SUSITNA HYDROELECTRIC PROJECT
CULTURAL RESOURCES - SIGNIFICANCE

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1985

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1 - INTRODUCTION

At the request of the Alaska Power Authority, the evaluation of significance has been prepared by the University of Alaska Museum as a separate report from the Cultural Resources Investigation 1979-1985 document (Dixon et al. 1985). This report is designed to be used in conjunction with two additional reports requested by APA: Susitna Hydroelectric Project, Cultural Resources - Impact Assessment (Smith and Dixon 1985) and Susitna Hydroelectric Project, Cultural Resources - Mitigation Recommendations (Smith and Dixon 1985).

Federal agencies are required to assess the effects of projects, such as the Susitna Hydroelectric Project, on properties on or eligible for nomination to the National Register of Historic Places. When such properties will be adversely affected, the agency must determine whether there are feasible and prudent alternatives which would avoid or satisfactorily mitigate the adverse effect. The eligibility of a site or group of sites, for inclusion in the National Register, is based on the significance of the site(s). Therefore, it is first necessary to determine site significance. The significance of a site is directly related to its potential to address research questions. This report summarizes the assessment of site significance through defining the concept of significance, identifying pertinent variables, presenting research questions relevant to the study area, and identifying the sites which will address these questions.

Chapter 2 addresses the determination of site significance from legal, scientific, and heritage perspectives. Legislation relating to site significance is discussed and professional concerns on the definition of significance are presented. Chapter 3 presents the significance evaluation framework. The hierarchy of research questions and the variables which sites must possess in order to address the questions are both discussed. Chapter 4 presents research questions grouped according to six major research areas. These areas are: 1) Cultural Chronology, 2) Subsistence and Settlement, 3) Human Ecology, 4) Population Dynamics/ Exchange and Diffusion, and 5) Athapaskan lifeways, and

6) Culture processes. Sites that have the potential for addressing a research questions are listed under the appropriate question. A site specific evaluation of significance is also presented in the fourth chapter of this document.

2 - SITE SIGNIFICANCE

The federal mandate to manage and protect archeological and historical resources has historically divided cultural properties into two classes: those which are "significant" and those which are not (Tainter and Lucas 1983:707). The definition of significant archeological resources is a controversial and much debated concept in archeological and legal communities. The complexity of the concept of significance has been discussed and evaluated in a number of reports and articles (Anderson 1972; Scovill et al. 1972; House and Schiffer 1975; Moratto 1975; Glassow 1977; King et al. 1977; Moratto and Kelly 1977; Raab and Klinger 1977; Schiffer and Gumerman 1977; Schiffer and House 1977; Sharrock and Grayson 1979; Barnes et al. 1980; Tainter and Lucas 1983). This section will outline the history of significance from legal and scientific standpoints to explicate how the concept of significance is implemented with respect to archeological sites associated with the Susitna Hydro-electric Project. Heritage significance and significance as measured by unique site characteristics will also be discussed in this section.

Effective evaluation of the concept of significance can be accomplished by dividing it into types.

> In principle, the process of assessing significance is relatively straightforward once there is agreement on the types of significance that needs to be considered. One first specifies explicit criteria for judging resources in relation to each type of significance. Then the fit between the criteria and the resources is evaluated. Finally, it may be desirable to arrive at an overall judgment based on a weighing of the types of significance that have been considered (Schiffer and Gumerman 1977:240).

Although several types of significance have been recognized in the literature, including historical, ethnic, public, legal, and scientific significance (Schiffer & Gumerman 1977:244-245), two are considered most encompassing and integral to our discussion. As will be shown, legal and scientific concepts of significance provide two different but interrelated pc ectives.

2.1 - Legal Significance

The concept of significance has a long history in federal legislation relating to archeological and historic preservation. In early legislation, such as the 1906 Antiquities Act and the 1935 Historic Sites Act, the concept was equated with significance on a national level. Private preservation groups working in the early decades of this century had to come to grips with the significance concept in order to evaluate historic buildings on their associative (association with great persons and events in American History) and artistic merits. This need to set standards for evaluation in historic preservation greatly influenced the further development of the concept of significance (Tainter and Lucas 1983:708).

The first formulation of guidelines to serve as selection standards for preservation was attempted by the National Park Service Chief Historian and later released to the National Resources Board in 1934. The determining factor for selection of a historic or prehistoric site was its possession of "certain matchless or unique qualities" which represented large patterns of "the American story," were associated with the life of some great American, or associated with some dramatic event in American history (Schneider 1935, in Tainter and Lucas 1983). Subsequent guidelines issued by a private organization, the National Council for Historic Preservation, which lobbied for the congressionally chartered National Trust for Historic Preservation, were based primarily on the 1934 standards, but stated more explicitly that preservation was to include sites exemplifying the achievements of aboriginal man in America or sites of outstanding scientific importance for the light they shed on this subject (Finley 1965, in Tainter and Lucas 1983). These criteria were revised and expanded by the National Trust in 1956 and are the basis for the federal attempts to define significance today (Tainter and Lucas 1983:708).

As a result of two important pieces of legislation and a presidential mandate, standards by which to evaluate the significance of sites have again been codified by the federal government. The National Historic

Preservation Act (NHPA) of 1966 established the National Register of "districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, and culture" (Public Law 89-665; 80 Stat. 915; 16 U.S.C. 470, Section 101). Under the provisions of this law, consideration must be given to any National Register or National Register eligible site, structure, or district which is to be adversely affected by projects utilizing federal funds. Also with the passage of NHPA, resources of regional, state, and local as well as national significance gained protection under the law.

The importance of the National Register was strengthened by the signing of Executive Order 11593 in 1971. This directive ordered federal agencies to locate, inventory, and nominate to the Secretary of the Interior all properties under their jurisdiction or control that appear to qualify for listing on the National Register of Historic Places (E.O. 11593). Implicit in the order is the notion that properties must be significant in order to be nominated to the National Register, as pointed out by Tainter and Lucas (1983:709).

In 1974 another key piece of legislation dealing with significant properties, the Archeological and Historic Preservation Act, was passed. It amends the Reservoir Salvage Act of 1960 which provided for the preservation of historical and archeological data that might be lost as a result of dam construction (74 Stat. 220; 16 U.S.C. 469). According to an amended section of the 1974 law,

> Whenever any Federal agency finds, or is notified, in writing, by an appropriate historical or archeological authority, that its activities in connection with any Federal construction project of federally licensed project, activity, or program may cause irreparable loss or destruction of significant scientific, prehistorical, historical, or archeological data, such agency shall notify the Secretary (Secretary of the Interior), in writing, and shall provide the Secretary with appropriate information concerning the project, program or activity. (Public Law 93-291; Stat. 174)

The law further states that recovery, protection, and preservation of the data must subsequently take place.

Criteria by which to assess significance in compliance with the federal laws and Executive Order 11593 appear in the Federal Register in 1976 and have been worded to provide for the inclusion of a diversity of cultural resources on the National Register of Historic Places. According to the National Register criteria of evaluation, the quality of significance is present in historic and archeological properties that possess integrity of location, design, setting, material, workmanship, feeling, and association, and

(a) That are associated with events that have made a significant contribution to the broad patterns of our history; or
(b) That are associated with the lives of persons significant in our past; or
(c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
(d) That have yielded, or may be likely to yield, information important in prehistory or history (CFR 36:60.6).

Criterion (d) is generally used in nominating archeological sites to the register.

Tainter and Lucas (1983) observed that the history of the concept of significance is rooted in legislation passed in the early decades of this century in response to concerns of architectural preservationists. The criteria stated above are very broad with regard to assessing the scientific or research value of archeological sites. Some aid in determining significance is, however, provided in a handbook, Treatment of Archeological Properties, published in 1980 by the Advisory Council on Historic Preservation. The council was established by the NHPA to act in an advisory capacity in reviewing proposals for archeological data recovery projects. In their handbook principles guiding the Council's staff in their review process are set forth. One of their major principles states that properties draw their archeological value (significance) from the "assumption that they can be used fruitfully for research" (Advisory Council on Historic Preservation 1980:6). One of the stated intents of the National Historic Preservation Act is "to insure future generations a genuine opportunity to appreciate and enjoy the rich heritage of our Nation" (Public Law 89-665, Preamble).

Archeological research which addresses significant questions about the past is viewed by the council as being in the public interest, and thus fulfills this intent.

The crucial role of research potential in assessing archeological significance is also documented in the Federal Register among the regulations to be employed in complying with the Archeological and Historic Act of 1974.

> Significant....data, as used by the Act, are data that can be used to answer research questions, including questions of present importance to scholars and questions that may be posed in the future (36 CFR 66.1).

These additional guidelines, set within a scientific framework, allow archeologists to more effectively gauge whether or not a site or sites have "yielded, or may be likely to yield, information important in prehistory or history" (CFR 36 60.6).

2.2 - Scientific Significance

Scientific significance is an outgrowth of legal significance as stated in federal antiquities legislation over the past century and more specifically since 1976 when the Federal Register set forth criteria for significance pursuant to the Historic Site Preservation Act of 1966, National Environmental Policy Act of 1969 and Executive Order 11593. This legislation is very open ended and subject to a wide range of interpretations (Raab and Klinger 1977).

A general consensus in the archeological discipline has been reached in interpreting the legislation. House and Schiffer (1977) state that significance of archeological sites is best assessed by scientific significance. They further argue that scientific significance is best evaluated by research potential. This position is also supported by Raab and Klinger who "... feel that the best approach to assessing archaeological significance is in relation to explicit, problem-oriented research designs" (1977:632). This same position was subsequently adopted by other archeologists (Grady 1977; Lynott 1980). The

assessment of archeological significance in general and scientific significance in particular might best be taken from Schiffer and Gumerman:

> A site or resource is said to be scientifically significant when its further study may be expected to help answer current research questions. That is, scientific significance is defined as research potential (1977:241).

The nature of research potential with regard to scientific significance is both diversified and dynamic. Basic archeological issues such as regional classification and chronology are included along with broader theoretical goals such as general anthropological principles and social scientific methods. Dixon (1977) presents an argument which suggests a broadening of the archeological significance base to other areas of science such as paleoecology, marine mammals science, weather and climate, and the fishing industry. These are all within the realm of scientific significance.

One other outstanding characteristic of scientific significance is its dynamic nature. If scientific significance is tied closely with research potential, then as research designs change and methodological techniques develop, the status of significance will also change. Lynott (1980) illustrates this case with an example from central Texas. The initial assessment of Bear Creek Shelter after limited testing in 1947 was essentially negative. This assessment was based upon the site's research potential to contribute to chronology building. Upon reevaluation of the site in the 1970's, research had come to emphasize questions of subsistence and settlement and the site was consequently considered significant. This same kind of issue of "future potential" is recognized by other archeologists (Glassow 1977; Dixon, in press). For instance, Glassow suggests:

> ...the history of archaeology over the last two decades demonstrates that our conception of what is important to observe in the archaeological record is subject of radical change or at least significant expansion. Before the advent of concern for studying settlement patterns, for example, only "type sites" or sites with deep, large deposits might have been considered "significant", whereas today we would consider even small, ephemeral sites to be important (1977:414).

The same kind of issue can be found in the archeological literature outside of a management context. For instance, Dixon evaluates the significance of artifacts from sites along the Porcupine River, Alaska, based upon context.

> The question of context is of paramount importance because it provides all things with meaning. Context provides parameters in which any object or phenomena may be interpreted and through interpretation becomes knowledge. Context is not limited to the depositional setting and recorded data associated with a specimen. The historic period in which the investigator functions also provides context which limits the parameters of analysis. For example, archeological material discovered in the early 1900's is regarded differently in the 1980's because of the advancement in analytical techniques such as scanning electron microscopy and radiometric dating, which have expanded the contextual limits of recovered material.
>
> Context must be understood as being characterized by a degree of confidence rather than as an absolute state of being. The degree of confidence is dependent upon the amount and quality of the information context provides (Dixon, in press).

Tainter and Lucas (1983:707-718) attempt to sum the problem up by suggesting that because the theoretical and methodological basis of research in archeology changes, as with all empirical disciplines, we must make our own assessments with very careful detail and rigor. In recapitulation, the significance of archeological resources is best assessed within a framework of research potential given the diversified and dynamic character of the science.

2.3 - Heritage Summary

Heritage significance is a concept which broadly encompasses the non-scientific aspects of site significance, including historical and ethnic significance. Criteria used to determine historical significance have been discussed previously in section 2.1 of this report. Ethnic significance pertains to the religious, mythological or social importance that an archeological site may have for a discrete population (Moratto 1975, cited by Schiffer and Gumerman 1977:244).

