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ENVIRONMENTAL STUDIES

SUBTASK 7.06: CULTURAL RESOURCES INVESTIGATION

PHASE I REPORT

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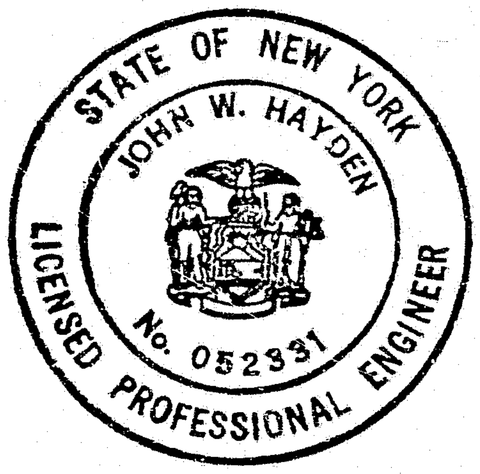

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PHASE I ENVIRONMENTAL STUDIES FINAL REPORT

SUBTASK 7.06
CULTURAL RESOURCES INVESTIGATION

April 1982

Submitted by

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Fairbanks, Alaska 99701

and

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Phoenix, New York 13135

to

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Buffalo, New York 14202

FINAL REPORT
SUB-TASK 7.06 CULTURAL RESOURCES INVESTIGATION
FOR THE SUSITNA HYDROELECTRIC PROJECT

A PRELIMINARY CULTURAL RESOURCE SURVEY IN THE UPPER SUSITNA RIVER VALLEY

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April 1982

SUMMARY

The University of Alaska Museum developed a five-step cultural resource program to assist the Alaska Power Authority, Acres American, and Terrestrial Environmental Specialists in complying with federal and state laws and regulations concerning protection of cultural resources for the proposed Susitna Hydroelectric Project. The five steps were aimed toward: 1) locating and documenting archeological and historical resources within preselected survey locales and 2) testing and evaluating these resources and proposing mitigation measures to avoid or lessen the adverse impact which may result from the proposed project. This report presents the results of a two-year preliminary cultural resource survey in the Upper Susitna River Region, the significance of the findings which will assist in determining the eligibility of sites for nomination to the National Register of Historic Places, an impact analysis, and a proposed mitigation plan to mitigate the adverse effects of the proposed project on significant cultural resources.

In preparation for field studies, all necessary permits were obtained, literature pertaining to the archeology, ethnology, history, geology, paleoecology, paleontology, flora and fauna in and near the study area was reviewed, and available aerial photographs were examined. These data were used to develop a tentative cultural chronology for the study area and focused effort toward defining types of archeological site locales for each culture period within the geochronologic units. These data, coupled with paleoecological information, were used to select 119 survey locales, 111 of which were surveyed during the 1980 and 1981 field seasons. Review of paleontological literature and prefield aerial reconnaissance of the Upper Susitna River Valley delineated the area suitable for paleontological investigations. Paleontological studies were designed to determine the types of paleontological specimens that could possibly occur in an archeological context.

The methods and defined study area varied for each aspect of study, i.e., archeology, geology, and paleontology. The archeological reconnaissance implemented surface and subsurface testing within the

preselected survey locales in an effort to locate historic and archeologic sites. Survey data was consistently recorded on Site Survey forms which enabled systematic recording of information for each site and survey locale.

For each site located, regional maps, site maps, soil profiles, photographs, and other data were recorded. All specimens collected were accessioned into the University of Alaska Museum. Sites were given both University of Alaska Museum accession numbers and Alaska Heritage Resources Survey numbers.

Geological studies generated data that were used in selecting archeological survey locales. Data concerning surficial geological deposits and glacial events of the last glaciation as well as more recent volcanic ashes were compiled and provided limiting dates for human occupation of the Upper Susitna River Valley. This information was collected by literature review and field studies. Geological data collected during 1980 were incorporated into the 1981 archeological program.

Archeological reconnaissance located and documented 6 historic and 109 prehistoric sites, 4 of which were originally located by another investigator during a brief survey in 1978. It is expected that continued survey will locate additional sites. Sites are also known adjacent to the study area near Stephan Lake, Fog Lakes, Lakes Susitna, Tyone and Louise, and along the Tyone River.

Systematic testing conducted in 1981 was designed to collect data on which to base the evaluation of significance for cultural resources discovered, which will assist in determining the eligibility of sites for nomination to the National Register of Historic Places, and to assess impact in order to develop mitigation measures and a general mitigation plan for significant sites located to date. Although in most cases systematic testing is necessary to address significance, the fact that many of the sites can be placed stratigraphically in relation to three distinct volcanic ashes makes it possible to consider the collective significance of all the sites because of the potential they hold for delineating the first cultural chronology for the Upper Susitna Valley.

Due to the large size of the study area, number of sites located, available field time and fiscal constraints, it was possible to systematically test only 18 of the 115 sites. Because of the poor knowledge regarding the cultural history of southcentral Alaska and the Upper Susitna River in particular, the primary objective of systematic testing was to define the cultural chronology sequence for this region of Alaska.

Both reconnaissance and systematically tested sites were evaluated to delineate the previously undocumented prehistory and history of the Upper Susitna River Region. These data enabled a cultural chronology to be developed which includes the following periods: Contemporary (1945 - present), Trapping (1920 - 1945), Goldrush (1900 - 1920), Athapaskan Tradition (A.D. 1900 - A.D. 500), Choris/Norton Tradition (ca. A.D. 500 - ca. 1500 B.C.), Northern Archaic Tradition (ca. 1500 B.C. - ca. 3000 B.C.) and the American Paleoarctic Tradition (ca. 3000 B.C.? - ca. 9000 B.C.?).

Impact on cultural resources will vary in relation to the type of activities that occur on or near them. Based on the present two-dam proposal (Devil Canyon and Watana) and the resultant increase in public access, all of the sites known to date within the study area will be directly or indirectly impacted, or could potentially be impacted, during construction and subsequent use and operation of the facility.

The impact of transmission facilities, recreational activities, upriver and downriver changes in hydrology, and land access and use cannot be assessed at this time due to the lack of information concerning the amount and type of disturbance associated with these activities. Currently, transmission facilities and upriver and downriver areas are not part of the cultural resources field investigation, although a very brief aerial reconnaissance was conducted along the transmission line corridor. Once all of the development plans are finalized, those sites in the potential category will be designated as likely to receive direct, indirect, or no impacts by project related activities.

Two historic and 26 archeological sites were located and documented in areas affected by the Watana dam and its impoundment. The two historic sites will be directly impacted. Twenty-four archeological sites will be directly impacted, and two indirectly impacted by the project.

One historic site and six archeological sites are presently known within the area to be affected by the Devil Canyon dam and its impoundment. The one historic site and the six archeological sites will all be directly impacted by the project.

Eight archeological sites were found and documented in proposed borrow areas, associated facilities, and areas disturbed by geotechnical testing. Two sites will be directly impacted and six have the potential of being impacted.

Eleven archeological sites were located and documented along the proposed access route. Four of these sites will be directly impacted, five will receive indirect impact and two have the potential of being impacted. One possible site was found during a cursory aerial reconnaissance of the proposed transmission lines but remains to be documented.

Two historic and 59 archeological sites are presently documented in areas outside the above categories but within the project area. The two historic sites have the potential of being impacted. Fifty-two of the archeological sites also have the potential of being impacted. The remaining seven sites will be indirectly impacted by the project.

No sites on the National Register of Historic Places were found in the study area. Data collected to date will assist in the determination of eligibility of sites for nomination to the National Register of Historic Places. Based on the results of the reconnaissance survey and the limited systematic testing of the selected archeological sites, the project area holds excellent potential for addressing many long-standing anthropological questions. Three tephras permit stratigraphic correlation between many sites and site components. This presents a uniquely significant opportunity to define the development of these archeological traditions which has not been possible elsewhere in interior or southcentral Alaska. No single site has been found which preserves the cultural chronology from deglaciation to historic times, but the tephra enable cultural development to be traced through time based on comparisons of a series of sites which can be clearly documented to be temporally discrete. With all this information it is possible to state that all sites found to date in the study area are likely significant and could collectively hold the potential for defining the prehistory for this region of Alaska and, therefore, may be eligible for inclusion in the National Register of Historic Places.

Given this level of significance it may be appropriate to nominate these sites to the National Register as an archeological district because of the unique opportunity the known sites in this area (as well as the yet undiscovered sites) have for addressing questions concerning the prehistory of a large portion of interior Alaska which is presently not well defined. If a nomination of this type is made, it ~~should~~ must be done in concert with the State Historic Preservation Officer.

If dam construction is approved, continued reconnaissance and systematic testing is recommended to assist in the mitigation of impacts. A mitigation plan to lessen project impacts on cultural resources is a basic management tool providing options to be considered during the overall decision making and planning process. Although the concept has and is presently undergoing refinement, it clearly consists of three options: avoidance, preservation, and investigation. For all sites to be adversely impacted by the Susitna Hydroelectric Project, either directly or indirectly, investigation is currently recommended. For all sites that could be potentially damaged, avoidance with an accompanying protection plan is currently recommended. When all the activities associated with construction and use of the project are identified, it will then be possible to determine if sites in this category will receive direct impact, indirect impact, or no impact.

ACKNOWLEDGMENTS

The talents, work, and cooperation of many individuals have greatly facilitated the execution of the field research and presentation of this report. The high quality of the data collected during the 1980 and 1981 field seasons is attributable to the field crew: Crew Leaders - Ms. Patricia M. Anderson, Mr. Robert C. Betts, Ms. Martha F. Case, Mr. James R. Marcotte and Mr. Charles J. Utermohle; Crew Members - Mr. Lester W. Baxter, Ms. Virginia L. Butler, Mr. Richard H. Glaser, Mr. James W. Jordan, Ms. Jenny Jorgensen, Mr. Steve Hardy, Ms. Maureen L. King, Ms. Allise A. Kritsis, Mr. James E. Kurtz, Mr. Peter G. Phippen, Mr. David E. Rhode, Ms. Jane Smith, and Mr. Alan Ziff.

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PROPOSED DEVELOPMENT

In the proposed plan for full basin development, two major reservoirs will be formed. The larger reservoir extends 48 miles upstream of the Watana site and has an average width of about 1 mile and a maximum width of 5 miles. The Watana reservoir has a surface area of 38,000 acres and a maximum depth of about 680 feet at normal operating level.

The Devil Canyon reservoir is about 26 miles long and one-half mile wide at its widest point. A surface area of 7800 acres and a maximum depth of about 550 feet represent conditions at normal operating level.

Staged development is planned. An initial installation of 680-MW of capacity at Watana will be available to the system in 1993 and 340 MW will be added in 1994. If the mid-range forecast in growth in energy demand is realized, Devil Canyon will be completed by 2002 with an installed capacity of 600 MW.

The Watana dam will be an earthfill structure with a maximum height of 885 feet, a crest length of 4100 feet, and a total volume of about 62,000,000 cubic yards. During construction, the river will be diverted through two concrete-lined diversion tunnels, each 38 feet in diameter, in the north bank of the river. Upstream and downstream cofferdams will protect the dam construction area. The power intake includes an approach channel in rock on the north bank. A multi-level, reinforced concrete, gated intake structure capable of operating over a full 140-foot drawdown range will be constructed.

