecker and Elias 2006, Carlson 2007).

Evidence from the Little John Site does not unequivocally resolve this debate, but the presence of a non-microblade assemblage bearing Chindadn points and other tools characteristic of the defined Nenana complex stratigraphically, and therefore temporally, separate from an overlying microblade bearing assemblage lends support to the notion that Nenana and Denali assemblages are separate techno-complexes, at least at this time in this place.

It remains unclear how the small assemblage recovered from the KaVn-2 site east of the Little John site near the White River, which possibly dates to between 10670 – 10130 BP, and which includes two bipointed bifaces – diagnostic of the Denali complex in our analysis – but lacking in any evidence of microblades, relates to the Little John Site in the culture-historical framework of the region. A reasonable conclusion – in the absence of direct dating of the Nenana component at the Little John Site – is to state that microblades, bipointed bifaces, and Chindadn points are present in the far southwest Yukon between 10500 and 9000 B.P. Viewed from the complex associations of techno-complexes in interior Alaska articulated by several generations of archaeologists, different manifestations of purported Nenana and Denali elements at different sites and times in the Yukon would not be surprising. Indeed, in the absence of clear stratigraphic or chronometric evidence otherwise, we have to at least entertain the possibility that the loess-level Chindadn-bearing assemblage from the West lobe of the Little John site *might* be the product of the same culture-bearers responsible for the deposition of the faunal remains and bipoints found in the East lobe paleosols; in such an event the Little John case takes on an additional importance.

In this context, we must finally note the possible relationship of the Little John biface assemblage to areas outside of Beringia. Carlson (1996a, 2004, 2007) has suggested that the Nenana complex may be antecedent to the early pre-microblade occupations of the Northwest Coast of North America. This possibility is based on the presence of foliate (what we here have termed bipointed) and Chindadn-like teardrop bifaces in the earliest documented archaeological components on the coast, dated to c. 9500 at Namu. Carlson (2007:2) argues that bearers of the Nenana complex, adapted to caribou hunting, may have "spread to the northern Northwest Coast…from interior Alaska through the Yukon between 11000 and 10000 BP during the Younger Dryas", at a time at which the tundra environment may have extended from interior Alaska through the Yukon and onto the coast, a proposition supported by the presence of caribou on the coast during this period.

The presence of foliate or bipointed bifaces and Chindadn points in the Yukon at the Little John Site and KaVn-2 in the far southwest Yukon between 10500 and 9000 BP provides support for Carlson's hypothesis. Interestingly, Bever (2006) notes that the Younger Dryas event might also be implicated in the disappearance of the Nenana complex from the Nenana Valley and its reappearance in the Tanana Valley. This may be supported by the presence of unequivocal Nenana components at Broken Mammoth - Component III and Swan Point - Component III, which taken together date to between 10800 and 9700 BP, coincident with the Younger Dryas. If this movement from the Nenana valley into the Tanana valley continued eastward and onto the coast via the Yukon, the Little John Site and KaVn-2 are perfectly positioned geographically, and in the right range chronologically, to have been locations across which this migrant population would have passed. A detailed technological comparison between early coastal bifaces and those found in the far southwest Yukon, further excavation and dating of the Little John site, and excavation of new sites to more clearly delineate the early culture-historical framework of the southwest Yukon - Alaska borderlands will help to address these questions.

CONCLUSIONS

The Little John site presents us with the first recovery of an unequivocal Nenana complex assemblage from within a stratified context in Canada, overlaid by a microblade bearing assemblage we assign to the Denali complex. The site also contains a buried paleosol complex rich in culturally modified fauna, indicative of a broad spectrum subsistence strategy, and dated to c. 9500 – 9000 BP, in itself a rare occurrence in Yukon - Alaska and thus important in it's own terms (Hutchinson, et al. 2007). We have also assigned this paleosol complex to the Denali complex, based on its association with bipointed bifaces and some evidence of microblade technology. Unfortunately, no material suitable for dating the Nenana complex component has been recovered but, if our separation of the site assemblage is correct, it would predate the fauna and date to c. 10,000 + BP, which would be in general accordance with similar Nenana complex assemblages in the nearby Tanana and Nenana river valleys.