The role of ethnic significance has also been considered by the Advisory Council on Historic Preservation (1980), who discuss the task of

balancing research values and other public values, such as ethnic values that may be inherent in a site, in determining the appropriate treatment of archeological properties. They state that "if the property is perceived by a local social group to have religious cultural value, for example, this value must be taken into account" (Advisory Council on Historic Preservation 1980:8). They further state that "a data recovery program should relate positively to non-archeological concerns ...(including) religious and other cultural concerns of Native Americans and/or other descendants of the historic and prehistoric people of the study area..." (Advisory Council on Historic Preservation 1980:30).

2.4 - Uniqueness

During early federal efforts to establish selection standards to use in preserving historic and prehistoric sites, the quality of uniqueness was highlighted as an essential characteristic for a site to possess. This fact is well illustrated by the following passage from a 1934 National Resources Board publication:

> The determining factor in the preservation of an historic site by the National Government, as in the case of any area of great scenic or scientific qualities, is that it possess certain matchless or unique qualities which entitle it to a position of first rank among historic sites (Schneider 1935:3-4, cited by Tainter and Lucas 1983:708).

In the present context, the quality of uniqueness is important primarily as it relates to either the scientific or heritage significance of a site. For example, if a site is unique because it is the earliest in the area, it is significant mainly because of its potential to address region-specific research questions dealing with early culture chronology, settlement and subsistence, etc. An historic site, deemed to be unique because it is the only example of a particular style of cabin or it was once inhabited by an important figure in local history, is valued for its heritage significance in preserving important aspects of the culture of the area. Specific examples of unique sites within the project area are included in a companion volume to this report, i.e., Susitna Hydroelectric Project, Cultural Resources - Mitigation Recommendations (Smith and Dixon 1985).

3 - Significance Evaluation Framework

The significance evaluation framework is comprised of two major components: 1) research questions grouped according to major themes of concerns to archeologists, i.e., cultural chronology, subsistence and settlement, human ecology, population dynamics/exchange and diffusion, Athapaskan lifeways, and culture process; and 2) variables which a site must possess in order to address specific questions. Each of these components is discussed below.

3.1 - Research Questions

(a) Culture Chronology - (Research Category I)

To date, five major cultural traditions and complexes, each characterized by specific configurations of associated cultural traits which persists over a long period of time have been documented within the study area. These are: 1) Euro-American tradition (0 - 100 B.P.) (cultural horizon 1), 2) the Athapaskan tradition (100 - ca. 1500 B.P.) (cultural horizons 2, 3, 4, 5), 3) Late Denali complex (ca. 1500 - 3400 B.P.) (cultural horizons 5 (?), 6, 7, 9), 4) Northern Archaic tradition (ca. 3400 - 5000 B.P.) (cultural horizon 8), and 5) American Paleoarctic tradition (ca. 5000 - ? 10,500 B.P.) (Cultural horizon 9).

Research Questions - Culture Chronology:

a. The temporal boundaries for each tradition are poorly understood, with the exception of the Euro-American and the late phase of the Athapaskan tradition. Additional research is required at individual sites which fall on cultural horizons that suggest they hold the potential to document temporal limits of each tradition.

(b) Subsistence and Settlement - (Research Category II)

The general topic of subsistence and settlement may best be viewed from the examination of a number of lesser topics which deal with, but are not limited to: 1) the present and past landscape, 2) present and past food resources, 3) site location, 4) site size, 5) site density. Because of poor organic preservation at some stratigraphic levels it may not be possible to address some topics in more than a speculative manner.

Prehistoric settlement information is probably the most abundant kind of data obtained which relates to issues of subsistence and settlement. The most direct approach for gaining subsistence information from sites is the identification of floral and faunal remains in past contexts. Unfortunately, acidic soils and post-depositional transformations preserve only the most durable kinds of materials (i.e., lithics). As a result, the amount of preserved organic remains is minimal and this situation escalates with progressively older occupations. Fortunately some depositional environments in the project area have allowed organic preservation. For instance, bone fragments of small mammals, birds, and caribou have been recovered at various sites. These remains do not allow for a reliable assessment of minimum numbers of individuals or percentage of the diet. Nor can reliable statements be made about the most preferred subsistence resource at sites. In addition to faunal remains, macrofossils of floral specimens have been recovered from some paleosols at various sites. Given the poor organic preservation, sites which do preserve organic material within and outside of the paleosol are very important.

Research Questions - Subsistence and Settlement:

a. Is there a change in subsistence practices between the American Paleoarctic and Northern Archaic periods, and what evidence is there to support or refute this change?

b. Among the Ahtna, the placename for Jay Creek is Nac'elcunt Na' ("food is stored again creek") (Kari 1983). A number of mineral licks occur along Jay Creek and in the hills to the west upon which local sheep populations depend. Do sites which are adjacent to mineral licks possess a distinctive artifact assemblage which may be related to sheep predation?

c. Many of the small sites within the project area tend to be located on small, glacially formed knolls (kames) which provide a panoramic view of surrounding lower land features. These sites are commonly characterized as overlooks or hunting stations. Is there a diagnostic artifact assemblage at these sites which might explain their size and location?

d. During the Northern Archaic period salmon were exploited in areas adjacent to the Susitna Canyon. Is it possible that Northern Archaic sites within the Susitna Canyon area participated in a larger settlement and subsistence cycle which included salmon procurement sites outside of the area?

e. Do attributes of sites located in the vicinity of natural topographic constrictions, known to funnel herds of migrating caribou, suggest that the killing and processing of these game animals were the principal site activities?

f. The confluences of streams and rivers (also streams and streams) are known to be rich in terms of subsistence resources. Are there specific artifact and faunal assemblages which characterize sites found at confluences and do these assemblages reflect particular site activities?

(c) Human Ecology - (Research Category III)

Evidence for four prehistoric tephra falls, occurring during an interval of at least 3,000 years from about 5,000 years B.P. to roughly the beginning of the Christian Era, is widespread in both cultural and

non-cultural contexts throughout the Susitna Canyon area. The Susitna tephras may correlate roughly in time with tephra deposits at other central Alaskan locales, indicating a fairly extensive distribution for these ash deposits.

Often overlooked in the archeological literature is the fact that emplacement of tephra on the landscape undoubtedly had some effect (positive or negative) on the prehistoric population inhabiting an area. Whether the effect was long-term and resulted in a large-scale emigration of people as suggested by Workman (1974, 1979) for the Yukon Basin, or only short-term as suggested by Dumond (1979) and Black (1981) for the Alaska Peninsula and the Aleutians, respectively, has yet to be resolved for the Susitna Canyon area. Environmental data, specifically data on plant and animal recovery in regions affected by historic volcanic activity and contemporary wildlife studies, can provide useful information for the formulation of models with which to assess the possible impact on people occupying or utilizing the Susitna area at the time of the tephra falls.

If the effects were only short-term in extent, major changes in artifact assemblages or major hiatuses in site occupation would not be expected to occur in the archeological record. On the other hand, what might be expected is evidence of shifts in settlement pattern or fluctuations in population density that may have resulted due to impact on the floral and faunal resources of the area. The following questions seek to address the above hypotheses on the impact of tephra falls.

Research Questions - Human Ecology:

a. According to Workman's (1974, 1979) hypothesis, catastrophic ash falls in Interior Alaska may have caused emigration of one group of people and re-occupation at a later date by another population. This may be confirmed with distinct changes in artifact assemblages. Is such a pattern evident in the project area?

b. The impact of tephra falls on past vegetational regimes in the project area may have affected caribou by causing their numbers to decrease (or possibly increase) their distribution or migration patterns to shift. Is there any archeological evidence for a change in caribou availability or distribution before and after ash fall events?

c. The impact of tephra falls on caribou herds and in turn on human populations dependent on them would be quite different if caribou were only a seasonally important resource as opposed to the primary resource on a year-round basis. Is there any evidence to suggest that caribou were only important seasonally and, if so, did this change over time?

d. The intensity of land use can be measured by the number, size, and artifact density of sites. Is there evidence to suggest that the intensity of land use in the Susitna Canyon area increased through time or fluctuated as the result of the ecological impact of tephra falls?

e. One effect of prehistoric tephra falls on human populations occupying the Susitna Canyon area may have been a shift in settlement. Is there any evidence for a marked change in settlement pattern before and after ash fall events?

f. Is there any evidence to suggest that the intensity of land use in the Susitna Canyon area decreased at the onset of Neoglacial times at approximately 3300 B.P.?

g. Minor variations in the climate can affect both plants and animals. The so-called "Little Ice Age" occurred in the 1600's. Did this have an effect on the native populations living in the Susitna Canyon area?

(d) Population Dynamics/Exchange and Diffusion - (Research Category IV)

A major humanistic and archeological question is the identity of the people whose cultural remains are being uncovered in the Susitna Canyon area. How far back can the use of the the region by the current groups of Ahtna and Tanaina be documented? The association of archeological assemblages with that of neighboring regions may aid in identifying the former inhabitants of the project area.

The ability to segregate sites on the basis of common stratigraphy allows for the study of site density through time. The currently large, and expanding, data set from the project may reveal temporal trends in the occupation of the Susitna Canyon area. These trends may then be correlated with climatic change and effects of the tephra falls which may have affected the subsistence resources of the region and thereby the degree and frequency of occupation. The magnitude of tephra falls themselves may have had a demonstrable effect upon occupation of the project and adjacent areas.

In addition to the intensity and duration of occupations, the introduction and transmission of items into and through the project area can be studied. Material sourcing of raw material and technological similarities with adjacent regions can provide information on the relationship of the study area to the remainder of Alaskan archeology. Archeology conducted along the Alyeska oil pipeline and natural gas pipeline corridors, in the Copper River basin, and the sites of Healy lake, Dry Creek, Carlo Creek, and the Nenana River Gorge Site provide information which can be used to place the Susitna Canyon within a broader regional framework. On a broader scale, the major technological phases in Alaskan prehistory can be tested for their presence in the Susitna Canyon region and thus expand the understanding of the dynamics of distribution, timing, and variability of the phases.

Research Questions - Population Dynamics/Exchange and Diffusion:

a. West (1981:224-227) has recently postulated a cultural hiatus between the Denali Complex at 7,000 B.P. and the appearance of the Northern Archaic at 4,000 B.P. in the Tangle Lakes region northeast of the project area. Do early sites in the Susitna Canyon show an affiliation with the Denali Complex between 7,000 B.P. and 4,000 B.P. and thus refute the existence of a hiatus in occupation?

b A number of obsidian sources have been identified in Alaska and the Yukon Territory. Can obsidian from the project area be traced to specific sources and thus yield information on past interaction or exchange networks?

c. Few prehistoric structures or permanent camps are known from within the confines of the project area. Are there environmental settings which typify these rare sites?

d. The paleosol between the Oshetna and Watana tephras may also be present at the sites of Dry Creek (Thorson and Hamilton 1977) and at Gerstle River Quarry (Kotani, Cook, and Nishimoto 1984). Comparisons of cultural horizon 8 of the Susitna project with the archeological unit IV at Dry Creek, 100 km to the northwest of the project, and the upper component at Gerstle River Quarry, 150 km to the northeast of the project enable regional variation within the Northern Archaic to be studied and possible exchange and diffusion networks to be delineated.

(e) Athapaskan Lifeways - (Research Category V)

At the time of historic contact, the upper Susitna drainage was occupied by the Western Ahtna, one of several groups of Athapaskan speakers inhabiting Interior Alaska. Through implementation of the direct historical approach, the Athapaskan Tradition can be traced back to

approximately A.D. 500 in the study area. Although ethnohistoric data have provided archeologists with useful information for interpreting sites falling within this time period, much remains to be learned about the origin, population dynamics, settlement and subsistence of these prehistoric people.

Indirect impact of Euro-American culture on the Ahtna was experienced as early as the late 1700's, at which time iron and glass beads imported by Russian traders became available to peoples with whom the Ahtna had established trade connections (Workman 1977). The first actual population expansion by non-natives into the upper Susitna occurred shortly after 1895 when gold was discovered in the Cook Inlet region. Following the goldrush, fur trappers began to move into the Susitna River area. The economic use of the area for fur trapping during the 1920's to 1940's is documented by abandoned cabins from this period. The effects of both indirect and direct white contact on the Ahtna are the subject of the questions in this section.

Research Questions - Athapaskan Lifeways:

a. What were the settlement and subsistence patterns associated with the Athapaskan Tradition in the Susitna Canyon area? Can the seasonal subsistence strategies documented in the ethnohistoric literature for the Western Ahtna be verified archaeologically?

b. Indirect trade of Russian and European products occurred in Alaska prior to the first recorded contact by Vitus Bering in 1728. Did indirect trade occur in the Susitna Canyon area, and, if so, can anything be learned about trade routes?

c. The influence of non-natives on native populations often produces change in various aspects of tradition life, including, but not limited to, subsistence, material culture, social structure, trade, and religion. This influence may have been felt in the Susitna River area as a result of gold mining and

fur trapping by non-natives during the early decades of the 1900's. What effect, if any, did these activities have on native populations living in or in close proximity to the Susitna Canyon area?