The Devil Canyon dam will be a double-curved arch structure with a maximum height of about 645 feet and a crest elevation of 1463 feet. The crest will be a uniform 20-foot width and the maximum base width will be 90 feet. A rock-fill saddle dam on the south bank of the river will be constructed to a maximum height of about 245 feet above foundation level. The power intake on the north bank will include an approach channel in rock leading to a reinforced concrete gate structure which will accommodate a maximum drawdown of 55 feet. Flow construction will be diverted through a single 30-foot diameter concrete-lined pressure tunnel in the south bank. Cofferdams and the diversion tunnel provide protection during construction against floods.

About 2½ years of average streamflow is required to fill the Watana reservoir. Filling will commence after dam construction proceeds to a point where impoundment concurrent with continued construction can be accommodated. Post-project flows will be lower in summer and higher in winter than current conditions. As one proceeds downstream of the project, differences between pre- and post-project flow conditions become less pronounced, as the entire upper basin contributes less than 20% of the total discharge into Cook Inlet.

The selected access plan consists of a road from a railhead at Gold Creek to Devil Canyon on the south side of the river. At Devil Canyon the road crosses the Susitna and proceeds east to the Watana site on the north side of the river. The plan also includes access by road connecting Gold Creek to the Parks Highway. Limited access between Gold Creek and the Watana site by way of a pioneer road will commence in mid-1983. Road access from the Parks Highway will be deferred until after award of a federal license for the project, and the pioneer road will be rendered impassable if the project does not proceed.

The selected transmission line route associated with the Susitna project roughly parallels, but is not adjacent to, the access route between Gold Creek and the Watana dam site. At Gold Creek, it connects into the Railbelt Intertie. Between Willow and Anchorage, the route extends in a southerly direction to a point west of Anchorage, where undersea cables will cross Knik Arm. Between Willow and Healy, the route would utilize the transmission corridor previously selected by the Power Authority for the Railbelt Intertie.

1 - INTRODUCTION

This document is a final report which presents the results of a preliminary two-year cultural resource research program designed to locate, document, evaluate and provide recommendations for mitigating adverse effects on cultural resources within the Susitna Hydroelectric Project area. This program was also designed to provide information necessary to meet the requirements for a Federal Energy Regulatory Commission license application if the state decides to pursue licensing. The two-year program was predominantly a reconnaissance level survey aimed at locating and documenting cultural resources in the study area. In addition it was possible to systematically test 18 of the 115 known sites, a process which is necessary to provide data on which to address significance, evaluate adverse effects on sites, and determine appropriate mitigation measures. The present study was not intended to mitigate potential damage or destruction to cultural resources. Mitigation must await the comments of the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation and, if the license application is submitted, the decision of the Federal Energy Regulatory Commission which will decide whether a license will be issued to authorize construction.

During the 1981 field season proposed borrow area C and several alternative corridors were examined for cultural resources. Although the original scope of work called for an intensive survey of the access corridor selected for study, this approach was modified and three alternative corridors were examined at the reconnaissance level to assist in corridor selection. Since then, however, proposed borrow area C has been eliminated from consideration as a potential borrow source and an access corridor from the Parks Highway to the dam sites has been selected for further investigation. Information included in this report has been adjusted to reflect these changes.

Although transmission lines were not part of the scope of work for cultural resource studies, cursory aerial reconnaissance was conducted.

Because this aerial reconnaissance was very preliminary in nature, further investigation is recommended along the transmission line corridors.

The large size of the study area (Figure 3), funding level, and personnel levels, precluded a complete survey of the entire study area in the two field seasons allotted for this portion of the program. As a result, a research strategy was employed that selected specific survey locales for testing (see Chapter 2 and Figures 156-286), in addition to areas affected by overall project activities. Although this resulted in the documentation of 115 sites, only a portion of the study has been examined for cultural resources to date. Therefore, since only a portion of the study area has been examined, continued on-the-ground investigation in areas not covered during the two previous field seasons of study is warranted.

The Susitna Hydroelectric Project, approximately 120 miles north of Anchorage (Figure 1) on the upper Susitna River (Figure 2), would be a federally licensed and State funded project. Federal law and regulation require that cultural resources, and paleontological resources in an archeological context must be documented in connection with any federally funded or licensed project if there is a chance that those resources may be adversely affected. Consequently, it is mandated by law that cultural resources be identified and evaluated and that mitigation measures to reduce or avoid adverse effects be developed for sites in the proposed Susitna Hydroelectric Project study area. In order to assist the Alaska Power Authority, Acres American, and Terrestrial Environmental Specialists, Inc. in complying with these laws and regulations, and to meet the criterion for the Federal Energy Regulatory Commission license application, the University of Alaska museum developed a five-step program to document, evaluate, and recommend mitigation measures for these resources. These steps include:

(a) Preparation for field studies 1980, 1981.

(b) Reconnaissance level archeological and paleontological survey 1980, 1981.

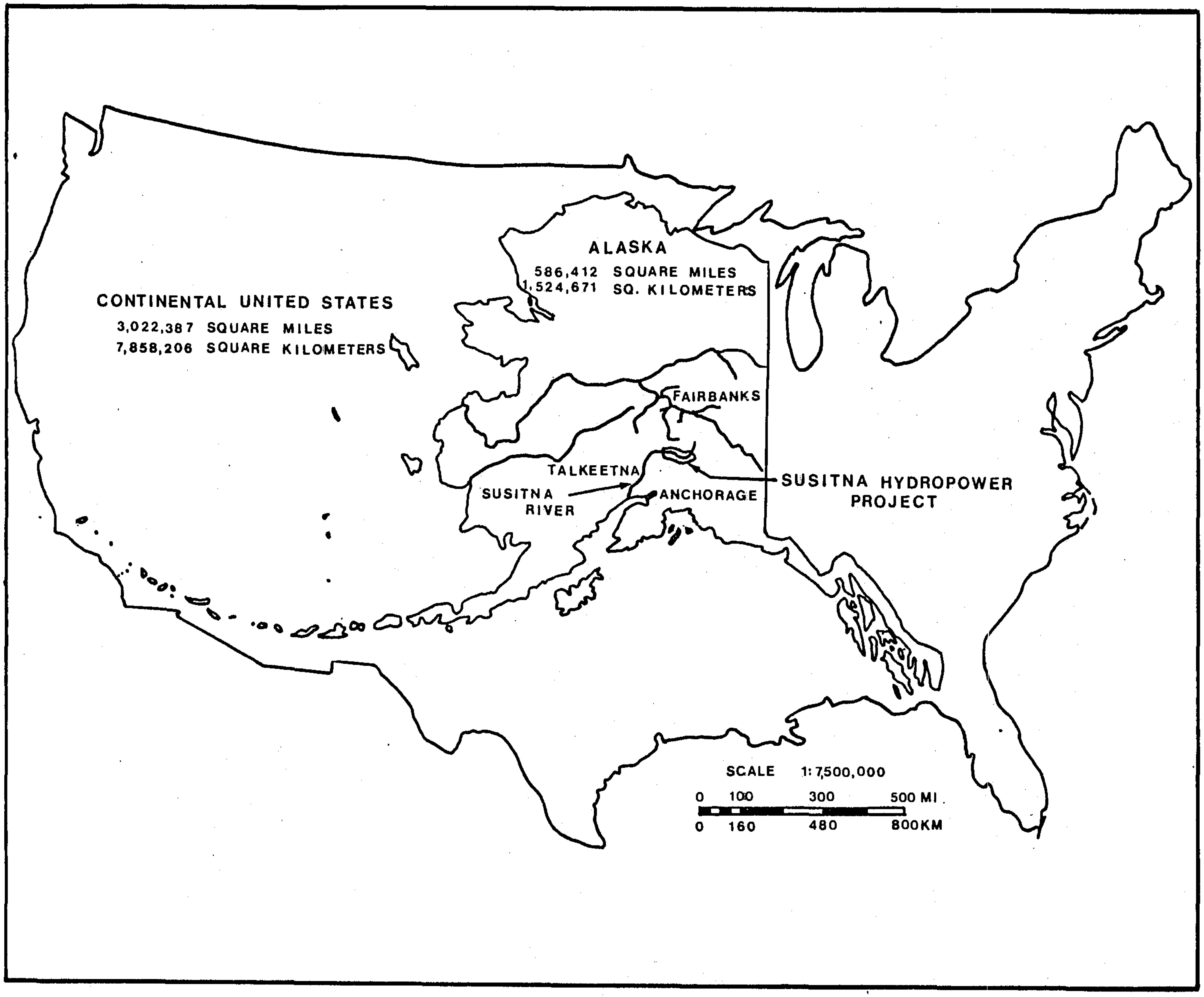


Figure 1. Location of Susitna Hydroelectric Project.

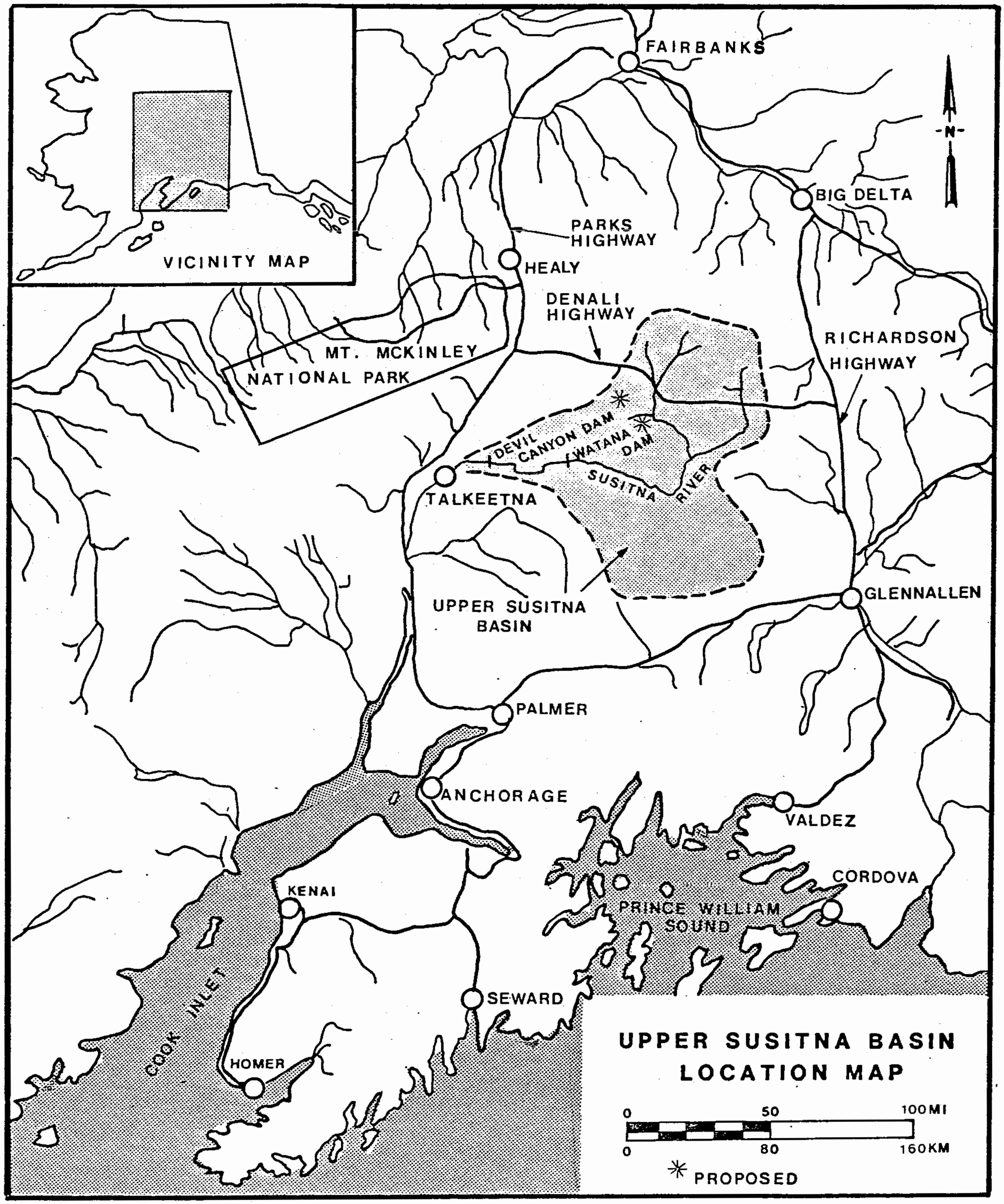


Figure 2. Location of Upper Susitna River Basin.