On the other hand, as our regional comparisons and discussion shows, the apparent is no longer as straight forward as cultural-historians would like, and currently there are several possible ways to interpret the early assemblage of the Little John site at this time. Only further excavation may lead us to more definitive answers to the complexities of the culture history of the Late Glacial period in this region and its relationship to subsequent developments elsewhere. Fortunately, the Little John site is large, and we are also confident that additional related sites in the borderlands region will soon be revealed, which together will undoubtedly provide additional data on the Terminal Pleistocene occupation of Canada's far northwest in years to come, contribute to the resolution of some of the conflicting interpretations we raise here, and undoubtedly present us with important new questions to ponder.

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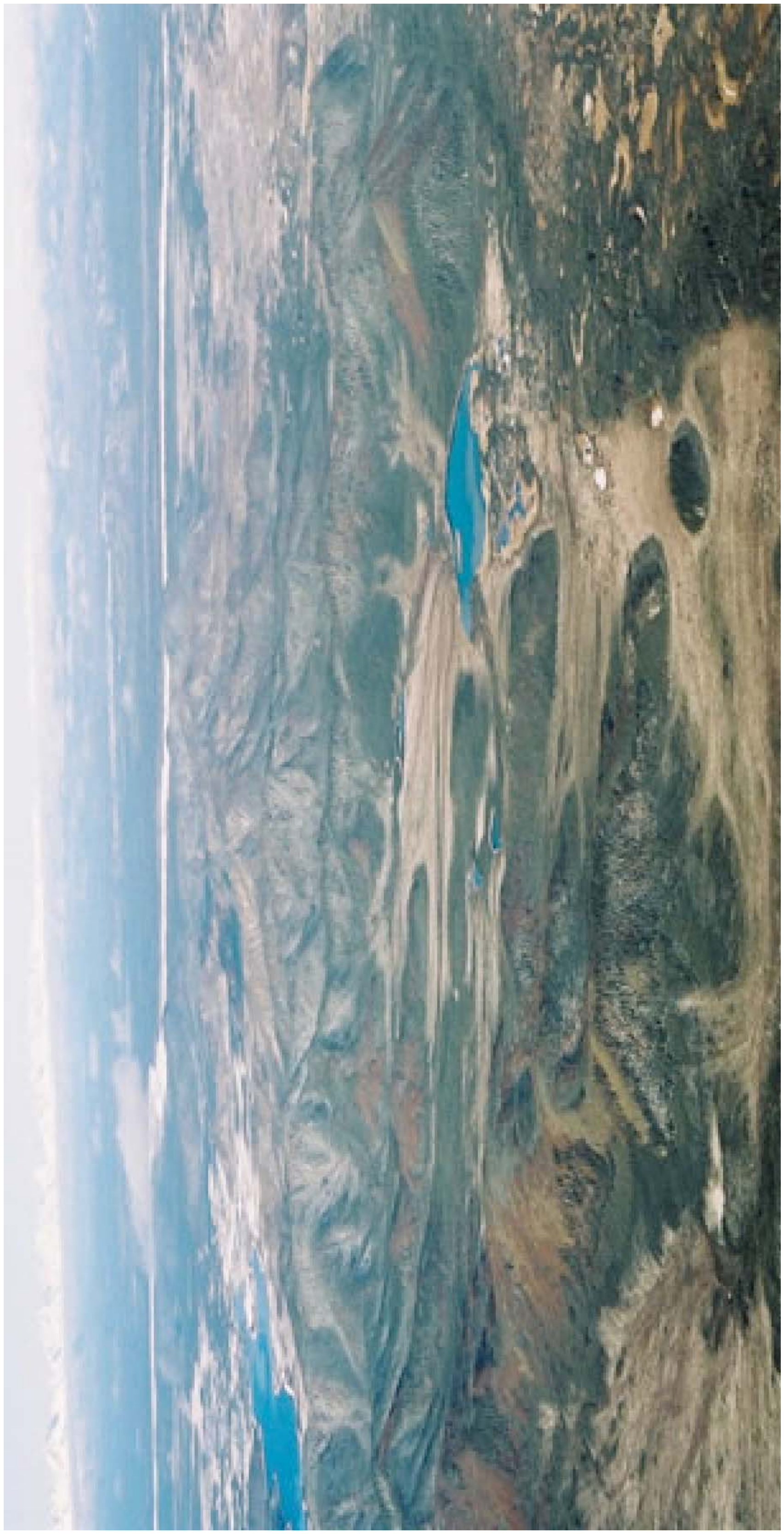
Figure 104. The Author with East Lobe Paleosols at the LitteJohn Site.



Mirror Creek Valley, Yukon - Alaska Borderlands, view to West.