(f) Culture Process - (Research Category VI)

The study of culture process has often been stated as being the ultimate goal in archeology. Explanations of culture change and the study of the relationships between human societies are the concerns of those who study culture process. Once the specifics of chronology and lifeway are explicated, the archeologist can begin to search for processes behind evolving cultural systems.

Research Question - Cultures Process:

a. The nature and form of transitions between traditions are poorly understood in the Susitna Canyon area. Are the observed changes in artifact assemblages the result of population replacement, diffusion of artifact types, in situ development, or some combination of the above?

b. The Late Denali Complex in the Alaskan Interior may have been an in situ development from previous occupations or represent an immigration of people from outside the area. Evidence associated with the intensity of occupation and artifact composition may help clarify this settlement problem. What evidence exists for either of these propositions?

(c) White, Native contact increased in interior Alaska as a result of gold mining, trapping, and building of the Alaska Railroad. What effect did this have on Native material culture, subsistence, economy, and lifeways? What effect did this have on land use, population growth, and development?

3.2 - Site Variables

The procedures implemented during Cultural Resources Investigation associated with the Susitna Hydroelectric Project were designed to retrieve information on several major attributes of sites, including environmental setting, stratigraphic context, and artifact assemblage. A host of variables by which sites can be evaluated for significance are subsumed under each category. These variables, ranging from location of a site in relation to geographic features to raw materials used in the manufacture of artifacts found at a site, are discussed below.

(a) Environmental Setting

The common characteristic which is important for human use and which is shared by these types of landforms is that they are comparatively flat, well-drained surfaces. The most meaningful criteria for classification of site setting are those which directly relate to the potential of an area for human occupation, i.e., access to water, a good vantage point, access to game, etc.

The presence or absence of major environmental features was recorded for each site by project personnel through the course of the field research. These data, coupled with map and air photo interpretation, were used in the construction of an environmentally relevant site classification. Nine types of settings were defined in which sites occur throughout the project area: 1) overlooks, 2) lake margins, 3) stream margins, 4) river margins, 5 confluences of a stream with a river, 6) confluence of a stream with a stream, 7) natural topographic constrictions, 8) mineral licks, and 9) quarries.

(b) Stratigraphic Context

Sixteen stratigraphic units have been identified in the project area (Dixon et al. 1985:8-11), and are depicted in Figure 1. No individual tests or sites have been found to contain all 16 stratigraphic units, however several archeological sites exhibit at least ten. Within any

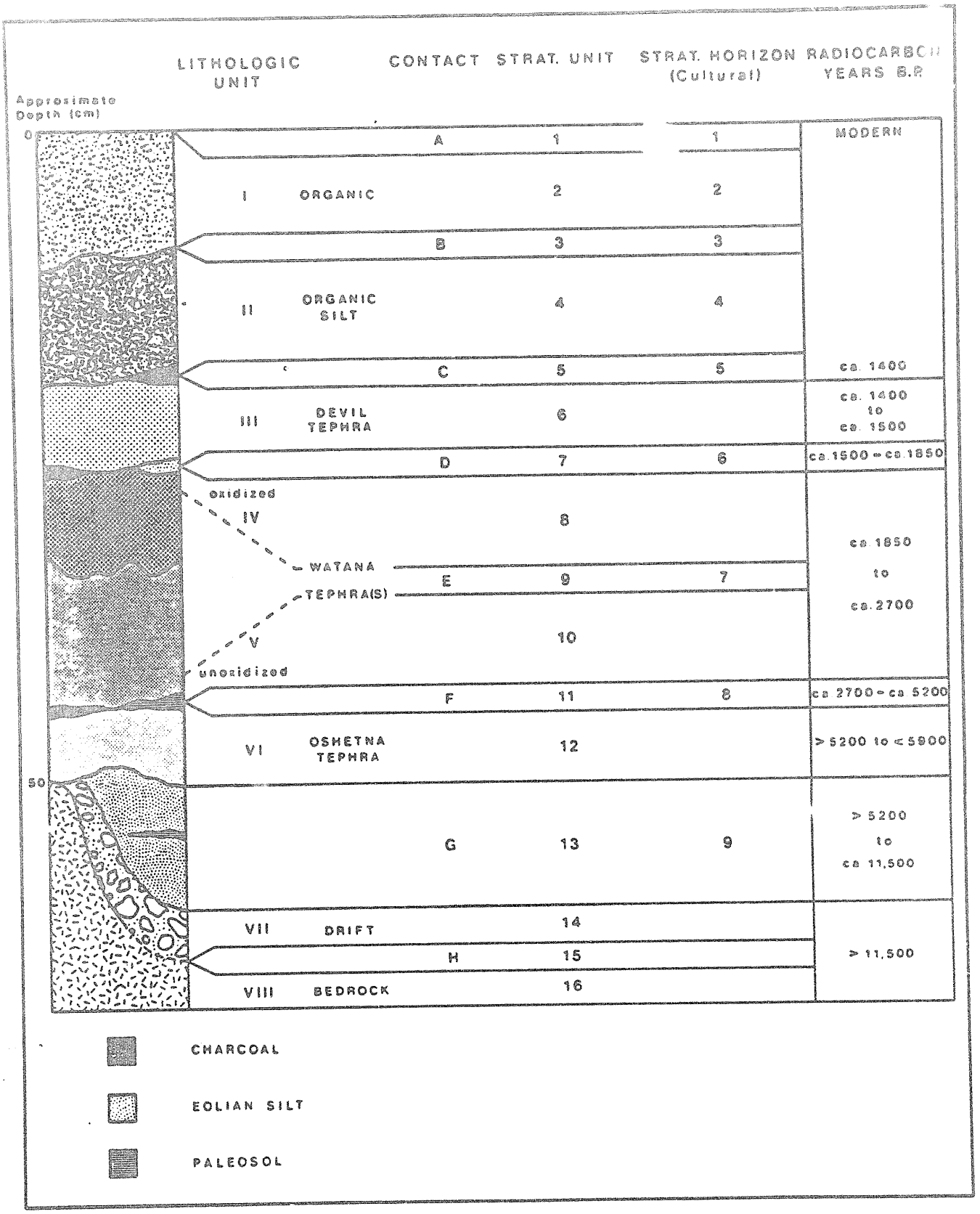

Figure 1. Generalized Terrestrial Stratigraphic Profile, Middle Susitna River Area.

given site or site locus, subunits can be arranged in stratigraphic order. The stratigraphic units are composed of the surface organics and associated pedogenic units, four tephra units, glacial drift, bedrock, and the intervening contacts. By regarding the contact units as separate stratigraphic units, it is possible to accurately define the intervals between deposition of soil/sediment units. The four tephra units are identified by local, project specific names. From the earliest to most recent they are: Oshetna, unoxidized Watana, oxidized Watana, and Devil. The tephra units are identifiable in the field on the basis of color, texture. and stratigraphic position. The region-wide occurrence of the tephra deposits make them excellent temporal horizon markers.

Nine cultural horizons have been identified which can be correlated throughout the region based on stratigraphy. These zones consist of the upper level of organics, organic silts, and the contact between them, the surfaces of the four tephras, and the surface of the glacial drift or bedrock (Dixon et al. 1985:8-11). In some cases paleosols are present between the tephra. Dating of these paleosols assists in establishing limiting dates for the tephra falls.

The chronological documentation of sites and components within the project area is based upon four methods: 1) the direct historic approach, 2) radiocarbon determinations, 3) relative stratigraphic placement, and 4) typological comparison of artifact assemblages with similar assemblages from dated sites. The nine cultural horizons can be dated within limits, although the time span represented by specific cultural horizons may vary from a few hundred years to as much as 7,000 - 8,000 years for cultural horizon 9. Four major cultural traditions and 1 culture complex, each characterized by a unique artifact assemblage have been documented within the study area. These are: 1) Euro-American tradition (0 - 100 B.P.) (cultural horizon 1), 2) the Athapaskan tradition (100 - ca. 1500 B.P.) (cultural horizons 2, 3, 4, 5), 3) Late Denali complex (ca. 1500 - 3500 B.P.) (cultural horizons 5?, 6, 7), 4) Northern Archaic tradition (ca. 3500 - 5200 B.P.) (cultural horizon 8), and 5) American Paleoarctic tradition (ca. 5200 -

10,500 (?) B.P.) (cultural horizon 9). Although the oldest dated sites in the study area do not exceed ca. 7,000 radiocarbon years it is possible that human occupation in this portion of Alaska may span the last ca. 10,500 years.

Due to the unlikelihood of dating all strata at every site, an emphasis is placed upon the relative dating potential of the tephra units. The widespread distribution of the tephra deposits allows correlations to be made between all parts of the study area. The association of cultural horizons with stratigraphic units enables the construction of cultural components based upon the artifact assemblages of a number of sites sharing the same stratigraphic position.

(c) Artifact Assemblages

An artifact can be considered as any object which owes one or more attributes to human activity. It can be faunal and floral material brought onto the site, structures and features, and items modified from stone, bone, wood, or other raw material. The major categories of artifacts are lithic remains which can be sorted according to material type and function, faunal remains, flora, non-lithic artifacts, and features.

Various types of lithic artifacts have been defined for the study area. These include: modified flakes, scrapers, blades, microblades, burins, burin spalls, bifaces, bifacial preforms, notched points, stemmed points, leaf shaped points, lanceolate points, triangular points, microblade cores, microblade core tablets, blade cores, rejuvenation flakes, flake cores, hammerstones, abraders, and notched pebbles. The definitions of each of the tool types may be found in Appendix A (glossary) of Dixon et al. (1985). Information is also recorded on the occurrence of the non-tool categories of unmodified lithic flakes, thermally altered rock, ochre, and cobbles and fragments.

Eight commonly occurring types of raw material used in the production of lithic artifacts have been identified in the study area. These raw materials are argillite, basalt, chalcedony, chert, obsidian, quartz, quartzite, and rhyolite. The number and type of tool according to raw material are recorded for the artifact assemblage of each component of a site or locus.

Provisions have been made for recording the occurrence of faunal remains for the variety of animals present in the Middle Susitna River Valley. Fauna include the subsistence species such as: caribou, moose, sheep, and bear; the furbearing species of wolf, fox, wolverine, and hares; and the rodents, birds, and fish which may be incorporated into the site either intentionally or as a result of non-cultural deposition. Special emphasis is placed upon caribou due to the probable importance of this species in the subsistence regime. By recording the presence of specific skeletal elements, patterns of subsistence activities may be elucidated.

The presence and absence of floral remains are recorded for their possible role in the subsistence round, paleoecological interpretations, and for their dating potential. Floral remains can also contribute to a better understanding of past climatic and vegetation regimes. The information recorded for flora consists of the presence of seeds and macrofossils and whether the material has been charred.

Other artifacts made of bone/antler, metal, glass, and wood have been recovered in the study area. Features which are recorded include cultural depressions, hearths, historic structures of cabins, caches, etc., and stone constructions such as cairns or hunting blinds.

(d) Criteria of Non-Significance

Factors affecting the research potential of a site are predominantly those of preservation and condition of deposits (Schiffer and Gumerman 1977:242). These factors are common to the assessment of the value of every site. A site is considered not relevant, and therefore non-

significant, to the research potential of a particular question when it does not possess the required suite of variables necessary to address the topic. Sites which do possess the required variables may be deemed unsuitable due to the poor state of preservation, e.g., bone present but in the form of bone meal, or when the integrity of relevant stratigraphy is lacking as a result of erosion, cryoturbation, or adverse human impact.

4 - Research Questions Matched with Sites

This chapter evaluates the potential for cultural resources to address significant research questions. Each question is matched to sites that have the potential for addressing it, based on specific criteria which are outlined below. Sites with high potential for addressing a specific research question are indicated by an asterisk (*); those with very high potential are marked with a double asterisk (**). Sites were identified on the basis of information contained in Cultural Resource Investigations 1979 - 1985, volumes I through VI (Dixon et al. 1985). A site-specific evaluation of significance is provided by Table 1 which lists sites by AHRS number and indicates which questions have the potential (or high or very high potential) for addressing specific research questions. Figure 2 graphically depicts the number of sites with the potential to address each of the questions

1. Chronology
   a. The temporal boundaries for each tradition are poorly understood, with the exception of the Euro-American and the late phase of the Athapaskan tradition. Additional research is required at individual sites which fall on cultural horizons that suggest they hold the potential to document temporal limits of each tradition.

Criteria for selecting sites: Sites ascribed to the American Paleoarctic (AP), Northern Archaic (NA), Late Denali (LD), and early Athapaskan (AT) (early Athapaskan, 750 B.P. or earlier, based on C-14 dates) periods. Letters in parentheses indicate specific site loci.

Priority: * C-14 dates which date a cultural horizon.