(c) Systematic testing of archeological and historical sites 1981.

(d) Analysis and report preparation 1980, 1981.

(e) Curation of cultural and paleontological materials 1980, 1981.

1.1 - Overall Objectives of the Program

The five steps outlined above are aimed at fulfilling the two objectives of the project:

(a) Identification of archeological, historical, and paleontological resources found in an archeological context in the defined study area (see Methodology section for definition of study area). This process was implemented during the 1980 field season and continued through the 1981 field season, resulting in the location and documentation of 115 sites. However, only a portion of the project area has been examined to date and additional survey is recommended (see Section 9.2a).

(b) Systematic testing and evaluation of these resources in order to evaluate significance and make recommendations for mitigating potential adverse effects that preconstruction studies, dam construction, and/or dam operation may have on them. Systematic testing began in 1981. To date only 18 of the 115 sites located have been systematically tested. Continued systematic testing is recommended (see Section 9.2a).

1.2 - Specific Objectives of the Program, 1980 and 1981

(a) Archeology

(i) Preparation for Field Studies, Step 1

Prior to implementing the field program it was necessary to complete the following tasks:

- Federal and state archeological permits were applied for and received (Federal Permit #80AK-023, #81AK-209; State Permit #80-1, #81-11).

- Literature pertaining to the archeology, ethnology, history, geology, paleontology, flora and fauna of the study area as well as adjacent regions was reviewed prior to preparing the Procedures Manual/Research Design in the spring of 1980.

- Archeological, ethnological and historical data were synthesized into a regional and local chronology (Figure 4, Chapter 2) in an effort to predict the types and ages of sites that could be expected to occur within the study area. In addition to cultural data, geological data concerning the last glaciation were also examined in order to establish limiting dates for human occupation of specific areas within the upper Susitna River basin. Objectives of the geoarcheology portion of the cultural resource studies are discussed in this section. Results of 1980 and 1981 field studies indicate that prefield season projections of site locations, and temporal placement provided reliable estimates of what has been subsequently documented.

- Aerial photographs of the study area were examined, the interpretation of which focused on identifying probable areas containing cultural resources as well as supplementing geoarcheological data.

- All previously recorded cultural resources in the study area were plotted on 1:63,360 USGS maps in order to document the location of sites within and adjacent to the study area.

(ii) Reconnaissance Level Archeological Survey, Step 2

The purpose of this step was to identify, locate and inventory archeological and historical sites within the study area, which can then be systematically tested. Because it is not the intent of a reconnaissance level survey to examine 100 percent of an area, data synthesized and generated about the study area were used to select 119 survey locales for testing during the 1980 and 1981 field seasons. Maps of each survey locale can be found in Appendix E.

During the 1980 and 1981 field seasons 111 of the 119 survey locales were examined using surface and subsurface testing procedures. In addition reconnaissance testing was conducted as needed at boreholes, auger holes, proposed borrow areas, helicopter landing zones, the proposed Watana airstrip, along seismic lines, and along alternative access routes. Although not part of the scope of work for subtask 7.06, a very cursory four-hour aerial reconnaissance was conducted of the proposed transmission lines between Anchorage and Willow, and Healy and Fairbanks.

The reconnaissance level survey resulted in the location and documentation of 115 sites which are discussed in Chapters 3 and 4. Additional sites are reported in close proximity to but outside the study area and include those on Lakes Susitna, Louise and Tyone, and the Tyone River. Several sites are reported in the Fog Lakes area but their exact location is not known. Only a portion of the study area was covered at the reconnaissance level and further survey is recommended to locate as many sites as possible.

(iii) Systematic Testing, Step 3

The purpose of this step was to test sites located during the reconnaissance level survey in order to collect sufficient data to address site significance and impact in order to develop mitigation measures and a general mitigation plan. Systematic testing, which began in 1981, requires transit surveys of sites, topographic mapping, and excavation of selected units using standard archeological methods. In addition site maps and soil profiles of excavation units producing cultural material were drawn and photographs taken.

Due to the large area covered, number of sites located, available field time, and fiscal constraints, it was possible to systematically test only 18 of the 115 sites investigated. Because the number of sites that could be tested was limited, sites that had the greatest potential for producing data that would assist in developing an overall cultural chronology for the Upper Susitna River Valley were given priority for systematic testing. This method enabled extrapolation to other sites (specifically the association of sites or components within sites to the three volcanic ashes identified in the area) and provided a basis for assessing significance of sites not subject to this level of testing. It is necessary to systematically test the remaining sites as well as any new sites, in order to establish size and content, prior to finalizing mitigation measures.

(iv) Analysis and Report Preparation, Step 4

This step was an integral part of each step of the project. It entailed compilation of the individual reports for the other steps of the project as well as synthesizing all data recovered and making recommendations for mitigating adverse effects on cultural resources when sufficient data were available to make recommendations.

(v) Curation, Step 5

Recording of recovered artifactual material and associated contextual data will be an ongoing program throughout the duration of and after the project. As specified by the Federal Antiquity Permit obtained for this project, materials and supporting documentation must be stored and maintained in a suitable repository. The designated repository is the University of Alaska Museum, Fairbanks, Alaska.

Artifacts and paleontological specimens recovered to date have been accessioned into their appropriate collections at the University of Alaska Museum in accordance with state and federal requirements pertinent to the preservation of antiquities.

(b) Geoarcheology

In order to accomplish the archeological objectives it was necessary to conduct geoarcheological studies to generate baseline data on the surficial geological deposits and glacial events in the study area which provided one of several criteria subsequently applied to the selection of survey locales during 1980 and 1981. Additionally, geoarcheological studies provide limiting dates for the earliest possible human occupation of specific areas within the region as well as baseline data on volcanic ashes (tephras) within the study area which can be used to provide relative dates for many of the archeological sites.

(c) Paleontology

In connection with cultural resource studies it was necessary to develop baseline paleontological data aimed at defining the type and range of paleontological specimens that could possibly occur in an archeological context within the study area.

The results of archeological, geoarcheological and paleontological studies are discussed in Chapters 3, 4, 5 and 6.

2 - METHODOLOGY

The methods used for the archeology portion of this project and its two related subsections, geoarcheology and paleontology (as they relate to cultural resources), varied. Study area size and individual methods are discussed below.

2.1 - The Study Area

(a) Archeology

The cultural resource study area was defined as those lands within approximately 3 km of the Susitna River from just below Devil Canyon to the mouth of the Tyone River (Figure 3). Also included, as requested, were the proposed access corridors. Areas outside the defined study area were examined when it was necessary to obtain data essential to the cultural resource study.

The study area delineated for cultural resource studies included both direct, indirect and potential impact areas. Direct impact is the immediately demonstrable effect of a land modification project on the resource base. Indirect impact relates to adverse effects that are secondary but clearly brought out by the land modification project which would not have occurred without the project. Potential impact is connected with ancillary development which can be predicted to occur as a result of the project.

Direct impact areas include the proposed reservoirs of the Devil Canyon and Watana dams, proposed dam construction sites and associated facilities, proposed borrow areas, proposed access corridors, and any other areas subject to subsurface disturbance during preconstruction, construction, or operation of the Susitna Hydroelectric Project. Indirect impact areas are those outside the above areas but none the less affected by the project due to such activities as increased access to remote areas afforded by roads into the project area, downcutting and

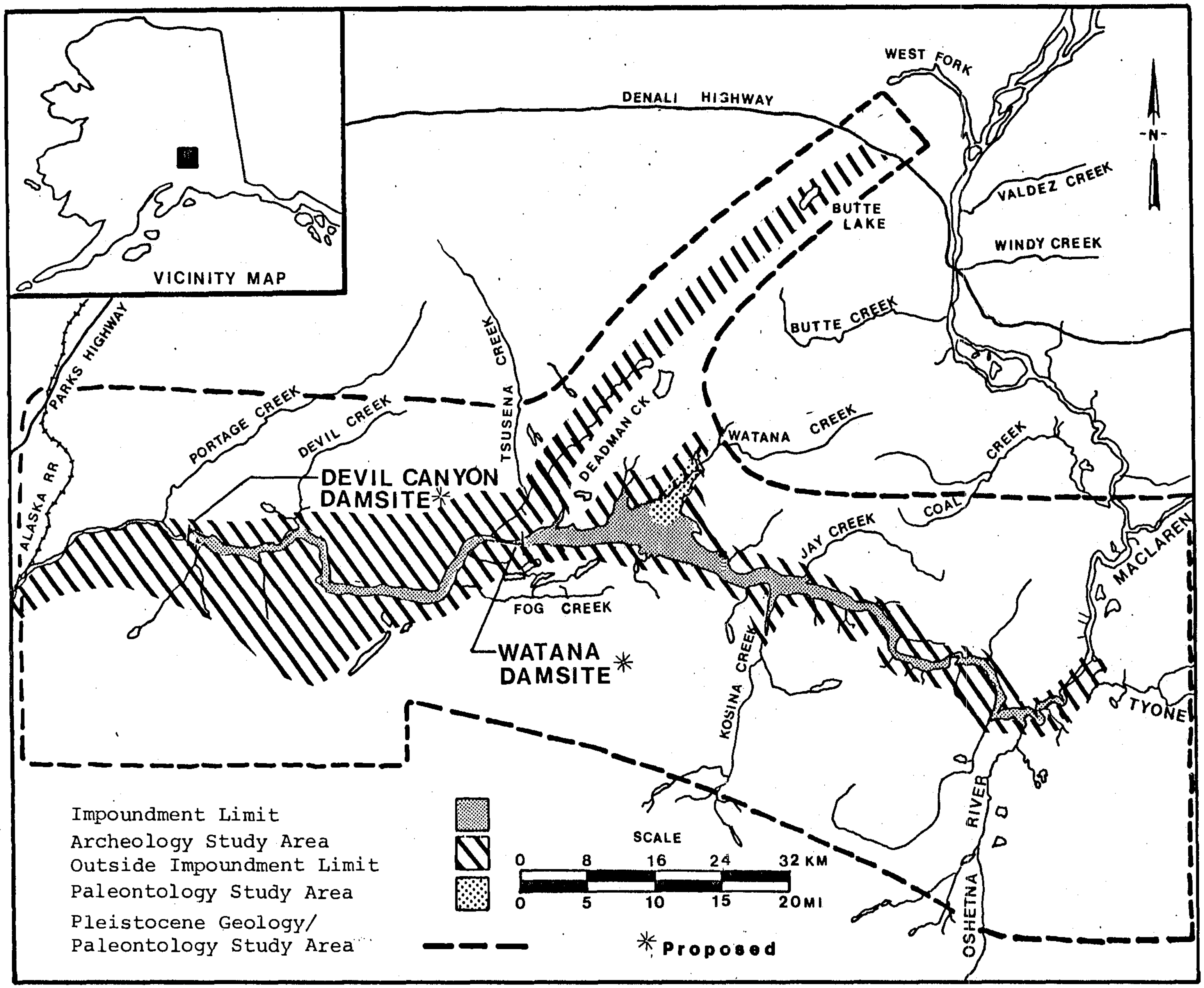


Figure 3. Study area for cultural resources, and associated activities.

erosion caused by changes in stream and river flow resulting from fluctuation of water levels of the reservoir. Potential impact can be expected to occur as a result of recreational development.