TLM 017 NA	TLM 034 LD	TLM 061 AT, AP
TLM 021* AT	TLM 038 LD	TLM 063 LD
TLM 027* AT, LD, AP	TLM 039 AT, AP	TLM 074 LD
TLM 029 NA	TLM 040 AT, LD, AP	TLM 077 AT, LD
TLM 030* AT, NA	TLM 059* AT	TLM 078 AT, LD

TLM 097*	AT, LD, AP	TLM 171	AT, LD	TLM 217*	AT, LD
TLM 128*	AT, AP	TLM 173(B)	AT, LD	TLM 218(B)	LD
TLM 130*	AT, LD	TLM 180	AP	TLM 220	AT, LD
TLM 136	LD	TLM 181	LD	TLM 222(C)	AT, LD
TLM 142	LD	TLM 184	AT, LD	TLM 225	AT, LD
TLM 143*	AT, LD, NA	TLM 190	LD	TLM 226(A,C)	AT, LD
TLM 144	NA	TLM 202	LD	TLM 228	LD
TLM 149	LD	TLM 207*	AT, AP	TLM 229	LD
TLM 159	LD	TLM 213	LD	TLM 230	AT, LD
TLM 164	LD	TLM 214*	AT	TLM 246	AT, LD
TLM 169*	LD	TLM 216*	LD	HEA 181	LD

N = 48

N* = 13

II. Subsistence and Settlement

a. Is there a change in settlement pattern between the American Paleoarctic and Northern Archaic traditions, and what evidence is there to support or refute this change?

Criteria for selecting sites: Sites ascribed to American Paleoarctic (AP) or Northern Archaic (NA) periods.

Priority: * Presence of diagnostic artifacts.

TLM 017 NA	TLM 040* AP	TLM 143* NA
TLM 027* AP	TLM 061* AP	TLM 144 NA
TLM 029 NA	TLM 097* NA	TLM 180* AP
TLM 030* NA	TLM 128* AP	TLM 207* AP
TLM 039* AP		

N = 13
N* = 10

b. Among the Ahtna, the place name for Jay Creek is Nac'elcunt Na' ("food is stored again creek") (Kari 1983). A number of mineral licks occur along Jay Creek and in the hills to the west upon which local sheep populations depend. Do sites which are adjacent to mineral licks possess certain attributes which suggest that sheep predation was an important site activity?

Criteria for selecting sites: All sites in the vicinity of mineral licks. (American Paleoarctic, AP; Northern Archaic, NA; Late Denali, LD; Athapaskan, AT; Unknown, -).

Priority: * 1) Presence of bone, or 2) diversity of artifact assemblages (4 or more artifact types).

TLM 128* AT, AP	TLM 142* LD	TLM 149* LD
TLM 134 -	TLM 143* AT, LD, NA	TLM 150* AT
TLM 135 -	TLM 144* NA	TLM 151* AT
TLM 136* LD	TLM 145* -	TLM 205 -
TLM 138 -	TLM 146 -	HEA 183 -
TLM 139* AT	TLM 147 -	HEA 184 -
TLM 140 AT	TLM 148 AT	HEA 185 -
TLM 141 AT		

N = 22
N* = 10

c. Many of the small sites within the project area tend to be located on small, glacially formed knolls (kames) which provide a panoramic view of surrounding lower land features. These sites are commonly characterized as overlooks or hunting stations. Is there a diagnostic artifact assemblage at these sites which might explain their size and location?

Criteria for selecting sites: All sites on overlooks (American Paleoarctic; AP; Northern Archaic, NA; Late Denali, LD; Athapaskan, AT; Euro American, EA; Unknown, -). Letters in parantheses indicate specific site loci.

Priority: * Sites with any diagnostic lithic artifacts (unmodified flakes, modified flakes, cobbles, thermally altered rock, and ochre are not considered diagnostic in prioritizing sites).

** Five or more artifact types at site (all types included).

TLM 015	-	TLM 051	-	TLM 087	AT
TLM 016**	-	TLM 052**	AT(A)	TLM 088	AT
TLM 017	NA	TLM 053	-	TLM 089*	AT
TLM 018**	AT	TLM 054	AT	TLM 090	-
TLM 021*	AT(B)	TLM 055*	AT	TLM 091*	-
TLM 024	-	TLM 057*	-	TLM 092	-
TLM 025**	-	TLM 058	AT	TLM 093	AT
TLM 026*	AT	TLM 059	AT	TLM 094*	AT
TLM 027**	AT, LD, AP	TLM 060*	-	TLM 095	-
TLM 028	-	TLM 061*	AT	TLM 096	AT
TLM 029*	NA	TLM 062**	AT	TLM 097**	AT, LD, NA
TLM 030**	AT, NA	TLM 063	LD	TLM 098	-
TLM 031	-	TLM 064*	AT(B)	TLM 099	-
TLM 032**	-	TLM 065	AT	TLM 100	AT
TLM 033	-	TLM 066*	-	TLM 101	-
TLM 034	LD	TLM 067**	-	TLM 102	AT
TLM 035	-	TLM 068*	-	TLM 103*	-
TLM 036*	-	TLM 069*	AT	TLM 104	AT
TLM 037	-	TLM 070*	-	TLM 105	AT
TLM 038	LD	TLM 074	LD	TLM 106*	-
TLM 039**	AT, AP	TLM 075*	AT(A)	TLM 107*	-
TLM 040**	AT, LD, AP	TLM 076*	-	TLM 108	-
TLM 041	-	TLM 077*	AT, LD	TLM 109	-
TLM 042**	-	TLM 078	AT, LD	TLM 110*	-
TLM 044*	-	TLM 081	-	TLM 111	AT
TLM 045*	-	TLM 082	-	TLM 112	-
TLM 046*	-	TLM 083	-	TLM 113*	-
TLM 047*	-	TLM 084	AT	TLM 114	-
TLM 048**	AT	TLM 085	-	TLM 115*	-
TLM 049	-	TLM 086	-	TLM 116	-

TLM 117	-	TLM 153	AT	TLM 197*	-
TLM 118*	-	TLM 154*	AT	TLM 198	-
TLM 119*	-	TLM 155	-	TLM 199	AT
TLM 120	-	TLM 159**	AT	TLM 200	-
TLM 121	-	TLM 160	-	TLM 201	AT
TLM 122	-	TLM 164	LD	TLM 202	LD
TLM 123	AT	TKM 165*	AT	TLM 203	AT
TLM 124*	-	TLM 166*	-	TLM 204	EA
TLM 125	-	TLM 167	-	TLM 205*	-
TLM 126	-	TLM 168	-	TLM 206	AT
TLM 127	AT	TLM 169*	LD	TLM 208**	-
TLM 128**	AT, AP	TLM 170*	-	TLM 209	AT
TLM 129	AT(A, B)	TLM 171*	AT, LD	TLM 210	AT
TLM 130*	AT, LD	TLM 172	-	TLM 211	AT
TLM 131	-	TLM 173**	AT(B), LD(B)	TLM 213	LD
TLM 132	-	TLM 174*	-	TLM 214	AT(B)
TLM 133*	-	TLM 175**	AT	TLM 215	AT
TLM 134	-	TLM 176	-	TLM 216	LD
TLM 135*	-	TLM 177	-	TLM 217**	AT, LD
TLM 136*	LD	TLM 179	-	TLM 218*	LD(B)
TLM 137	-	TLM 180**	AP	TLM 219*	-
TLM 138	-	TLM 181	LD	TLM 220**	AT, LD
TLM 139	AT	TLM 182	-	TLM 221	AT
TLM 140*	AT	TLM 183	-	TLM 222	AT(A,B,D,E)
TLM 141*	AT	TLM 184**	AT, LD	TLM 223*	AT
TLM 142	LD	TLM 185*	-	TLM 224	AT
TLM 143**	AT, LD, NA	TLM 186*	AT	TLM 225	AT, LD
TLM 144*	NA	TLM 187	AT	TLM 226*	AT(A,B,D,E)
TLM 145	-	TLM 188	AT	TLM 227	AT
TLM 146	-	TLM 189	AT	TLM 228	LD
TLM 147	-	TLM 190	LD	TLM 229	LD
TLM 148	AT	TLM 191	-	TLM 230**	AT, LD
TLM 149	LD	TLM 192	-	TLM 231	AT
TLM 150	AT	TLM 193	-	TLM 234	AT(A,B)
TLM 151	AT	TLM 194	-	TLM 235*	AT(C)
TLM 152	-	TLM 195	-	TLM 236	AT

TLM 237	AT, LD(C)	HEA 033	-	HEA 181	LD
TLM 238	AT	HEA 035	-	HEA 182*	-
TLM 239	-	HEA 038	-	HEA 183	-
TLM 241	-	HEA 137	-	HEA 184	-
TLM 242	AT, LD(A,C)	HEA 174**	-	HEA 185*	-
TLM 243	-	HEA 175**	-	HEA 186*	-
TLM 244	AT	HEA 176	-	HEA 210	-
TLM 245	-	HEA 177*	-	HEA 211	-
TLM 246	AT, LD	HEA 178*	-	FAI 213	-
TLM 247*	AT(A,B,C)	HEA 179	-	FAI 214	-
HEA 007	-	HEA 180*	-	TYO 014	-
HEA 012	-				

N = 232
N* = 61
N** = 27

d. During the Northern Archaic period salmon were exploited in areas adjacent to the Susitna Canyon. Is it possible that Northern Archaic sites within the Susitna Canyon area participated in a larger settlement and subsistence cycle which included salmon procurement sites outside of the area?

Criteria for selecting sites: All Northern Archaic sites.

Priority: * Presence of diagnostic artifacts and C14 dates.

TLM 017 TLM 029 TLM 030* TLM 097* TLM 143* TLM 144

N = 6
N* = 3

e. Do attributes of sites located in the vicinity of natural topographic constrictions, known to funnel herds of migrating caribou, suggest that the killing and processing of these game animals were the principal site activities?

Criteria for selecting sites: All sites at natural topographic constrictions (Northern Archaic, NA; Late Denali, LD; Athapaskan, AT; Euro American, EA; Unknown -). Letters in parentheses indicate specific site loci.

Priority: * Presence of caribou bone.

TLM 055* AT	TLM 090 -	TLM 155 -
TLM 056 EA	TLM 091 -	TLM 168 -
TLM 078* AT, LD	TLM 092 -	TLM 176 -
TLM 081 -	TLM 093 AT	TLM 202 LD
TLM 083 -	TLM 094 AT	TLM 203 AT
TLM 084 AT	TLM 095 -	TLM 209 AT
TLM 085 -	TLM 096 AT	TLM 210 AT
TLM 086 -	TLM 097* AT, LD, NA	TLM 211 AT
TLM 087 AT	TLM 098 -	TLM 213 LD
TLM 088 AT	TLM 099 -	TLM 214 AT(B)
TLM 089* AT	TLM 117 -	

N = 32
N* = 4

f. The confluences of streams and rivers (also streams and streams) are known to be rich in terms of subsistence resources. Are there specific artifact and faunal assemblages which characterize sites found at confluences and do these assemblages reflect particular site activities?

Criteria for selecting sites: All sites at confluences (American Paleoarctic, AP; Northern Archaic, NA; Late Denali, LD; Athapaskan, AT; Unknown, -). Letters in parentheses indicate specific site loci.

Priority: * on the presence of bone (unless bone is on surface and possibly not associated with site).

** Presence of identified bone (caribou, moose, sheep) or in the absence of bone, five or more artifact types.

TLM 007	-	TLM 073	-	TLM 203	AT
TLM 009	-	TLM 076*	-	TLM 207**	AT, AP
TLM 020	EA	TLM 079	EA	TLM 218	LD(B)
TLM 021(B)*	AT	TLM 080	EA	TLM 230**	AT, LD
TLM 022**	AT	TLM 086	-	TLM 232**	AT
TLM 023	EA	TLM 097*	AT, LD, NA	TLM 233	AT
TLM 027**	AT, LD, AP	TLM 101	-	TLM 236	AT
TLM 029**	NA	TLM 108	-	TLM 239*	-
TLM 030**	AT, NA	TLM 114	-	TLM 240**	AT
TLM 033	-	TLM 159**	LD	TLM 246*	AT, LD
TLM 043**	AT	TLM 176	-	TLM 247**	AT(A,B,C)
TLM 050**	AT	TLM 179	-	TLM 249**	AT(A,B)
TLM 054*	AT	TLM 186	AT	TLM 250**	AT
TLM 055*	AT	TLM 187	AT	TLM 257	AT
TLM 058	AT	TLM 199	AT	TLM 258	AT
TLM 061**	AT, AP	TLM 200	-	HEA 182	-
TLM 071	EA	TLM 202	LD	HEA 211	-

N = 51
N* = 6
N** = 15

a. According to Workman's (1974, 1979) hypothesis, catastrophic ash falls in Interior Alaska may have caused emigration of one group of people and re-occupation at a later date by another population. This may be confirmed with distinct changes in artifact assemblages. Is such a pattern evident in the project area?

Criteria for selecting sites: All sites ascribed to a tradition (except Euro-American). Letters in parentheses indicate specific site loci.

Priority: * Sites with lithic artifacts in addition to unmodified flakes, thermally altered rock and cobbles.

TLM 017	NA	TLM 062*	AT	TLM 105	AT
TLM 018*	AT	TLM 063	LD	TLM 111	AT
TLM 021(B)	AT	TLM 064(B)*	AT	TLM 123	AT
TLM 022	AT	TLM 065	AT	TLM 127	AT
TLM 026	AT	TLM 069	AT	TLM 128*	AT, AP
TLM 027*	AT, LD, AP	TLM 072	AT	TLM 129	AT
TLM 029*	NA	TLM 074	LD	TLM 130*	AT, LD
TLM 030*	AT, NA	TLM 075(A)*	AT	TLM 136	LD
TLM 034	LD	TLM 077*	AT, LD	TLM 139	AT
TLM 038	LD	TLM 078	AT, LD	TLM 140*	AT
TLM 039*	AT, AP	TLM 084	AT	TLM 141*	AT
TLM 040*	AT, LD, AP	TLM 087	AT	TLM 142	LD
TLM 043*	AT	TLM 088	AT	TLM 143*	AT, LD, NA
TLM 048*	AT	TLM 089	AT	TLM 144*	NA
TLM 050*	AT	TLM 093*	AT	TLM 148	AT
TLM 052	AT	TLM 094*	AT	TLM 149	LD
TLM 054	AT	TLM 096	AT	TLM 150	AT
TLM 055*	AT	TLM 097*	AT, LD, NA	TLM 151	AT
TLM 058*	AT	TLM 100	AT	TLM 153	AT
TLM 059*	AT	TLM 102*	AT	TLM 154	AT
TLM 061*	AT, AP	TLM 104	AT	TLM 159*	LD

TLM 164	LD	TLM 211	AT	TLM 232(A)*,(B)*	AT
TLM 165*	AT	TLM 213	LD	TLM 233	AT
TLM 169	LD	TLM 214(B)	AT	TLM 234(A,B)	AT
TLM 171	AT, LD	TLM 215*	AT	TLM 235(C)*	AT
TLM 173(B)	AT, LD	TLM 216*	LD	TLM 236	AT
TLM 175*	AT	TLM 217*	AT, LD	TLM 237	AT
TLM 180*	AP	TLM 218(B)*	LD	TLM 238	AT
TLM 181	LD	TLM 220*	AT, LD	TLM 240	AT
TLM 184*	AT, LD	TLM 221	AT	TLM 242	AT
TLM 186*	AT	TLM 222	AT, LD	TLM 244	AT
TLM 187	AT	(all loci)		TLM 246	AT, LD
TLM 188	AT	TLM 223	AT	TLM 247(B)*,(A)	AT
TLM 189	AT	TLM 224	AT	TLM 249(A)*,(B)	AT
TLM 190	LD	TLM 225	AT, LD	TLM 250	AT
TLM 199	AT	TLM 226	AT, LD	TLM 252*	AT
TLM 201	AT	(all loci)		TLM 253	AT
TLM 202	LD	TLM 227	AT	TLM 256	AT
TLM 203	AT	TLM 228	LD	TLM 257	AT
TLM 206	AT	TLM 229	LD	TLM 258	AT
TLM 207*	AT, AP	TLM 230*	AT, LD	TLM 259*	AT
TLM 209	AT	TLM 231	AT	HEA 181	LD
TLM 210	AT				

N = 125
N* = 46

b. The impact of tephra falls on past vegetational regimes in the project area may have affected caribou by causing their numbers to decrease (or possible increase) their distribution or migration patterns to shift. Is there any archeological evidence for a change in caribou availability or distribution before and after ash fall events?

Criteria for selecting sites: All sites with bone except if on surface and probably not associated with site. (American Paleoarctic, AP;

Northern Archaic, NA; Late Denali, LD; Athapaskar, AT; Unknown, -).
Letters in parentheses indicate specific site loci.

Priority: * All sites with caribou bone.

TLM 016*	-	TLM 069*	AT	TLM 217*	AT, LD
TLM 018*	AT	TLM 072	AT	TLM 220*	AT, LD
TLM 021	AT(B)	TLM 076	-	TLM 221*	AT
TLM 022*	AT	TLM 077*	AT, LD	TLM 222*	AT(A,B,D,E), LD(C)
TLM 026	AT	TLM 089*	AT	TLM 223	AT
TLM 029	NA	TLM 097*	AT, LD, NA	TLM 225	AT, LD
TLM 030*	AT, NA	TLM 104	AT	TLM 226*	AT(A,B,D,E), LD(A,C)
TLM 038*	LD	TLM 121	-	TLM 227*	AT
TLM 040	AT, LD, AP	TLM 123*	AT	TLM 229*	LD
TLM 042*	-	TLM 130*	AT, LD	TLM 231*	AT
TLM 043	AT	TLM 136*	LD	TLM 232*	AT(A,B)
TLM 044	-	TLM 139	AT	TLM 234*	AT(A,B)
TLM 045*	-	TLM 142*	LD	TLM 239	-
TLM 046*	-	TLM 143*	AT, LD, NA	TLM 240*	AT
TLM 048*	AT	TLM 144	NA	TLM 242*	AT
TLM 049	-	TLM 145	-	TLM 246	AT, LD
TLM 050*	AT	TLM 149*	LD	TLM 247*	AT(A,B,C)
TLM 054	AT	TLM 150	AT	TLM 249*	AT(A,B)
TLM 055	AT	TLM 151	AT	TLM 250	AT
TLM 059*	AT	TLM 169	LD	TLM 251	-
TLM 060	-	TLM 173	AT(B), LD(B)	TLM 252*	AT
TLM 061*	AT, AP	TLM 184*	AT, LD	TLM 253*	AT
TLM 062*	AT	TLM 207	AT, AP	TLM 256*	AT
TLM 063*	LD	TLM 215*	AT	HEA 175*	-
TLM 065*	AT	TLM 216*	LD		

N = 74
N* = 46

c. The impact of tephra falls on caribou herds and in turn on human populations dependent on them would be quite different if caribou were only a seasonally important resource as opposed to the primary resource on a year-round basis. Is there any evidence to suggest that caribou were only important seasonally and, if so, did this change over time?

Criteria for selecting sites: All sites with caribou bone. (American Paleoarctic, AP; Northern Archaic, NA; Late Denali, LD; Athapaskan, AT; Unknown, -). Letters in parentheses indicate specific site loci.

Priority: * All sites with teeth (thin-sectioning) or immature bones that can be used to indicate seasonality.

TLM 016	-	TLM 077	AT, LD	TLM 222*	AT(A,B,D,E), LD(C)
TLM 018	AT	TLM 089	AT	TLM 226*	AT(A,B,D,E), LD(A,C)
TLM 022	AT	TLM 097	AT, LD, NA	TLM 227	AT
TLM 030	AT, NA	TLM 123	AT	TLM 229	LD
TLM 038	LD	TLM 130	AT, LD	TLM 231	AT
TLM 043*	AT	TLM 136	LD	TLM 232*	AT(A,B)
TLM 045	-	TLM 142*	LD	TLM 234*	AT(A,B)
TLM 046	-	TLM 143	AT, LD, NA	TLM 240	AT
TLM 048	AT	TLM 149	LD	TLM 242	AT
TLM 050	AT	TLM 184*	AT, LD	TLM 247	AT(A,B,C)
TLM 059	AT	TLM 215	AT	TLM 249	AT(A,B)
TLM 061	AT, AP	TLM 216	LD	TLM 252*	AT
TLM 062	AT	TLM 217	AT, LD	TLM 253	AT
TLM 063	LD	TLM 220	AT, LD	TLM 256	AT
TLM 065*	AT	TLM 221*	AT	HEA 175	-
TLM 069	AT				

N = 46
N* = 10

d. The intensity of land use can be measured by the number, size, and artifact density of sites. Is there evidence to suggest that the intensity of land use in the Susitna Canyon area increased through time or fluctuated as the result of the ecological impact of tephra falls?

Criteria for selecting sites: Sites ascribed to the American Paleoarctic (AP), Northern Archaic (NA), Late Denali (LD), and Athapaskan (AT). Letters in parentheses indicate specific site loci.

Priority: * Sites with C14 dates clearly associated with tephra.
** Multicomponent sites.

TLM 017	NA	TLM 064(B)	AT	TLM 128*(**)	AT, AP
TLM 018	AT	TLM 065	AT	TLM 129	AT
TLM 021(B)	AT	TLM 069	AT	TLM 130**	AT, LD
TLM 022	AT	TLM 072	AT	TLM 136	LD
TLM 026	AT	TLM 074	LD	TLM 139	AT
TLM 027*(**)	AT, LD, AP	TLM 075(A)	AT	TLM 140	AT
TLM 029	NA	TLM 077*	AT, LD	TLM 141	AT
TLM 030*	AT, NA	TLM 078*	AT, LD	TLM 142	LD
TLM 034	LD	TLM 084	AT	TLM 143*(**)	AT, LD, NA
TLM 038	LD	TLM 087	AT	TLM 144	NA
TLM 039**	AT, AP	TLM 088	AT	TLM 148	AT
TLM 040**	AT, LD, AP	TLM 089	AT	TLM 149	LD
TLM 043	AT	TLM 093	AT	TLM 150	AT
TLM 048	AT	TLM 094	AT	TLM 151	AT
TLM 050*	AT	TLM 096*	AT	TLM 153	AT
TLM 052	AT	TLM 097*(**)	AT, LD, NA	TLM 154	AT
TLM 054	AT	TLM 100	AT	TLM 159	LD
TLM 055	AT	TLM 102	AT	TLM 164	LD
TLM 058	AT	TLM 104*	AT	TLM 165	AT
TLM 059*	AT	TLM 105	AT	TLM 169*	LD
TLM 061**	AT, AP	TLM 111	AT	TLM 171**	AT, LD
TLM 062	AT	TLM 123	AT	TLM 173(B)**	AT, LD
TLM 063	LD	TLM 127	AT	TLM 175	AT

TLM 180*	AP	TLM 216*	LD	TLM 234(A,B)	AT
TLM 181	LD	TLM 217*(**)	AT, LD	TLM 235(C)	AT
TLM 184*(**)	AT, LD	TLM 218(B)	LD	TLM 236	AT
TLM 186	AT	TLM 220**	AT, LD	TLM 237	AT
TLM 187	AT	TLM 221	AT	TLM 238	AT
TLM 188	AT	TLM 222**	AT, LD	TLM 240	AT
TLM 189	AT		(all loci)	TLM 242	AT
TLM 190	AT	TLM 223	AT	TLM 244	AT
TLM 199	AT	TLM 224	AT	TLM 246**	AT, LD
TLM 201	AT	TLM 225**	AT, LD	TLM 247(A,B,C)	AT
TLM 202	LD	TLM 226**	AT, LD	TLM 249(A, B)	AT
TLM 203	AT		(all loci)	TLM 250	AT
TLM 206	AT	TLM 227	AT	TLM 252	AT
TLM 207*(**)	AT, AP	TLM 228	LD	TLM 253	AT
TLM 209	AT	TLM 229	LD	TLM 256	AT
TLM 210	AT	TLM 230**	AT, LD	TLM 257	AT
TLM 211	AT	TLM 231	AT	TLM 258	AT
TLM 213	LD	TLM 232(A,B)	AT	TLM 259	AT
TLM 214(B)	AT	TLM 233	AT	HEA 181	LD
TLM 215	AT				

N = 125
N* = 17
N** = 19

e. One effect of prehistoric tephra falls on human populations occupying the Susitna Canyon area may have been a shift in settlement. Is there any evidence for a marked change in settlement pattern before and after ash fall events?

Criteria for selecting sites: Sites ascribed to the American Paleoarctic (AP), Northern Archaic (NA), Late Denali (LD) and Athapaskan (AT) periods. Letters in parentheses indicate specific site loci.

Priority: * Sites with C14 dates clearly associated with tephra.
** Multicomponent sites.