The study area is not static. It has, and will continue to, changed in response to modifications in the engineering of the hydroelectric project, as well as to new data provided by ongoing studies associated with the overall project, such as land use analysis and recreation planning.

(b) Geoarcheology

The study area for geoarcheological studies supporting cultural resource analysis was approximately 16 km wide on each side of the Susitna River extending from the Portage Creek area to the mouth of the MacLaren River (Figure 3). When necessary, contiguous areas were examined.

(c) Paleontology

The study area for paleontological studies as they apply to cultural resources was confined to the Watana Creek vicinity. This locale was selected because it was the only area identified within the entire Susitna basin that provided suitable large deposits for pre-Pleistocene paleontological studies (Figure 3).

2.2 - Methods - Archeology

In preparation for field studies, a research design based on current data was developed. The research design integrated the current data (Appendices A, B) into a cultural chronological framework, and developed a research strategy that was structured to predict archeological site locations in relation to physical and topographic features within the limits of contemporary archeological method and theory. Based on the delineated cultural chronology, documented site locales for each culture period, geoarcheologic evaluation, and paleoecological data of the project area, 119 survey locales (Figures 167 through 274) were identified as exhibiting relatively high potential for archeological site occurrence. These locales were subject to preliminary examination for cultural resources representing various periods of Alaska prehistory. The 119 survey locales represent the number of locales that could realistically be examined during the 1980 and 1981 field seasons. Additional areas remain that have varying degrees of site potential which must also be examined. The data used in selecting the survey locales are presented below.

(a) Application of Data Base

(i) Cultural Chronology

A tentative cultural chronology was constructed utilizing archeological data from known sites in or adjacent to the study area. Archeological sites of several cultural periods spanning the past ca. 10,000 years and several cultural/historical periods are known (Figure 4). These data assisted in selecting survey locales.

Archeological sites which were expected to occur in the Upper Susitna region were not expected to exceed 9,000 B.C. in age, based on the sequence of deglaciation that occurred in the area. The earliest sites that were expected in the study area were those representing the American Paleoarctic Tradition, specifically the Denali Complex for which West (1975) ascribes a date of ca. 10,000 B.C. to 4,500 B.C. This distinctive and long lasting stone tool industry is characterized by wedge-shaped microblade cores, microblades, core tablets, bifacial knives, burins, burin spalls and end scrapers. Incorporation of Denali into the American Paleoarctic Tradition follows Dumond (1977) who suggests that the Denali Complex is a regional variant of the American Paleoarctic Tradition as defined by Anderson (1968a).

The Denali Complex has been dated to between 8,600 B.C. to 4,000 B.C. in Interior Alaska. There appears to be a hiatus of Denali sites in the Interior archeological record after 4,000 B.C.; however, several sites in the Tanana Valley which contain elements thought to be distinctive of

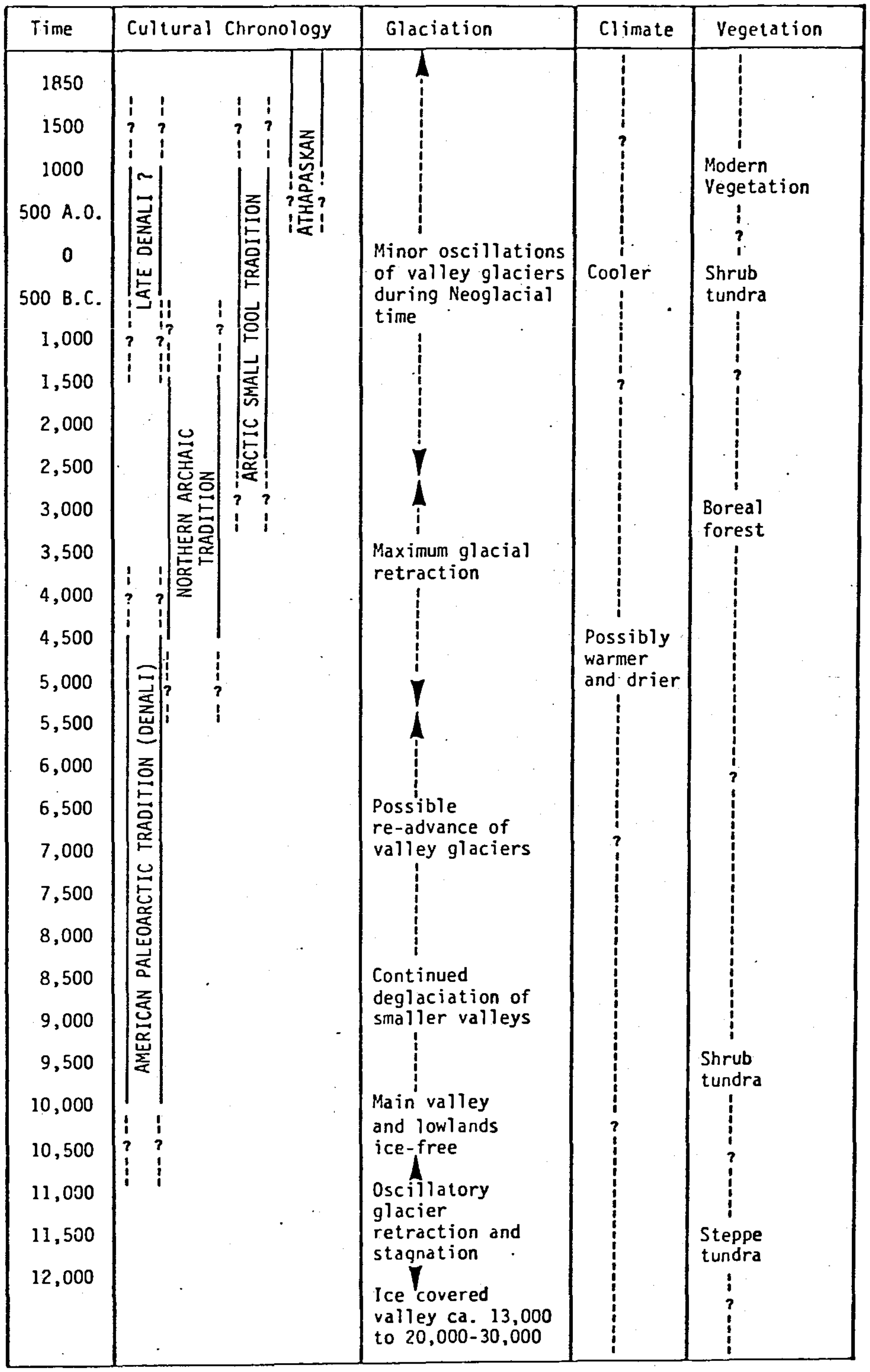


Figure 4. Speculative cultural chronology and inferred glacial, climatological and vegetational regimes of the Upper Susitna Valley.

the Denali Complex date to between 2,400 B.C. and A.D. 1,000. This may suggest a late persistence of this stone industry. Sites representative of the Denali Complex are located in areas adjacent to the study area. The oldest dated Denali Complex site in the Alaska Range area is Component II, at the Dry Creek site which dates to ca. 8,600 B.C. (Powers and Hamilton 1978:76).

Other sites containing the Denali Complex in surrounding regions are Teklanika 1 and 2 near Mt. McKinley, MMK-004 at Lake Minchumina, the Campus site, the Village site at Healy Lake, site FAI-062 (central Tanana Valley), the Donelly Ridge site, several undated Denali sites on the Ft. Wainwright Reservation in the central Tanana Valley, several sites at Tangle Lakes, two sites near Lake Susitna and upper Cook Inlet, the Beluga Point site, and the Long Lake site in the Talkeetna Mountains. These suggest that the Denali peoples were extremely widespread and occupied both inland and coastal zones. If a continuum between early and late Denali proves to be real, a time span of over 9,000 years would exist for Denali peoples. The available information suggested that sites representing the Denali period existed within the study area. Sites containing elements associated with the Denali complex were found as a result of surface and subsurface testing in the study area (see Chapters 3, 4 and 7).

The question of the late duration of the Denali Complex is not settled. Several sites in regions adjacent to the study area have yielded materials similar to those of the Denali Complex, i.e., microblades, microblade cores, and burins, which have late dates. These are the Village site at Healy Lake with a date of ca. 500 A.D. (Cook 1969), and MMK-004 at Lake Minchumina dated to ca. 800-1000 A.D. (Holmes 1978). At the Dixthada site, similar material has been dated to ca. 470 B.C. Several as yet undated sites containing Denali-like material were also located during a 1979 survey in the central Tanana Valley (Dixon et al.) and could represent late Denali occupation.

Sites potentially of late Denali age in areas near the Upper Susitna study area suggested that late Denali sites could also exist in the study area. Several sites documented during the 1980 and 1981 field seasons may represent this period, however, further testing and evaluation is necessary in order to support this hypothesis.

Areas surrounding the study area have produced sites representative of the Northern Archaic Tradition as defined by Anderson (1968b) which date from ca. 4,500 B.C. Northern Archaic sites include Lake Minchumina, Dry Creek, the Campus site, the Village site at Healy Lake, several sites found at Ft. Wainwright in 1979, Tangle Lakes, Lake Susitna, Beluga Point, and the Ratekin site. The distribution of these sites is similar to that for the Denali Complex sites. This tradition is characterized by notched projectile points, notched pebbles, a variety of bifaces, end scrapers, and notched boulder chip scrapers. It was expected that sites representing the Northern Archaic Tradition existed within the study area. A site on Stephan Lake (TLM 007) dating to ca. 4000 B.C. suggested the presence of the Northern Archaic Tradition in the study area. Several projectile point types indicative of this tradition were found during the 1980 and 1981 field seasons and along with several radiocarbon dates that correspond to the time span for this culture period indicates that this tradition is present in the Upper Susitna Valley (see Chapters 3, 4 and 7).

The Arctic Small Tool Tradition is characterized by assemblages containing microblade cores, microblades, burins, burin spall artifacts, flake knives, and bifacial end blades. This tradition is represented by coastal and non-coastal sites, several of the latter being known from the Alaska Interior. Dumond (1977) suggests that the Arctic Small Tool Tradition can broadly encompass a Denbigh-Choris-Norton continuum, and this is how the tradition is used here. One site in the immediate study area, Lake Susitna Site 9, has been suggested as a possible Arctic Small Tool Tradition (Irving 1957). A date of 2,200 to 1,800 B.C. has been documented for the Arctic Small Tool occupation at Onion Portage (Anderson 1968) and may be somewhat later in the southern interior.

Norton period sites, the late end of the Arctic Small Tool Tradition continuum, first appear on the Bering Sea coast about ca. 500 B.C.

Norton does not predate 400 B.C. in the upper portion of the Naknek drainage, and lasts to ca. 1000 A.D. around much of the Bering Sea area (Dumond 1977:106-108). Shortly after its appearance (ca. 500 B.C.) Norton may be represented in Interior Alaska archeological sites. This is suggested by artifacts from Lake Minchumina, the Beluga Point site in upper Cook Inlet and possibly one site in the Upper Susitna River Valley.