TLM 017	NA	TLM 064(B)	AT	TLM 128*(**)	AT, AP
TLM 018	AT	TLM 065	AT	TLM 129	AT
TLM 021(B)	AT	TLM 069	AT	TLM 130**	AT, LD
TLM 022	AT	TLM 072	AT	TLM 136	LD
TLM 026	AT	TLM 074	LD	TLM 139	AT
TLM 027*(**)	AT, LD, AP	TLM 075(A)	AT	TLM 140	AT
TLM 029	NA	TLM 077*	AT, LD	TLM 141	AT
TLM 030*	AT, NA	TLM 078*	AT, LD	TLM 142	LD
TLM 034*	AT, NA	TLM 084	AT	TLM 143*(**)	AT, LD, NA
TLM 038	LD	TLM 087	AT	TLM 144	NA
TLM 039**	LD	TLM 088	AT	TLM 148	AT
TLM 040**	AT, LD, AP	TLM 089	AT	TLM 149	LD
TLM 043	AT	TLM 093	AT	TLM 150	AT
TLM 048	AT	TLM 094	AT	TLM 151	AT
TLM 050*	AT	TLM 096*	AT	TLM 153	AT
TLM 052	AT	TLM 097*(**)	AT, LD, NA	TLM 154	AT
TLM 054	AT	TLM 100	AT	TLM 159	LD
TLM 055	AT	TLM 102	AT	TLM 164	LD
TLM 058	AT	TLM 104*	AT	TLM 165	AT
TLM 059*	AT	TLM 105	AT	TLM 169*	LD
TLM 061**	AT, AP	TLM 111	AT	TLM 171**	AT, LD
TLM 062	AT	TLM 123	AT	TLM 173(B)**	AT, LD
TLM 063	LD	TLM 127	AT	TLM 175	AT

TLM 180*	AP	TLM 216*	LD	TLM 234(A,B)	AT
TLM 181	LD	TLM 217*(**)	AT, LD	TLM 235(C)	AT
TLM 184*(**)	AT, LD	TLM 218(B)	LD	TLM 236	AT
TLM 186	AT	TLM 220**	AT, LD	TLM 237	AT
TLM 188	AT	TLM 221	AT	TLM 238	AT
TLM 189	AT	TLM 222**	AT, LD	TLM 240	AT
TLM 190	LD		(all loci)	TLM 242	AT
TLM 199	AT	TLM 223	AT	TLM 244	AT
TLM 201	AT	TLM 224	AT	TLM 246**	AT, LD
TLM 202	LD	TLM 225**	AT, LD	TLM 247(A,B,C)	AT
TLM 203	AT	TLM 226**	AT, LD	TLM 249(A, B)	AT
TLM 206	AT		(all loci)	TLM 250	AT
TLM 207*(**)	AT, AP	TLM 227	AT	TLM 252	AT
TLM 209	AT	TLM 228	LD	TLM 253	AT
TLM 210	AT	TLM 229	LD	TLM 256	AT
TLM 211	AT	TLM 230**	AT, LD	TLM 257	AT
TLM 213	LD	TLM 231	AT	TLM 258	AT
TLM 214(B)	AT	TLM 232(A,B)	AT	TLM 259	AT
TLM 215	AT	TLM 233	AT	HEA 181	LD

N = 125
N* = 17
N** = 19

f. Is there any evidence to suggest that the intensity of land use in the Susitna Canyon area decreased at the onset of Neoglacial times at approximately 3300 B.P.?

Criteria for selecting sites: Sites with C-14 dates in the ca. 3,000 year time range (American Paleoarctic, AP; Northern Archaic, NA; Late Denali, LD; Athapaskan, AT; and Unknown, -).

Priority: * (C-14 date must bracket cultural occupation at site).

TLM 016* -
TLM 027* AT, LD, AP
TLM 030* AT, NA
TLM 096* AT
TLM 169* LD

N = 5
N* = 5

g. Minor variations in the climate can affect both plants and animals. The so-called "Little Ice Age" occurred in the 1600's. Did this have an effect on the native populations living in the Susitna Canyon area?

Criteria for selecting sites: C-14 dates in appropriate time range (Athapaskan, AT).

Priority: * Presence of faunal remains.

TLM 022 (300 ± 70)* AT
TLM 250 (370 ± 60)* AT
TLM 253 (430 ± 130)* AT

N = 3
N* = 3

IV. Population Dynamics

a. West (1981:224-227) has recently postulated a cultural hiatus between the Denali Complex at 7,000 B.P. and the appearance of the Northern Archaic at 4,000 B.P. in the Tangle Lakes region northeast of the project area. Do early sites in the Susitna Canyon show an affiliation with the Denali Complex between 7,000 B.P. and 4,000 B.P. and thus refute the existence of a hiatus in occupation?

Criteria for selecting sites: Sites dating from 7,000 - 4,000 years B.P. (based on C-14 and stratigraphic position, i.e., Oshetna tephra or below). (American Paleoarctic, AP; Northern Archaic, NA; Late Denali, LD; Athapaskan, AT; and Unknown, -).

Priority: * Sites that combine good C-14 date, appropriate stratigraphic position and a diagnostic artifact assemblage.

TLM 016	-	TLM 039	AT, AP	TLM 143*	AT, LD, NA
TLM 017	NA	TLM 040	AT, LD, AP	TLM 144	NA
TLM 027	AT, LD, AP	TLM 061	AT, AP	TLM 180	AP
TLM 029	NA	TLM 097*	AT, LD, NA	TLM 207*	AT, AP
TLM 030*	AT, NA	TLM 128*	AT, AP		

N = 14
N* = 5

b. A number of obsidian sources have been identified in Alaska and the Yukon Territory. Can obsidian from the project area be traced to specific sources and thus yield information on past interaction or exchange networks?

Criteria for selecting sites: Presence of obsidian (American Paleoarctic, AP; Northern Archaic, NA; Late Denali, LD; AThapaskan, AT; and Unknown, -).

Priority: * More than 10 obsidian specimens

TLM 018	AT	TLM 046	-	TLM 183	-
TLM 025	-	TLM 069*	AT	TLM 184*	AT, LD
TLM 027	AT, LD, AP	TLM 076	-	TLM 186	AT
TLM 030*	AT, NA	TLM 097	AT, LD, NA	TLM 208	-
TLM 039	AT, AP	TLM 128	AT, AP	TLM 220	AT, LD
TLM 040*	AT, LD, AP	TLM 143*	AT, LD, NA	TLM 225*	AT, LD
TLM 042	-	TLM 169	LD	TLM 239	-
TLM 044	-	TLM 171	AT, LD	HEA 175	-
TLM 045	-	TLM 180	AP		

N = 26

N* = 6

c. Few prehistoric structures or permanent camps are known from within the confines of the project area. Are there environmental settings which typify these rare sites?

Criteria for selecting sites: Presence of features (hearths, cultural depressions, and rock features). (American Paleoarctic, AP; Northern Archaic, NA; Late Denali, LD; AThapaskan, AT; and Unknown, -). Letters in parentheses indicate specific site loci.

Priority: * Sites with multiple features.

TLM 022 AT	TLM 104 AT	TLM 232 AT(A,B)
TLM 048 AT	TLM 123* AT	TLM 234* AT(A,B)
TLM 059* AT	TLM 184 AT, LD	TLM 240 AT
TLM 065* AT	TLM 215 AT	TLM 242 AT
TLM 067 -	TLM 220* AT, LD	TLM 247 AT(A,B,C)
TLM 072 AT	TLM 222* AT(A,B,D,E), LD(C)	TLM 249 AT(A
TLM 100* AT	TLM 231 AT	

N = 20
N* = 7

d. The paleosol between the Oshetna and Watana tephras may also be present at the sites of Dry Creek (Thorson and Hamilton 1977) and at Gerstle River Quarry (Kotani, Cook, and Nishimoto 1984). Comparisons of sites from this paleosol (cultural horizon 8) of the Susitna project with the archeological unit IV at Dry Creek, 100 km to the northwest of the project, and the upper component at Gerstle River Quarry, 150 km to the northeast of the project enable regional variation within the Northern Archaic to be studied and possible exchange and diffusion networks to be delineated.

Criteria for selecting sites: Presence of artifacts between the Oshetna and Watana tephras (cultural horizon 8). Northern Archaic, NA; Late Denali, LD; Athapaskan, AT).

Priority: * Presence of diagnostic artifacts.

TLM 017 NA	TLM 030* AT, NA	TLM 143* AT, LD, NA
TLM 029 NA	TLM 097* AT, LD, NA	TLM 144 NA

N = 6
N* = 3

V. Athapaskan Lifeways

a. What were the settlement and subsistence patterns associated with the Athapaskan Tradition in the Susitna Canyon area? Can the seasonal subsistence strategies documented in the ethnohistoric literature for the Western Ahtna be verified archeologically?

Criteria for selecting site: Athapaskan tradition. Letters in parentheses indicate specific site loci.

Priority: * Presence of identified faunal remains, features, or artifacts other than unmodified flakes (at least two of the three categories).

TLM 018
TLM 021(B)
TLM 022*
TLM 026
TLM 027
TLM 030
TLM 039
TLM 040
TLM 043*
TLM 048*
TLM 050*
TLM 052(A)
TLM 054
TLM 055
TLM 058
TLM 059*
TLM 061
TLM 062*
TLM 064(B)
TLM 065*
TLM 069
TLM 069
TLM 072*
TLM 075(A)
TLM 077
TLM 078
TLM 084
TLM 087
TLM 088
TLM 089
TLM 093
TLM 094
TLM 096
TLM 097*
TLM 100
TLM 102
TLM 104
TLM 105
TLM 111
TLM 123*
TLM 127
TLM 128
TLM 129(A,B)
TLM 130
TLM 139
TLM 140
TLM 141
TLM 143
TLM 148
TLM 150
TLM 151
TLM 153
TLM 154
TLM 165
TLM 171
TLM 173(B)
TLM 175
TLM 184
TLM 186
TLM 187
TLM 188
TLM 189
TLM 199

TLM 201
TLM 203
TLM 206
TLM 207
TLM 209
TLM 210
TLM 211
TLM 214(B)
TLM 215*
TLM 217
TLM 220*
TLM 221*
TLM 222(A)*,(B)*,(D,E)
TLM 223
TLM 224
TLM 225
TLM 226(A),(B)*,(D,E)
TLM 227
TLM 230
TLM 231*
TLM 232(A)*,(B)*
TLM 233
TLM 234(A)*,(B)*
TLM 235C
TLM 236
TLM 237
TLM 238
TLM 240*
TLM 242
TLM 244
TLM 246
TLM 247(A)*,(B)*,(C)
TLM 249(A)*,(B)*
TLM 250*
TLM 252*
TLM 253
TLM 256
TLM 257
TLM 258
TLM 259

N = 103
N* = 28

b. Indirect trade of Russian and European products occurred in Alaska prior to the first recorded contact by Vitus Bering in 1728. Did indirect trade occur in the Susitna Canyon area, and, if so, can anything be learned about trade routes?

Criteria for selecting sites: Athapaskan sites with trade goods.

Priority: * Site with multiple trade items (beads, iron, copper, ceramics).

TLM 065* TLM 221 TLM 222* TLM 226 TLM 230* TLM 234 TLM 240*

N = 7
N* = 4

c. The influence of non-natives on native populations often produces change in various aspects of traditional life, including subsistence, material culture, social structure, trade, and religion. This influence may have been felt in the Susitna River area as a result of gold mining and fur trapping by non-natives during the early decades of the 1900's. What effect, is any, did these activities have on native populations living in or in close proximity to the Susitna Canyon area?

Criteria for selecting sites: Athapaskan sites with modern dates (standard deviation within last 100 years)

Priority: Presence of trade goods identified, faunal material, or structures.

TLM 022* TLM 027 TLM 030* TLM 104* TLM 221* TLM 242* TLM 249*

N = 7
N* = 6

VI. Culture Process

a. The nature and form of transition between traditions are poorly understood in the Susitna Canyon area. Are the observed changes in artifact assemblages the result of population replacement, diffusion of artifact types, in situ development, or some combination of the above?

Criteria of selecting sites: Sites which have been ascribed to a tradition (except Euro-American). Letters in parentheses indicate specific site loci.

Priority: * Sites with lithic artifacts in addition to unmodified flakes, thermally altered rock and cobbles.