It should also be noted that Norton period sites in the Bristol Bay region tend to occur well up major salmon streams, presumably exploiting this rich resource (Dumond 1977:113). Inland Norton period sites demonstrate the importance of caribou in the Norton subsistence strategy (Dumond 1977:113). The Beluga Point site in upper Cook Inlet may represent the maritime portion of the Norton subsistence cycle. Norton populations employed a subsistence pattern that included the seasonal exploitation of both coastal resources (sea mammals, shell fish, and fish) and interior resources (caribou, moose, salmon, etc.). This shift in subsistence strategy may have been a response to climatic amelioration which occurred after 1000 B.C. and preceded the "Little Ice Age" (ca. A.D. 1600-A.D. 1800). This change in resource exploitation may be reflected by the occurrence of a possible Norton period archeological site in the Susitna study area.

Late prehistoric Athapaskan and historic period sites have also been documented in areas adjacent to the study area. Late prehistoric Athapaskan sites are represented at Lake Minchumina, the upper component at the Healy Lake Village site, the upper component at Dixthada, several sites at Tangle Lakes, other sites on Lakes Susitna, Louise and Tyone, a reported site on the Tyone River, and another site in the vicinity of upper Cook Inlet. These late prehistoric Athapaskan sites indicate widespread occupation of several regions in Alaska by these groups. Dumond and Mace (1968) have suggested, based on archeological and historical data, that Tanaina Athapaskans may have replaced the Pacific Eskimo in upper Cook Inlet sometime between 1650 A.D. and 1780 A.D. Possibly this replacement occurred somewhat earlier in the study area. Several sites representing this period were documented in the Upper Susitna River Valley during this study (see Chapters 3, 4 and 7).

The chronology presented here is speculative and was intended to provide a baseline from which archeological sites of different periods in the project area could be expected. This chronology is presently being tested and refined using data from archeological sites located in the study area. The relationship of this chronology to actual sites found is discussed in Chapter 7.

In order to evaluate the significance of archeological sites located during survey and testing (with respect to National Register criteria), as well as aid in the analysis of archeological materials collected, it was necessary to explicate hypotheses which could be tested and evaluated utilizing the project data.

A fundamental hypothesis examined in this study was the validity of the cultural chronology which was proposed. To test the cultural chronology, each period must be examined separately against archeological data from sites located during survey. To evaluate a site against a proposed period in the chronology, it is necessary that the full range of artifactual material from the site, not just selected types, and non-artifactual contexts be compared against the known range of artifactual material from sites of the period and the attempt made to explain the range of variability and the anomalies. This should lead to a fuller understanding of periods involved, or the elimination of invalid periods for the study area and possibly the delineation of others presently unknown.

(ii) Geoarcheological Data

Geoarcheological data was reviewed, aerial photographs examined and a preliminary data base developed which provided information on glacial events and surficial geological deposits within and adjacent to the study area. (see Chapter 5). These data were used in conjunction with archeological data to select survey locales for testing. Updated geoarcheological data were incorporated into ongoing cultural resource studies during the course of the project.

During the 1980 field season, aerial reconnaissance was conducted in order to outline more specifically the distribution and range of surface landforms and deposits as well as to examine the potential for stratigraphic work. Stratigraphic reconnaissance was conducted in a number of areas in order to generate data on major valley-forming geologic events. Geoarcheological reconnaissance was conducted in order to examine land forms specifically associated with glacial events in the area such as, moraines, deltas, lake plains, and eskers, in order to suggest limiting data for cultural resources in specific areas.

Based on the analysis of the above data, a preliminary geoarcheological terrain map was developed to assist cultural resource field studies. This map is on file at the University of Alaska, Fairbanks. In addition, organic samples collected and submitted for radiocarbon analysis were used to provide keys to stratigraphic units within the study area, information which was applied to site age whenever possible. Tephra samples were also collected in order to identify ash horizons noted in archeological sites and stratigraphic sections. As with the other geoarcheological data, this information was used to date cultural resources when possible (see Chapter 5).

(b) Permits

Federal Antiquities permits (#80AK-23, #81AK-209) and State of Alaska Permits (#80-1, #81-11) were obtained for the project.

(c) Literature Review

Literature pertaining to the archeology, history, geology, flora and fauna of the study area and surrounding areas was reviewed and incorporated into the research design.

(d) Cultural Chronology

The data resulting from the review of the archeological and historical literature was used to construct a tentative cultural chronology for cultural resources expected in the study area, provide data for the delineation of a predictive model for archeological potential of various project areas, and explicate hypotheses that could aid in the evaluation of sites located during survey and testing. A tentative chronology suggested that sites spanning the past ca. 10,000 years would be found in the study area. Preliminary analysis of cultural resources located during the two field seasons of this project indicate that sites representing all culture periods outlined in the research design occur in the study area (see Chapter 7).

(e) Research Strategy

An analysis of the data derived from the literature search focusing on site locales has established that archeological sites occur in a non-random pattern in relation to associated physical, topographic, and ecological features. Based on the analysis of site locational data from regions adjacent to the study area, the features characteristically associated with archeological site occurrence are discussed below. All sites located during this study can effectively be placed in one or more of these categories.

(i) Overlooks

Overlooks are areas of higher topographic relief than much of the surrounding terrain. These areas are charcteristically well drained and command a view of the surrounding region. It is generally inferred that overlooks served as hunting locales and/or possibly short term camp sites. Because these sites occur in elevated areas, soil deposition is generally thin and they are frequently easily discovered through subsurface testing or examination of natural exposures. Examples of sites ascribed to the Denali Complex which occur in this setting are the Campus Site, Donnelly Ridge, Susitna Lake, and the Teklanika sites. Northern Archaic Tradition sites also known to occur on overlooks are the Campus Site, some sites in the Tangle Lakes area, Susitna Lake, the Ratekin Site, and a site near the Watana Dam project area. Archeological sites ascribed to the Arctic Small Tool Tradition frequently occur on overlooks; however, no positively identified Arctic Small Tool sites situated on overlooks have yet been reported from the study area or regions immediately adjacent to it. The Nenana River Gorge site, some of the Tangle Lakes sites, and Lake Susitna are all Athapaskan period sites which occur on overlooks.

(ii) Lake Margins

Sites ascribed to all defined traditions have been discovered on the margins of major lakes. It is generally inferred that they are frequently more permanent seasonal camps and that fishing, the exploitation of fresh water aquatic resources and large mammal hunting were the primary economic activities associated with these sites. These inferences are primarily based on the location of these sites rather than an analysis of faunal and artifactual material. Sites on lake margins may exhibit greater soil deposition than overlooks because of their lower topographic position. Sites in this setting are frequently discovered through subsurface testing, the observation of surface features, or through the examination of natural exposures. Athapaskan sites on lake margins include those at Lake Minchumina, Healy Lake, Tangle Lakes, Lake Susitna, Lake Louise, and Lake Tyone. Archeological sites ascribed to the Arctic Small Tool Tradition are reported to occur on lake margins and an example is the Norton component reported at Lake Minchumina. At Lake Minchumina, Healy Lake, Tangle Lakes, Susitna Lake and Stephen Lake, sites which may be ascribed to the Northern Archaic Tradition are known to occur on lake margins. Denali Complex sites which have been found near lakes include the Tangle Lake sites, Lake Minchumina, Healy Lake, Long Lake, and Lake Susitna.

(iii) Stream and River Margins

Numerous sites have been reported along the banks of abandoned channels of streams and rivers. They vary from large semi-permanent seasonal camps to what appear to be brief transient camps. Soil deposition at such locales may be greater than either lake or overlook sites because of the low topographic setting of streams and an active agent (the stream or river) for soil deposition. Sites may be discovered through the examination of natural exposures, subsurface testing, and visual observation of cultural features. Denali Complex sites reported along stream and river margins or abandoned channels include Dry Creek, Carlo Creek, and the Campus site. Northern Archaic Tradition sites found in this type of locale are Dry Creek and the Campus site. The Merrill site, which is ascribed to the Norton period of the Arctic Small Tool Tradition, is a former meander of the Kenai River. Athapaskan sites on stream and river margins include Dixthada, Dakah De'nin's Village and the Nenana River Gorge site.

(iv) Natural Constrictions

Areas where the topographic setting and surrounding terrain form natural constrictions tend to funnel game animals using the area. Lakes, rivers, streams, incised abandoned channels, as well as mountains and hills can produce, either singularly or in combination, natural funnels, concentrating game animals (especially herd aminals) into areas that afford more efficient and effective exploitation of this resource by human populations. Sites in the form of "lookouts" or actual kill sites could be associated with these areas. In the Upper Susitna River Valley extant caribou herds presently use the area for summer and calving ranges, and are subject to this funneling. Presumably this was the case in the past.

It can easily be noted in the review of site locational data that many sites have been subject to reoccupation and share more than one of the defined physical, topographic, or ecological features characteristic of archeological site locales. It would appear that there may be a compounding effect in human utilization of a locale, if more than one of these major variables occur, thus possibly increasing the probability of its use and subsequent reuse. It is also recognized that this analysis is limited because it does not address known chronological and settlement pattern gaps in the archeological record. Additionally, sites such as caves, rock shelters, quarry sites, etc., are not reported immediately adjacent to the study area, although they may occur in the Susitna region. By focusing initial survey efforts in these locales, as well as natural exposures, it was anticipated that most of the archeological sites which can be easily discovered would be found during initial stages of the project, thus providing maximum time for evaluation and planning to insure their protection. One hundred fifteen archeological/historic sites were located and recorded during the 1980 and 1981 field seasons through implementation of this research strategy.

However, a problem in the delineation of the topographic, physical, and ecological features listed above is that a variety of specific settings are subsumed under these general categories and little precise detail about individual sites is available. One objective of the research strategy was to attempt to obtain more precise data relevant to prehistoric settlement patterns and the juxtaposition of individual sites in relation to the natural environment. Forms used to compile this data are discussed below and presented in Appendix C. It is anticipated that analysis of this data will increase predictability for locating archeological sites. Additionally, this examination may permit detailed analysis of shifting subsistence patterns during various cultural historical periods which in turn may enable correlation of changing settlement patterns with environmental change(s).

Field data recording gathered detailed site specific information such as the geomorphic feature on which sites were located, topographic position and elevation, slope, exposure, view, stratigraphy, as well as details about the surrounding terrain and environment. This specific kind of information may enable an analysis of settlement patterns in relation to ecological variables and human response to changes in these variables through time. A Site Survey Form was developed which outlines the specific kinds of information that field personnel were required to record. This form is presented in the Appendix C. Similar information was also collected at locales where test pits did not yield cultural evidence to facilitate analysis of areas where sites do not occur.

The research strategy developed for this project was based on a two field season plan designed to provide feedback data throughout the project so that new data could be used to modify, refine and further develop the cultural resources investigation. Primary objectives of the field research program were: 1) examination of areas which would be immediately affected by the Susitna Hydropower Project (proposed air-strips, borrow areas, drilling locales, etc.); 2) survey and testing of the documented archeological site locales; 3) an on-the-ground survey of preselected survey locales within the study area; and 4) systematic testing of sites discovered to determine spatial limits, depth of deposits, stratigraphic placement of cultural materials, probable age and function of sites, etc.

Reconnaissance data from the 1980 season assisted in selecting 1981 survey locales and analyzing archeological site distribution and non-site locales within the project area. The second season's systematic testing program provided a basis for the assessment of individual site significance of the sites tested. In addition to significance, testing was also necessary to define spatial and temporal limits, and propose mitigation measures to avoid or lessen the impact of the hydroelectric project on cultural resources.

(f) Data Collection Procedures

To insure consistent data collection in the field and provide a systematic format for data retrieval, a Site Survey Form was used for this project (Form 1, Appendix C). The form served as a basis for recording specific information on each site located during the reconnaissance level survey as well as a basis for systematic testing.

The form is organized into major categories including: site location, environment, site description and condition, photographic records and additional information such as a site map, and location of test pits.

Subcategories within each of these headings provide specific data on these topics. Use of the form is discussed in the Technical Procedures Section of the Procedure Manual. Although the form organizes a large quantity of data, it is designed to supplement field notebooks, not to replace them.

Daily field notes were kept by each crew member. Each page was numbered in the upper right hand corner along with the date or dates included on that page. Each site was noted by BOLD underlined numbers (i.e., TLM 027) at the beginning of the notes associated with that site. Field notebooks for survey recorded much of the same information found on the Site Survey Forms, such as site location, topography, vegetation, soils, extent of site, and photographs taken. Field notebooks for systematic testing also recorded a detailed description of soils, drawings stratification of soils, drawings of significant features or artifacts in situ, horizontal and vertical placement of artifacts and features excavated at the site, site maps, methods of excavation and collection of non-archeological samples (soil, pollen, radiocarbon). A space was left on each page for additional notes and corrections. Crew leaders kept a continuous log of all areas surveyed, noting both the location of all test pits and natural exposures and the presence and absence of cultural material.

Once an archeological site was located, additional test pits were excavated to the north, south, east, and west of the test pit which first documented the site. This testing was designed to assist in determining extent of the the site as well as to locate additional cultural material. In an effort to keep sit disturbance to a minimum, preliminary testing at each site was limited, and the number of tests made at each site varied with the nature of the specific site. All test pits were numbered, mapped, and backfilled.

The location of all excavated and surface collected artifacts were recorded. Specimens were bagged by arbitrary 5 cm levels, unless natural stratification was encountered. Each bag contained the following information: location (i.e., Devil Canyon, Survey Locale 15), date, University of Alaska Site Number (i.e., UA80-23), name of excavator, test number (as recorded on site map, i.e., Test #1), depth, and specimen(s) in bag. Radiometric samples collected were double wrapped in aluminum foil and placed in ziplock bags with the following data recorded on each: location, date, site number, collector's name, test number, depth, specimen. All individual bags from each test were placed in a larger bag with site number, name, date, and location on the outside. All test pit bags were placed in a site bag with the site number and date on the outside. All site bags were organized by survey locale and stored at the Watana Base Camp until transported to the University of Alaska Museum in Fairbanks for cataloging, analysis, and curation.

A site specific and regional map was made for each site. Site maps included horizontal and vertical datum points, site grid, all test pits made, location of surface artifacts, features (such as hearths, cabin remains, house pits), distance and direction to other sites or major land features, a scale, date, name of person drawing map, name of person recording data, and reference to pages in field notebooks on which additional information was recorded. Regional maps showed the site in relation to a larger portion of the study area including nearby rivers, lakes, topographic features, vegetation communities, and other sites in the immediate area.

Photographs were taken of each site located. The first picture at each site was an identification shot indicating site number, date, and crew. Other photographs recorded the environment around the site, features at the site, soil profiles exposed in test pits, and artifacts or features *in situ* before removal by excavation. Each photograph was recorded by roll and frame and recorded on the survey form. Direction of view, if applicable, was noted for each photograph taken along with a short statement of content, and any other data pertinent to the photograph. When practical, a metric scale or other reference object was included. Photographs are on file at the University of Alaska Museum.

Detailed soil profiles were drawn of soil deposits exposed during excavation. These included a description of color, grain size and consistency. Measurements documenting depth and thickness for each unit were also recorded. Soil profiles are on file at the University of Alaska Museum.

A catalog of all specimens collected in the field during survey or excavation was prepared during Step 5, Curation. Pertinent data was recorded for each specimen, including its Museum accession and catalog number, description of specimen, excavation or collection unit, level or depth from which it was collected, date of collection, and collector or excavator. Site information collected and recorded during survey and testing was recorded on Alaska Heritage Resource Site Survey long forms; a sample of which is presented as Form 3 (Appendix C). These become a permanent public record of the State of Alaska.

The reconnaissance level survey was directed toward on-the-ground evaluation of preselected survey locales that have been identified for the project area. Along with this evaluation an attempt was made in the field to identify areas that potentially may be eliminated from further survey, and the location of as many site locales as possible. Form 2 (Appendix C) was developed to aid this evaluation.

2.3 - Methods, Geoarcheology 1980

(a) Literature Review

Prior to the 1980 field season all published geologic reports were collected and reviewed for information relevant to the study. This literature survey was updated during 1981. Because specific glacial/climatic studies are not available for the immediate study area, literature for the adjacent regions was heavily relied upon. The review concentrated on those areas for which radiocarbon dates were available from meaningful stratigraphic contexts. Because of the relatively high quality of climatic sequences from the Glacier Bay-Boundary Ranges region, Southeast Alaska, and Brooks Range, these areas were also reviewed. No attempt was made to review the geologic literature for northern and southeast Alaska.

(b) Geoarcheologic Terrain Unit Mapping

During May of 1980, a preliminary regional map of the Susitna Valley was prepared for a first-order interpretation of the geologic history and terrain-units to be studied by the archeologists. The map extended to at least 10 km and usually 15-20 km from the Susitna River. Units, which were defined completely from air-photo interpretation, using 1:20,000 false color infrared U-2 flight lines were subdivided on the basis of age and surface characteristics. This preliminary map, though not detailed in the immediate vicinity of the Susitna Canyon, was used in the archeologic research design. This map is on file at the University of Alaska Museum.

(c) Field Study

Field studies were carried out during June and August, and relied almost completely on helicopters for logistical support. Four major objectives of the field program were to ground truth and reinterpret the preliminary regional geoarcheologic map, to carry out a regional stratigraphic reconnaissance, to help interpret and describe significant archeologic sites, and to examine some of the more critical glacial-geomorphologic features in the region near the proposed impoundment area.

(d) Aerial Reconnaissance

The first field objective was to get a regional overview of the Susitna Valley in order to become familiar with the distribution and range in surface landforms and deposits, and to examine the potential for stratigraphic work. In addition, this overview was necessary to examine the mapping done from air-photos in order to test its reliability and accuracy. This reconnaissance was done in conjunction with project archeologists in order to provide collective agreement on the basis for revised mapping. This joint examination allowed the geologist and archeologists to define the map units that best accommodate both needs.

(e) Stratigraphic Reconnaissance

A second objective was to determine the number and quality of river bluff exposures that might provide stratigraphic information needed to interpret and date the major valley-forming geologic events. After a "fly-by" look at all river bluffs along the Susitna and all of the tributaries from the Chulitna River to the Tyone River, 25 exposures were selected for further study. Those not selected for further study were observed from the helicopters, and here only briefly described. At each selected exposure the entire bluff face, was examined and a selected stratigraphic section measured. The sediments were divided into significant natural units, and the character and height of each unit was described above "recent high water" which was used as an altitude datum. Study of each exposure resulted in a detailed sketch and description of units, including the character of the surface above the exposure. In addition to measuring and describing all units, as many as possible were sampled for various reasons. Organic matter in key units was sampled whenever possible for radiocarbon dating. Organic horizons with well preserved plant macrofossils were sampled for paleobotanical analysis. Some sediment units were sampled to obtain a representative sample of the unit lithology. In addition, many exposures contained one or more volcanic ash layers, which were also sampled (see Chapter 5).

(f) Archeologic Sites

During the 1980 and 1981 field seasons, the geological examination of archeologic sites was conducted, particularly those that were well stratified. Geologic descriptions of the sediment units and regional relationships at the sites greatly aided in site interpretation.

(g) Geomorphic Reconnaissance

A final field objective was to examine the landforms within the study area. Major glacial moraines, deltas, lake plains, eskers, and terraces were described and their heights and gradients measured. Most examination was done from the air, but many glacial-geologic features were studied on the ground. Also the geomorphic character of each of the geoarcheologic terrain units within the impoundment area were briefly described from the air.

(h) Revised Geoarcheologic Terrain Unit Mapping

A week was spent refining the earlier preliminary map to make it more detailed, and therefore more useful for archeological purposes. Twenty-six units were defined, and mapped directly on the U-2 images. These photographs are on file at the University of Alaska Museum. During map revision, much more attention was focused on surface relief and drainage characteristics of each unit than on its estimated age. This mapping was done during the field season because the archeologists needed to have the best possible data available for the remainder of the season.

(i) Data Organization and Compilation

Field data was organized, clarified and tabulated where possible. All short written descriptions were transferred to the 1:63,360 scale base maps. All stratigraphic diagrams and descriptions were redrawn and edited. All samples were double-checked and curated, and a detailed sample list was prepared. All photographs were labeled and keyed to geologic steps and exposures.

(j) Investigation and Dating of Samples

Nine organic samples were submitted for radiocarbon dating, and all have provided good dates for key stratigraphic horizons. One faunal sample of a fossil mammoth(?) was examined and identified by University of Alaska scientists. One paleobotanical sample has been tentatively identified by the herbarium staff at the University of Alaska Museum. One tephra sample has been submitted to Pullman, Washington for bulk- and trace-element analysis, the results of which are not available at this time.

2.4 - Methods, Geoarcheology 1981

(a) Geoarcheologic Terrain Unit Mapping

Considerable effort was expended to revise the geoarcheological terrain unit mapping during the 1981 field season. This mapping proved very useful for the selection of archeological survey locales. However, a final version was not prepared (and thus not included in this report) because archeological testing procedures evolved, such that the map was no longer needed.

(b) Glacial-stratigraphic Mapping

Portions of the 1981 field season were devoted to continuing investigations of the distribution and extent of past glaciers during late Wisconsin time. To assess this, it was necessary to map older glacial sequences as well. This mapping effort consisted of reconnaissance mapping of glacial limits by helicopter, with numerous ground trips during which the surficial character of the glacial landforms were assessed.

(c) Archeological Stratigraphy

The major effort of the 1981 field season was devoted to interpreting the geological context of the cultural horizons at numerous archeological sites. All important sites were visited and interpreted in the field by the geologist. Sites that were not visited in the field were interpreted by the geologist on the basis of field drawings and descriptions made by the archeologists.

As part of the archeological stratigraphy effort, a major portion of the geologists' time was spent informing and educating the excavators about the landforms, soils and volcanic ash layers found throughout the study area. The standardization of techniques and descriptions which resulted from numerous instructional situations greatly improved the quality of the resulting data collected by all investigators during the field season.

Following the field season, a final interpretation of the archeological stratigraphy was made by synthesizing over 250 stratigraphic drawings made during the field season. This interpretation was supported by some laboratory investigations. Samples for radiocarbon dating were selected, prepared and sent by the geologist on the basis of their stratigraphic importance, the results and interpretation of which are discussed in Chapter 5.

2.5 - Methods, Paleontology

As part of the Cultural Resource Inventory, the paleontology of a non-marine Tertiary sedimentary basin exposed along Watana Creek was investigated in order to develop baseline data on paleontological specimens, other than faunal remains, that could possibly occur in an archeological context. The deposits crop out locally along the Susitna River near the mouth of Watana Creek and along the course of Watana Creek and adjacent areas for approximately seven miles upstream. The primary focus of the investigation was to identify and collect a representative assemblage of plant fossils from the exposed stratigraphic section and determine the age of the deposits.

Field study of the deposits was conducted in July and August, 1980 from a base camp approximately 2 miles east of the mouth of Watana Creek. Field study consisted of mapping and sampling of the units comprising the sedimentary deposits.