TLM 017	NA	TLM 062*	AT	TLM 105	AT
TLM 018*	AT	TLM 063	LD	TLM 111	AT
TLM 021(B)	AT	TLM 064(B)*	AT	TLM 123	AT
TLM 022	AT	TLM 065	AT	TLM 127	AT
TLM 026	AT	TLM 069	AT	TLM 128*	AT, AP
TLM 027*	AT, LD, AP	TLM 072	AT	TLM 129	AT
TLM 029*	NA	TLM 074	LD	TLM 130*	AT, LD
TLM 030*	AT, NA	TLM 075(A)*	AT	TLM 136	LD
TLM 034	AT, NA	TLM 077*	AT, LD	TLM 139	AT
TLM 038	LD	TLM 078	AT, LD	TLM 140*	AT
TLM 039*	LD	TLM 084	AT	TLM 141*	AT
TLM 040*	AT, LD, AP	TLM 087	AT	TLM 142	LD
TLM 043*	AT	TLM 088	AT	TLM 143*	AT, LD, NA
TLM 048*	AT	TLM 089	AT	TLM 144*	NA
TLM 050*	AT	TLM 093*	AT	TLM 148	AT
TLM 052	AT	TLM 094*	AT	TLM 149	LD
TLM 054	AT	TLM 096	AT	TLM 150	AT
TLM 055*	AT	TLM 097*	AT, LD, NA	TLM 151	AT
TLM 058*	AT	TLM 100	AT	TLM 153	AT
TLM 059*	AT	TLM 102*	AT	TLM 154	AT
TLM 061	AT, AP	TLM 104	AT	TLM 159*	LD

TLM 164	LD	TLM 211	AT	TLM 232(A)*,(B)*	AT
TLM 165*	AT	TLM 213	LD	TLM 233	AT
TLM 169	LD	TLM 214B	AT	TLM 234(A,B)	AT
TLM 171	AT, LD	TLM 215*	AT	TLM 235(C)	AT
TLM 173(B)	AT, LD	TLM 216*	LD	TLM 236	AT
TLM 175*	AT	TLM 217*	AT, LD	TLM 237	AT
TLM 180*	AP	TLM 218(B)*	LD	TLM 238	AT
TLM 181	LD	TLM 220*	AT, LD	TLM 240	AT
TLM 184*	AT, LD	TLM 221	AT	TLM 242	AT
TLM 186*	AT	TLM 222	AT, LD	TLM 244	AT
TLM 187	AT		(all loci)	TLM 246	AT, LD
TLM 188	AT	TLM 223	AT	TLM 247(A),(B)*	AT
TLM 189	AT	TLM 224	AT	TLM 249(A)*,(B)	AT
TLM 190	LD	TLM 225	AT, LD	TLM 250	AT
TLM 199	AT	TLM 226	AT, LD	TLM 252*	AT
TLM 201	AT		(all loci)	TLM 253	AT
TLM 202	LD	TLM 227	AT	TLM 256	AT
TLM 203	AT	TLM 228	LD	TLM 257	AT
TLM 206	AT	TLM 229	LD	TLM 258	AT
TLM 207*	AT, AP	TLM 230	AT, LD	TLM 259	AT
TLM 209	AT	TLM 231	AT	HEA 181	AT
TLM 210	AT				

N = 125

N* = 46

b. The Late Denali complex in the Alaskan Interior may have been an in situ development from previous occupations or represent an immigration of people from outside the area. Evidence associated with the intensity of occupation and artifact composition may help clarify this settlement problem. What evidence exists for either of these propositions?

Criteria for selecting sites: All Late Denali complex sites. Letters in parentheses indicate specific sie loci.

Priority: * On presence of artifacts other than unmodified flakes, thermally altered rock, ochre, and cobbles (within the Late Denali component only).

TLM 027*	TLM 077*	TLM 143*	TLM 173B	TLM 216*	TLM 226(A)*,(C)
TLM 034	TLM 078	TLM 149	TLM 181	TLM 217	TLM 228
TLM 038	TLM 097*	TLM 159*	TLM 184*	TLM 218B*	TLM 229
TLM 039	TLM 130*	TLM 164	TLM 190	TLM 220*	TLM 230*
TLM 040*	TLM 136	TLM 169	TLM 202	TLM 222C	TLM 246
TLM 063	TLM 142	TLM 171	TLM 213	TLM 225	HEA 181
TLM 074					

N = 37
N* = 13

(c) Contact between ..tives and whites increased in interior Alaska as a result of gold mining, trapping, and building of the Alaska Railroad. What effect did this have on Native material cultural, subsistence, economy and lifeways? What effect did this have on land use (including trails), settlement patterns, trade, and population growth?

Criteria for selecting sites: All non-Native (Historic) sites associated with gold mining, trapping or building of the Alaska Railroad.

Priority: Sites representing early white contact with structures and artifacts from the late 19th century and early 20th century (1900-1930).

TLM 005	TLM 023*	TLM 079	TLM 204	HEA 081	FAI 089
TLM 006	TLM 056*	TLM 080	TLM 212	HEA 091	FAI 090
TLM 020*	TLM 071*	TLM 178*	TLM 248*	FAI 070	FAI 169

N = 18
N* = 6

Table 4

Significance Questions Listed by Site

SITE #	CHRONOLOGY & CULTURE	SUBSISTENCE & SETTLEMENT						HUMAN ECOLOGY							EXPLANATION OF CULTURE				ATHAPASKAN ORIGINS			CULTURE PROCESS			TOTAL
	I a	II a	II b	II c	II d	II e	II f	III a	III b	III c	III d	III e	III f	III g	IV a	IV b	IV c	IV d	V a	V b	V c	VI a	VI b	VI c	X/*/**
TLM 005			*																					X	1/0/0
TLM 006																								X	1/0/0
TLM 007							X																		1/0/0
TLM 009						'	X																		1/0/0
TLM 015				X																					1/0/0
TLM 016 (SY)				**					*	X			*		X										2/2/1
TLM 017 (SY)	X	X		X	X			X			X	X			X			)				)			10/0/0
TLM 018 (SY)				**				*	*	X	X	X				)			;			*			5/3/1
TLM 020 (H)							X																	*	1/1/0
TLM 021	*			*			*	X	X		X	X							)			)			6/3/0
TLM 022 (SY)							**	X	*	X	X	X		*			X		*		*	)			6/4/1
TLM 023 (H)							X																		1/0/0
TLM 024				X																					1/0/0
TLM 025				**												)									1/0/1
TLM 026				*				X	X		X	X							)			)			6/1/0
TLM 027 (SY)	*	*		**			**	*			**	**	*		)	)			,		)	*	*		4/6/4
TLM 028				X																					1/0/0
TLM 029 (SY)	X	X		*	X		**	*	X		X	X			X			)				*			8/3/1
TLM 030 (SY)	*	*		**	*		**	*	*	X	*	*	*		*	*		*	)		*	*			2/13/2
TLM 031				X																					1/0/0
TLM 032				**																					0/0/1
TLM 033 (SY)				X			X																		2/0/0
TLM 034 (SY)	X			X				X			X	X										)	)		7/0/0
TLM 035				X																					1/0/0
TLM 036				*																					0/1/0
TLM 037				X																					1/0/0
TLM 038 (SY)	X			X				X	*	X	X	X										)	)		8/1/0
TLM 039 (SY)	X	*		**				*			**	**			X	(			)			*	)		5/3/3
TLM 040 (SY)	X	*		**				*	X		**	**			X	*			/			*	*		4/5/3
TLM 041				X																					1/0/0
TLM 042 (SY)				**					*							/									1/1/1
TLM 043 (SY							**	*	X	*	X	X							*			*			3/4/1
TLM 044				*					X							)									2/1/0
TLM 045				*					*	X						)									2/2/0
TLM 046 (SY)				*					*	X						(									2/2/0
TLM 047				*																					0/1/0
TLM 048 (SY)				**				*	*	X	X	X					)		*			*			4/4/1
TLM 049				X					X																2/0/0
TLM 050 (SY)							**	*	*	X	**	**							*			*			1/4/3
TLM 051				X																					1/0/0
TLM 052				**				X			X	X										(			5/0/1
TLM 053				X																					1/0/0
TLM 054				X			*	X	X		X	X							)			)			7/1/0
TLM 055 (SY)				*		*	*	*	X		X	X							/			*			4/5/0
TLM 056 (H)						X																			1/0/0
TLM 057				*																					0/1/0
TLM 058 (SY				X			X	*			X	X							)			*			5/2/0
TLM 059 (SY	*			X				*	*	X	*	*					*		*			*			2/8/0

Table 4-1. (Continued)

SITE #	CHRONOLOGY	SUBSISTENCE & SETTLEMENT						HUMAN ECOLOGY							POPULATION DYNAMICS				ATHAPASKAN LINGUAS			CULTURE PROCESS			TOTAL X/*/**
	I a	II a	II b	II c	II d	II e	II f	III a	III b	III c	III d	III e	III f	III g	IV a	IV b	IV c	IV d	V a	V b	V c	VI a	VI b	VI c	
TLM 060 (SY)				*					X																1/1/0
TLM 061 (SY)	X	*		*			**	*	*	X	**	**			X				X			*			4/5/3
TLM 062 (SY)				**				*	*	X	X	X							*			*			3/4/1
TLM 063 (SY)	X			X				X	*	X	X	X										X	X		8/1/0
TLM 064 (SY)				*				*			X	X							X			*			3/3/0
TLM 065 (SY)				X				X	*	*	X	X					*		*	*		X			5/5/0
TLM 066				*																					0/1/0
TLM 067				**													X								1/0/1
TLM 068				*																					0/1/0
TLM 069 (SY)				*				X	*	X	X	X				*			X			X			6/3/0
TLM 070				*																					0/1/0
TLM 071 (H)							X																	*	1/1/0
TLM 072								X	X		X	X					X		X			X			6/1/0
TLM 073 (SY)							X																		1/0/0
TLM 074	X			X				X			X	X										X	X		7/0/0
TLM 075				*				*			X	X							X			*			3/3/0
TLM 076				*			*		X							X									2/2/0
TLM 077 (SY)	X			*				*	*	X	*	*							X			*	*		3/7/0
TLM 078	X			X		*		X			*	*							X			X	*		6/3/0
TLM 079 (H)							X																	*	2/0/0
TLM 080 (H)							X																	X	2/0/0
TLM 081				X		X																			2/0/0
TLM 082				X																					1/0/0
TLM 083				X		X																			2/0/0
TLM 084				X		X		X			X	X							X			X			7/0/0
TLM 085				X		X																			2/0/0
TLM 086				X		X	X																		3/0/0
TLM 087				X		X		X			X	X							X			X			7/0/0
TLM 088				X		X		X			X	X							X			X			7/0/0
TLM 089				*		*		X	*	X	X	X							X			X			6/3/0
TLM 090				X		X																			2/0/0
TLM 091				*		X																			1/1/0
TLM 092				X		X																			2/0/0
TLM 093				X		X		*			X	X							X			*			5/2/0
TLM 094				*		X		*			X	X							X			*			4/3/0
TLM 095				X		X																			2/0/0
TLM 096				X		X		X			*	*	*						X			X			5/3/0
TLM 097 (SY)	*	*		**	*	*	*	*	*	X	**	**			*	X		*	*			*	*		2/12/3
TLM 098				X		X																			2/0/0
TLM 099				X		X																			2/0/0
TLM 100				X				X			X	X					*		X			X			6/1/0
TLM 101				X			X																		2/0/0
TLM 102 (SY)				X				*			X	X							X			*			4/2/0
TLM 103				*																					0/1/0
TLM 104 (SY)				X				X	X		*	*					X		X		*	X			6/3/0
TLM 105				X				X			X	X							X			X			6/0/0
TLM 106				*																					0/1/0
TLM 107				*																					0/1/0
TLM 108				X			X																		2/0/0
TLM 109				X																					1/0/0
TLM 110				*																					0/1/0

TABLE 1. (Continued)

	CHRONOLOGY	SUBSISTENCE & SETTLEMENT						HUMAN ECOLOGY							POPULATION DYNAMICS				ATHAPASKAN LIFEWAYS			CULTURE PROCESS			
SITE #	I a	II a	II b	II c	II d	II e	II f	III a	III b	III c	III d	III e	III f	III g	IV a	IV b	IV c	IV d	V a	V b	V c	VI a	VI b	VI c	TOTAL X/*/**
TLM 111				X				X			X	X							X			X			6/0/0
TLM 112				X																					1/0/0
TLM 113				*																					0/1/0
TLM 114				X			X																		2/0/0
TLM 115 (SY)				*																					0/1/0
TLM 116				X																					1/0/0
TLM 117				X		X																			2/0/0
TLM 118				*																					0/1/0
TLM 119 (SY)				*																					0/1/0
TLM 120				X																					1/0/0
TLM 121				X					X																2/0/0
TLM 122				X																					1/0/0
TLM 123				X				X	*	X	X	X					*		*			X			6/3/0
TLM 124				*																					0/1/0
TLM 125				X																					1/0/0
TLM 126 (SY)				X																					1/0/0
TLM 127				X				X			X	X							X			X			6/0/0
TLM 128 (SY)	*	*	*	**				*			**	**			*	X			X			*			2/6/3
TLM 129				X				X			X	X							X			X			6/0/0
TLM 130 (SY)	*			*				*	*	X	**	**							X			*	*		2/6/2
TLM 131				X																					1/0/0
TLM 132				X																					1/0/0
TLM 133				*																					0/1/0
TLM 134			X	X																					2/0/0
TLM 135			X	*																					1/1/0
TLM 136	X		*	*				X	*	X	X	X										X	X		7/3/0
TLM 137				X																					1/0/0
TLM 138			X	X																					2/0/0
TLM 139			*	X				X	X		X	X							X			X			7/1/0
TLM 140			X	*				*			X	X							X			*			4/3/0
TLM 141			X	*				*			X	X							X			*			4/3/0
TLM 142	X		*	X				X	*	*	X	X										X	X		7/3/0
TLM 143 (SY)	*	*	*	**	*			*	*	X	**	**			*	*		*	X			*	*		2/11/3
TLM 144	X	X	*	*	X			*	X		X	X			X			X	X			*			8/4/0
TLM 145			*	X					X																2/1/0
TLM 146			X	X																					2/0/0
TLM 147			X	X																					2/0/0
TLM 148			X	X				X			X	X							X			X			7/0/0
TLM 149	X		*	X				X	*	X	X	X										X	X		8/2/0
TLM 150			*	X				X	X		X	X							X			X			7/1/0
TLM 151			*	X				X	X		X	X							X			X			7/1/0
TLM 152				X																					1/0/0
TLM 153				X				X			X	X							X			X			6/0/0
TLM 154				*				X			X	X							X			X			5/1/0
TLM 155				X		X																			2/0/0
TLM 159	X			**			**	*			X	X										*	*		3/3/2
TLM 160				X																					1/0/0
TLM 164	X			X				X			X	X										X	X		7/0/0
TLM 165				*				*			X	X							X			*			3/3/0
TLM 166				*																					0/1/0
TLM 167				X																					1/0/0

TABLE 1. (Continued)

	CHRONOLOGY	SUBSISTENCE & SETTLEMENT						HUMAN ECOLOGY							POPULATION DYNAMICS				ATHAPASKAN LIFEWAYS			CULTURE PROCESS			
SITE #	I a	II a	II b	II c	II d	II e	II f	III a	III b	III c	III d	III e	III f	III g	IV a	IV b	IV c	IV d	V a	V b	V c	VI a	VI b	VI c	TOTAL X/*/**
TLM 168				X		X																			2/0/0
TLM 169 (SY)	*			*				X	X		*	*		X		X							X		6/4/0
TLM 170				*																					0/1/0
TLM 171 (SY)	X			*				X			**	**				X			X			X	X		6/1/2
TLM 172				X																					1/0/0
TLM 173 (SY)	X			**				X	X		**	**							X			X	X		6/0/3
TLM 174 (SY)				*																					0/1/0
TLM 175 (SY)				**				*			X	X							X			*			3/2/1
TLM 176				X		X	X																		3/0/0
TLM 177 (SY)				X																					1/0/0
TLM 178 (H)																								*	0/1/0
TLM 179				X			X																		2/0/0
TLM 180 (SY)	X	*		**				*			*	*			X	X						*			1
TLM 181	X			X				X			X	X										X	X		7/0/0
TLM 182 (SY)				X																					1/0/0
TLM 183				X												X									2/0/0
TLM 184 (SY)	X			**				*	*	*	**	**				*	X		X			*			3/6/3
TLM 185				*																					0/1/0
TLM 186				*			X	*			X	X				X			X			*			5/3/0
TLM 187				X			X	X			X	X							X			X			7/0/0
TLM 188				X				X			X	X							X			X			6/0/0
TLM 189				X				X			X	X							X			X			6/0/0
TLM 190	X			X				X			X	X										X	X		7/0/0
TLM 191				X																					1/0/0
TLM 192				X																					1/0/0
TLM 193				X																					1/0/0
TLM 194 (SY)				X																					1/0/0
TLM 195				X																					1/0/0
TLM 196																									0/0/0
TLM 197				*																					0/1/0
TLM 198				X																					1/0/0
TLM 199 (SY)				X			X	X			X	X							X			X			7/0/0
TLM 200 (SY)				X			X																		2/0/0
TLM 201				X				X			X	X							X			X			6/0/0
TLM 202	X			X		X	X	X			X	X										X	X		9/0/0
TLM 203				X		X	X	X			X	X							X			X			8/0/0
TLM 204 (H)				X																				X	2/0/0
TLM 205			X	*																					1/1/0
TLM 206 (SY)				X				X			X	X							X			X			6/0/0
TLM 207 (SY)	*	*					**	*	*		**	**		*					X			*			1/6/3
TLM 208				**												X									1/0/1
TLM 209				X		X		X			X	X							X			X			7/0/0
TLM 210				X		X		X			X	X										X			7/0/0
TLM 211				X		X		X			X								X			X			7/0/0
TLM 212 (H)																								X	1/0/0
TLM 213	X			X		X		X			X											X	X		8/0/0
TLM 214	*			X		X		X			X								X			X			7/1/0
TLM 215 (SY)				X				*	*	X	X	X					X		*			*			5/4/0
TLM 216 (SY)	*			X				*	*	X	*	*										*	*		2/7/0
TLM 217 (SY)	*			**				*	*	X	**	**										*	X		3/4/3
TLM 218	X			*			X	*			X	X										*	*		4/4/0

TABLE 1. (Continued)

	CHRO-NOL OGY	SUBSISTENCE & SETTLEMENT						HUMAN ECOLOGY							POPULATION DYNAMICS				ARCHAEOLOGICAL INFERENCE			CULTURE PROCESS			
SITE #	I a	II a	II b	II c	II d	II e	II f	III a	III b	III c	III d	III e	III f	III g	IV a	IV b	IV c	IV d	V a	V b	V c	VI a	VI b	VI c	TOTAL X/*/**
TLM 219				*																					0/1/0
TLM 220 (SY)	X			**				*	*	X	**	**				X	*		*			*	*		3/6/3
TLM 221 (SY)				X				X	*	*	X	X							*	X	*	X			6/4/0
TLM 222	X			X				X	*	*	**	**					*		*	*		X	X		5/5/1
TLM 223				*				X	X		X	X							X			X			6/1/0
TLM 224				X				X			X	X							X			X			6/0/0
TLM 225 (SY)	X			X				X	X		**	**				*			X			X	X		7/1/2
TLM 226 (SY)	X			*				X	*	*	**	**							*	X		X	*		4/5/2
TLM 227				X				X	*	X	X	X							X			X			7/1/0
TLM 228	X			X				X			X	X										X	X		7/0/0
TLM 229 (SY)	X			X				X	*	X	X	X										X	X		8/1/0
TLM 230 (SY)	X			**			**	*			**	**							X	*		X	*		3/3/4
TLM 231				X				X	*	X	X	X					X		*			X			7/2/0
TLM 232							**	*	*	*	X	X					X		*			*			3/5/1
TLM 233							X	X			X	X							X			X			6/0/0
TLM 234				X				X	*	*	X	X					*		*	X		X			6/4/0
TLM 235				*				*			X	X							*			*			3/3/0
TLM 236				X			X	X			X	X							X			X			7/0/0
TLM 237				X				X			X	X							X			X			6/0/0
TLM 238				X				X			X	X							X			X			6/0/0
TLM 239				X			*		X							X									3/1/0
TLM 240							**	X	*	X	X	X					X		*	*		X			6/3/1
TLM 241				X																					1/0/0
TLM 242				X				X	*	X	X	X					X		X		*	X			3/2/0
TLM 243				X																					1/0/0
TLM 244				X				X			X	X							X			X			6/0/0
TLM 245				X																					1/0/0
TLM 246	X			X			*	X	X		**	**							X			X	X		7/1/2
TLM 247				*			**	*	*	X	X	X					X		*			*			4/5/1
TLM 248 (H)																								*	0/1/0
TLM 249							**	*	*	X	X	X					X		*		*	*			4/5/1
TLM 250							**	X	X		X	X	*						*			X			5/2/1
TLM 251 (SY)									X																1/0/0
TLM 252								*	*	*	X	X							*			*			2/5/0
TLM 253								X	*	X	X	X	*									X			6/2/0
TLM 256								X	*	X	X	X							X			X			6/1/0
TLM 257							X	X			X	X							X			X			6/0/0
TLM 258							X	X			X	X										X			6/0/0
TLM 259								*			X	X										X			4/1/0
HEA 007				X																					1/0/0
HEA 012				X																					1/0/0
HEA 033				X																					1/0/0
HEA 035				X																					1/0/0
HEA 038	X	X		X																					3/0/0
HEA 081 (H)																								*	1/0/0
HEA 091 (H)																								X	1/0/0
HEA 137				X																					1/0/0
HEA 174				**																					0/0/1
HEA 175 (SY)				**					*	*						X									1/2/1
HEA 176				X																					1/0/0
HEA 177				*																					0/1/0

TABLE 1. (Continued)

	CHRONOLOGY	SUBSISTENCE & SETTLEMENT						HUMAN ECOLOGY							POPULATION DYNAMICS				ATHAPASKAN LIFEWAYS			CULTURE PROCESS			
SITE #	I a	II a	II b	II c	II d	II e	II f	III a	III b	III c	III d	III e	III f	III g	IV a	IV b	IV c	IV d	V a	V b	V c	VI a	VI b	VI c	TOTAL X/*/**
HEA 178				*																					0/1/0
HEA 179				X																					1/0/0
HEA 180				*																					0/1/0
HEA 181	X			X				X			X	X										X	X		7/0/0
HEA 182				*			X																		1/1/0
HEA 183			X	X																					2/0/0
HEA 184			X	X																					2/0/0
HEA 185			X	*																					1/1/0
HEA 186				*																					0/1/0
HEA 210				X																					1/0/0
HEA 211				X			X																		2/0/0
FAI 070 (H)																								X	1/0/0
FAI 089 (H)																								X	1/0/0
FAI 090 (H)																								X	1/0/0
FAI 169 (H)																								X	1/0/0
FAI 213				X																					1/0/0
FAI 214				X																					1/0/0
TYO 014	X																								1/0/0

X Potential to address research questions
* High potential to address research questions
** Very high potential to address research questions
H Historic
SY Systematic testing

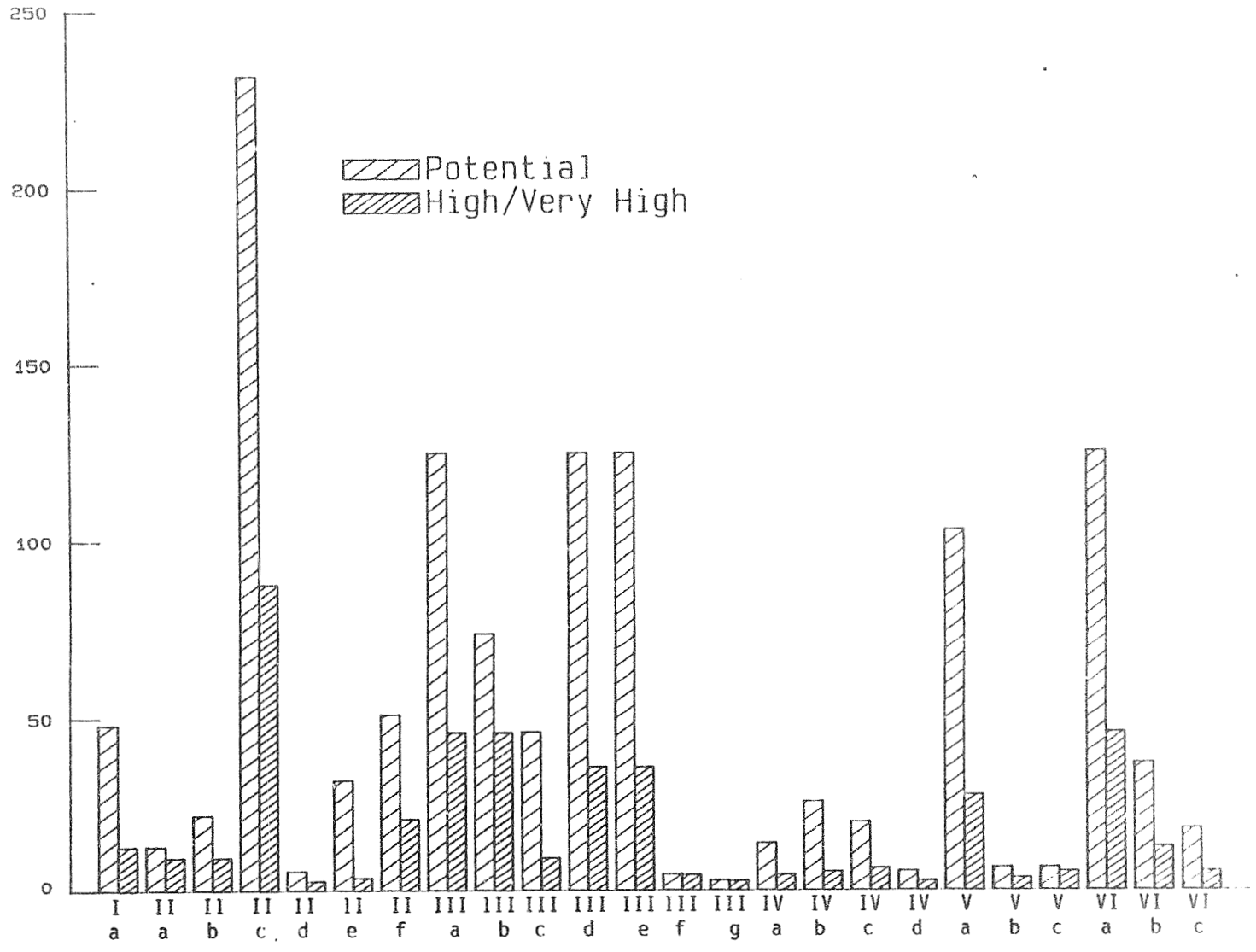

Figure 2. Frequencies of Sites with the Potential to Address Specific Research Questions.

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