(a) Fossil Leaves

Many bedding horizons exposed along Watana Creek were noted to contain plant material. A number of these units were not suitable for collection of samples (friable siltstones, etc.), however, units which were considered to be of a nature to yield specimens useful for biostratigraphic studies were extensively sampled. These specimens were delivered to the Unitersity of Alaska Museum, Fairbanks, cataloged, and identified and are part of the permanent collections.

(b) Pollen

Coal seams throughout the section were sampled for later laboratory preparation to determine the existence of pollen grains which could be used for further biostratigraphic control. 200-300 gram samples were taken normal to bedding within coal seams greater than 0.5 feet thick. Approximately 30 seams were sampled throughout the section (see Chapter 6).

Coal samples were prepared for microscopic examination to determine pollen content at the University of Alaska. Specimens considered to be of quality likely to be of aid in biostratigraphic correlation were photographed and identified.

2.6 - Agency Consultation

(a) Consultation Methods

For all federally funded or licensed projects such as the Susitna Hydroelectric Project, it is necessary to obtain a federal antiquities permit. Formal application including vitas of individuals in general and direct charge was made to the National Park Service and the necessary permits received for 1980-81. In addition to the federal antiquities permits, state antiquity permits were obtained for state selected land within the study area.

The State Historic Preservation Officer and State Archeologist have been advised of cultural resource investigations associated with this project through verbal and written communications. Copies of the Procedure Manual and the Annual Report for subsection 7.06 were submitted to them for review, comment, and to document compliance with appropriate state and federal legislation. The preliminary general mitigation has also been discussed with the SHPO and State Archeologist.

(b) Summary of Comments

Comments concerning the federal antiquities permit applications were in the form of stipulations to the permits by the National Park Service, Bureau of Land Management, and the U.S. Fish and Wildlife Service. These comments specified the conditions of the permit.

The research design and the 1980 annual report were reviewed by the SHPO and the State Archeologist and found to meet project needs and professional standards. It is their opinion that the research conducted to date is thorough and well documented and constitutes an excellent preliminary cultural resource program, but that continued reconnaissance testing of areas not covered during 1980 and 1981 must be undertaken to locate as many sites as possible given present technology and that systematic testing should continue to further evaluate sites and provide data on which to base significance, assess effect and determine the appropriate mitigation measures. In addition, archeological clearance must continue for any activities that may impact cultural resources in the study area and a final mitigation plan prepared. They also request a copy of the final report for review (see Appendix D).

3 - HISTORIC AND ARCHEOLOGICAL SITES IN THE PROJECT AREA LOCATED DURING RECONNAISSANCE LEVEL TESTING; 1980 AND 1981

3.1 - Introduction

In addition to archeological investigations, geoarcheological and paleontological studies were conducted in order to provide data which would enhance the location and evaluation of cultural resources within the study area. Prior to and during field studies geoarcheological studies were conducted to provide data that would define the ages of surficial deposits and provide limiting dates for human occupation of the area. Paleontological studies were conducted in order to define the types and range of paleontological specimens that could possibly be found in an archeological context. The results of the cultural resource studies are included in this section. Federal law mandates that site locational data not be released if it may create a risk of harm to the site. Therefore, site location maps contained in Appendix E are not included in reports released to the general public.

Surface reconnaissance and subsurface testing located 6 historic and 109 prehistoric sites during the two field seasons of the project. One hundred and one historic period sites were located and recorded by the land use analysis team (subtask 7.07) under the direction of Dr. Alan Jubenville and are described in that report. Of the 101 historic cabins recorded by the land use study only 12 fell within the archeological study area. Of this number only four were older than the 1950's which was the arbitrary cutoff date for cultural resource studies. These sites were documented and are discussed in this section. Historic sites encountered within survey locales were also recorded.

Cultural resources were located in 28 (25%) of the 111 survey locales examined. A total of 37 sites were documented for these locales. The remaining 78 sites were located in proposed borrow areas, areas disturbed by geotechnical testing along proposed access routes and in other portions of the study area. Sites reported to the archeology study team by other project personnel were subsequently documented. Four sites were originally recorded during a 1978 survey (TLM 015, 016, 017, 018) and one during a survey in 1970 (TLM 007), an additional site (TLM 020) was reported in the files of the State Archeologist.

The fact that no sites were located during reconnaissance testing in 83 (75%) of the survey locales could be due to the testing level employed, sampling bias, or the fact that site locational data used for selecting survey locales needs to be further refined to reflect specific topographic settings in the Upper Susitna River Valley. Although it is possible that no sites exist within the limits of the selected survey locales, the fact that testing in 25% of the areas did locate cultural resources suggests otherwise. This is also supplemented by the fact that in 1981 archeological sites were found in three survey locales that were reconnaissance tested in 1980 with negative results. This suggests that increased testing levels will increase the number of sites located and documented.

Survey locales examined were selected based on the application of archeologic, ethnographic, historic, and geologic data compiled and refined prior to and during the 1980 and 1981 field seasons. Maps depicting these locales are presented in Appendix E. Specific criteria used for defining and selecting survey locales are discussed in Chapter 2.

The sites found in 1980 and 1981, as well as the sites located in 1971 and 1978 are discussed below. Each site report contains information concerning the setting, the results of reconnaissance testing, an inventory of collected artifacts and a site map. Maps showing the location of each site on USGS 1:63,360 scale maps are located in Appendix E. Artifacts specifically discussed in the text are presented in Artifact Photos A through T at the end of this section.

During reconnaissance level survey the minimal amount of cultural material needed to document the existence of a site and provide a basis for evaluating further study was collected. Therefore, not all cultural material noted was collected. The provenience of artifacts at each site was recorded in relation to their distance from the site datum set up at the site. Metal tags inscribed with the appropriate University of Alaska Museum accession number and/or AHRS number were left at each site to mark the site and avoid confusion in site designations.

To avoid confusion, the meaning of certain terms as used in this report are discussed below:

Site: Any location with detectable physical evidence of prehistoric and early historic human activity in the Susitna Valley within the confines of a defined topographic setting. Physical evidence deposited as a result of human activity includes but is not limited to tools, lithic debitage, animal bones, and features (including hearths, house pits, cairns, etc.).

Locus: One of two or more concentrations of cultural material within a site which is spacially discrete from other concentrations of cultural material.

Scatter: A concentration or cluster of cultural material at a site or within a locus.

Shovel Test: A subsurface testing method using a shovel. For this project shovel tests were excavated in each survey locale in 5 cm arbitrary levels and were excavated to at least 50 cm when possible.

Test Pit: A systematic excavation conducted with a trowel. Tests varied in size depending on the terrain but were usually less than 50 cm x 50 cm. In some cases shovel tests were turned into test pits when cultural material was encountered.

1m Test Square: The standard excavation unit used during systematic testing.

cmbs: Centimeters below the surface.

asl: Above sea level.

I.L.: Impoundment limit. Used on survey locale maps.

Survey Locale: One of the 119 areas selected for testing during the 1980 and 1981 field seasons based on the application of archeologic, ethnologic, historic, and geologic data (see Appendix E).

Flake: A fragment of rock culturally removed from a parent rock by percussion or pressure flaking. The remains of lithic tool manufacturing or repair, usually characterized by a bulb of percussion, a striking platform, and radiating ripples or force lines from the point of impact or pressure on the ventral surface.

Retouch: The occurrence of small flake scars along the edge of a lithic artifact.

Component: The manifestation of a given archeological phase at a site (Willey and Phillps 1958:21). Sites may be single component (representing only one cultural period) or multicomponent (representing two or more distinct cultural periods).

Level: The vertical subdivision of an excavation unit, generally a naturally deposited stratigraphic unit.

Horizon: In soil science, a natural developmental zone in a soil profile.

Tephra: Solid material ejected during the eruption of a volcano and transported through the air. Three tephras have been identified in the Upper Susitna River Valley.

UA80-XX: Each site is represented by a University of Alaska accession number. All artifacts from a given site are numbered with this site number. Individual specimens receive consecutive numbering, i.e., UA80-68-1, UA80-68-2, etc.

TLM XXX: State Heritage Resource Survey site numbers are also assigned to sites discussed in this report. The first three letters reflect the USGS quadrangle in which the site is located; in this case TLM represents Talkeetna Mts. The following three digit number represents the specific site.

A discussion of individual sites follows. Although included in this section, the 18 sites that were systematically tested are discussed in Chapter 4 as well.

Tables organizing sites by Museum accession numbers, AHRS numbers, survey locales, proposed borrow areas and land status are included at the end of this section (Tables 1, 2, 3, 4).

3.2 - Watana Dam and Impoundment

(a) Archeological Sites - Results and Discussion

(i) AHRS Number TLM 015, Accession Number UA78-65

Area: ca. 6 km Northeast of Tsusena Creek Mouth, Proposed Borrow F

Area Map: Figure 157; Location Map: Figure 287

USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 423050 Northing 6970100

Latitude 62°51'21" N., Longitude 148°30'40" W.

T. 32 N., R. 5 E., Seward Meridian

Sec. 22, NW¼NW¼NW¼

Setting: The site, at an elevation of approximately 639 m asl (2275 feet), is located southeast of proposed Borrow Area F (Figure 157) approximately 1.7 km east of Tsusena Creek and 2.7 km north of the Susitna River (Figure 157). Situated on ice stagnation terrain characterized by kettle and kame topography, the site is located at the top of a kame with large kettle lakes to the north, west, and south (Figure 287). A low ridge extends from this knoll approximately 200 m southwest terminating in a lower knoll. Numerous other knolls and ridges and over 20 kettle lakes lie within a 1 km radius of the site. The elevation of the knoll on which the site is located is the highest point of relief within approximately 800 m. The view from the site is unrestricted and encompasses a radius of 1.6 km of accessible terrain including portions of five kettle lakes to the north, northeast, west, and south. These lakes are between 10 m to 30 m lower than the site and are all easily accessible from it. Much of the area between the lakes is poorly drained muskeg and marsh and the numerous ridges and knolls in the vicinity provide natural travel routes and vantage points overlooking the lakes and ponds. The lakes in the vicinity of the site vary from 1 hectare to 18 hectares in size with the northern end of the largest lake located approximately 250 m southeast of the site. Many of the lakes are interconnected by their outlet and inlet streams and a lake approximately 200 m southwest of the site has an outlet to Tsusena Creek. Tsusena Creek, which lies approximately 1 km northwest of the site at the closest point, is approximately 90 m lower in elevation and is not in view. Vegetation at the site consists primarily of shrub birch, low bush cranberry, blueberry, Labrador tea, moss, and lichen. Dense stands of black spruce are present at lower elevations especially around the lake margins. A great deal of bear (*Ursus* spp.) and moose (*Alces alces*) sign was observed in the vicinity of the site and the area appears to be excellent wildlife habitat. Site TLM 051, situated near the top of a slightly higher kame and located approximately 600 m to the north near the boundary of Borrow Area F, is in a similar topographic context.

Reconnaissance Testing: This site was identified by Mr. Glenn Bacon during a preliminary reconnaissance conducted in 1978 prior to the establishment of Watana Camp (Bacon 1978b). It was revisited during the 1980 reconnaissance survey in order to check locational data and environmental information. No further testing was done at the site although three previously excavated test pits on the lower knoll approximately 200 m southwest of the site were reopened in an attempt to determine the provenience of the cultural material reported by Bacon. No cultural material was observed in these tests or in surface reconnaissance in the area. Initially it was assumed that the site location was on the lower knoll where the test pits were found and it was not until after the field season that it was learned that the site was located on the higher of the two knolls as indicated on the original site map (Bacon, personal communication). Intensive surface reconnaissance on the higher knoll failed to identify earlier testing at that location. Bacon (1978b) reports that subsurface testing at the site produced two flakes from different soil units in a single test and suggests that the site is multicomponent. One flake was recovered at a depth of 34 cmbs associated with a dark brown/black loess unit and a second flake was recovered between 34 and 49 cmbs and associated with an orange sandy silt with pebble intrusion (Bacon 1978:22).

(ii) AHRS Number TLM 016, Accession Number UA78-66

Area: ca. 10 km North of Deadman Creek Mouth, Proposed Borrow D

Area Map: Figure 158; Location Map: Figure 288

USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 424350 Northing 6970050

Latitude 62°51'18" N., Longitude 148°29'10" W.

T. 32 N., R. 5 E., Seward Meridian

Sec. 22, SW¼NE¼NE¼

Site Map: Figure 5

Setting: Located at an elevation of 732 m asl (2400 feet) approximately 1.5 km east of site TLM 015, site TLM 016 is located in the area of kettle and kame topography bordered to the west and east by Tsusena and Deadman Creeks and to the south by the Susitna River (Figure 158). The site is situated at the top of a relatively low rounded kame which is the highest point of relief within a 600 m radius. A 1978 Corps of Engineers Survey Monument (WA 16) is located on the knoll at the site location (Figure 288). This knoll is fairly difficult to locate from the air as it slopes very gradually eastward, blending into the relatively flat terrain in that direction. The slope is steepest to the west where it approaches an angle of 15° to 20°. To the northwest the slope is more gradual and several relatively flat benches occur, possibly a result of solifluction. The view from the top of the knoll is panoramic but the principal view is to the west and north encompassing portions of four lakes. These lakes vary in distance from 150 m to 1.5 km from the site and in size from 1 hectare to 14 hectares. A marsh, which appears to formerly have been a small pond 30 m to 40 m in diameter, lies approximately 50 m to the southwest of the site. Deadman

Creek, the closest creek to the site, lies approximately 2 km to the east but is not visible. Like Tsusena Creek, Deadman Creek is deeply incised in a bedrock canyon with at least one major waterfall prior to its confluence with the Susitna River approximately 2.8 km southeast of the site. Access to both of these creeks, the Susitna River, and the kettle lakes in the vicinity is across low, poorly drained tundra which is best traversed by staying on the knolls and low ridge systems that comprise the higher ground. Site vegetation consists primarily of tundra, shrub birch, and willow but includes dwarf birch, low bush cranberry, crowberry, blueberry, Labrador tea, and lichen. Shrub birch and willow are denser on the slopes of the knoll and lower elevations contain stands of black spruce and muskeg especially in the vicinity of the lakes.

Reconnaissance Testing: Surface and subsurface cultural material at this site, was identified by Bacon (1978b). It was revisited during the 1980 reconnaissance survey in order to check locational data and environmental information but no further testing was done. The site was initially identified by the presence of flakes exposed in a blowout at the top of the knoll next to a Corps of Engineers Monument (WA 16). Six basalt and rhyolite flakes were collected by Bacon from this blowout in 1978 and one additional basalt flake was observed but not collected in 1980. Subsurface testing in 1978 revealed a 1 cm thick concentration of charcoal at 16.5 cmbs in test pit 1. Forty bone fragments were excavated in association with the charcoal and three charcoal samples were collected, one of which was submitted for radiometric dating. A radiocarbon determination of 3675 ± 160 years: 1725 B.C. (GX-5630) was obtained from the sample that was submitted (Bacon 1978:24). In addition to the bone, six flakes were excavated from test pit 1 between 7.5 and 17.5 cmbs and were associated both with the charcoal stained level and with an overlying gray-brown loess level (Bacon 1978:24). Two other tests in the site vicinity produced cultural material in 1978. Test pit 2 produced a unifacially retouched rhyolite pebble (UA78-66-3) and test pit 5 produced six flakes (Bacon 1978b: 26, 38). Two of the earlier tests (Figure 5, tests A and B) were relocated in 1980.

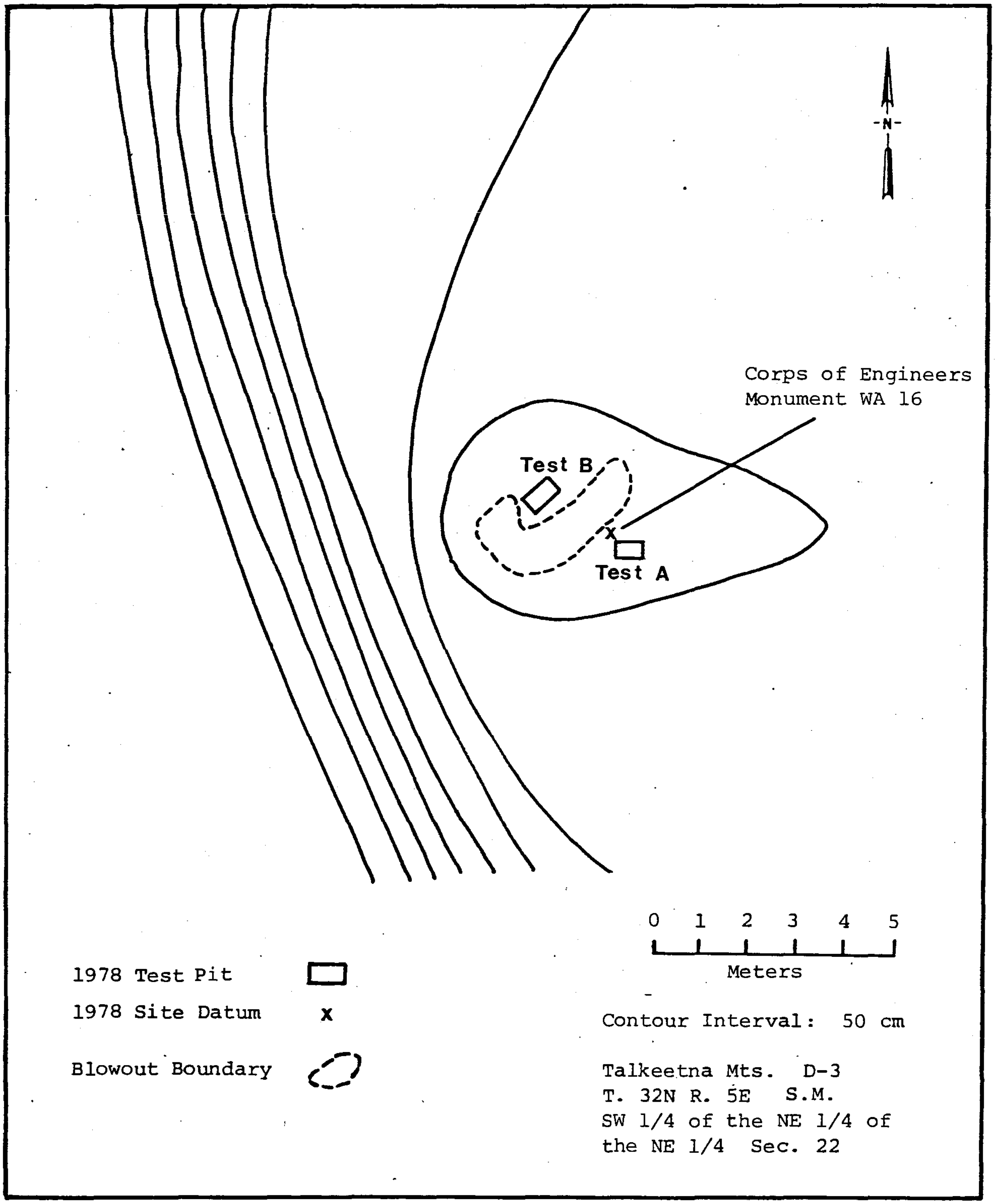


Figure 5. Site Map TLM 016.

(iii) AHRS Number TLM 017, Accession Numbers UA78-67, UA80-164

Area: ca. 2 km Northeast of Confluence of Tsusena Creek and the Susitna River

Area Map: Figure 157; Location Map: Figure 289

USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 419600 Northing 6967500

Latitude 62°49'55" N., Longitude 148°34'35" W.

T. 32 N., R. 5 E., Seward Meridian

Sec. 29, SW¼NW¼SW¼

Site Map: Figure 6

Setting: Located at an elevation of 610 m asl (2000 feet), the site is approximately 900 m north of the Susitna River and 1.2 km east of Tsusena Creek (Figure 289). The site is situated on a level bench near the top of a northwest facing slope which descends to Tsusena Creek which is approximately 122 m lower in elevation. The bench upon which the site is located is a discrete feature oriented northeast-southwest and is approximately 75 m long by 30 m wide. Several other similar benches are located at about the same elevation on the northwest slope in the vicinity of the site. To the east the terrain continues to rise for approximately 61 m after which it becomes a relatively flat undulating plain of glacial drift characterized by kettle and kame topography. The confluence of Tsusena Creek and the Susitna River is located approximately 2.1 km southwest of the site and approximately 152 m lower in elevation. A 180° field of view from the southwest to the northwest encompasses the Tsusena Creek drainage for a distance of several km although the creek itself is not visible. Portions of the Susitna River approximately 2 km to the southwest are in view and although access to the Susitna to the southwest is reasonably good, access to Tsusena Creek to the west and southwest is much better even though it is restricted in places by sheer bedrock walls. Terrain on the west side of Tsusena Creek is visible from the site but the difficulty of crossing the deeply incised canyon and the deep, fast-flowing creek makes accessibility to this area difficult. Vegetation at the site is relatively open with scattered black spruce, birch, and a ground mat of moss and lichen covering most of the bench. Other vegetation at the site includes Labrador tea, blueberry, low bush cranberry, crowberry, and willow. Several large boulders, apparently glacial erratics, are conspicuous in the vicinity of the site. The site is located at the transitional zone between dense black spruce, which begin thinning out approximately 150 m below the site to the west, and a more open tundra and brush environment which becomes the dominant vegetation at about the elevation of the site and extends eastward.

Reconnaissance Testing: This site was identified by Mr. Glenn Bacon in 1978 during a preliminary reconnaissance survey prior to the establishment of Watana Camp (Bacon 1978b). No surface cultural material was observed by Bacon at the site but one of his tests next to a large boulder near the center of the bench (Figure 6, test pit 1) produced 372 basalt flakes, a large number of which were cortex flakes (Bacon 1978:43). The flakes excavated by Bacon were recovered from a dark brown-black loess-clay unit 1 cm thick located 23 to 24 cmbs and just above a 1 cm thick loess-clay unit which overlies the sandy silt and unsorted pebbles characteristic of glacial drift (Bacon 1978:27). Only a portion of this subsurface flake scatter was excavated by Bacon. This site was revisited in 1980 and the 1978 test which produced cultural material was relocated (Figure 6). No additional cultural material was revealed by the eight additional shovel tests dug in 1980 and the site appears to be limited to the immediate vicinity of Bacon's test pit 1. This test was reexcavated in 1980 to positively identify the provenience of the flakes recovered by Bacon and to draw a soil profile. During the removal of backdirt from test pit 1 and the preparation of the west wall of the test for a drawing of the soil profile an additional 285 basalt flakes were recovered from this test. The flakes excavated during the preparation of the west wall of the test were associated with what appears to be a dark gray paleosol varying in depth from 11 to 24 cmbs.

Flakes were concentrated at depths of 14 and 24 cmbs in association with this soil unit. The subsurface flake scatter partly excavated by test pit 1 is a very dense concentration of flakes which appears to be limited spacially to the immediate vicinity of the large boulder which forms the southern wall of the test. The flakes are actually found concentrated at the base of this boulder (Figure 6).

Collected Artifact Inventory

285 Black basalt flakes

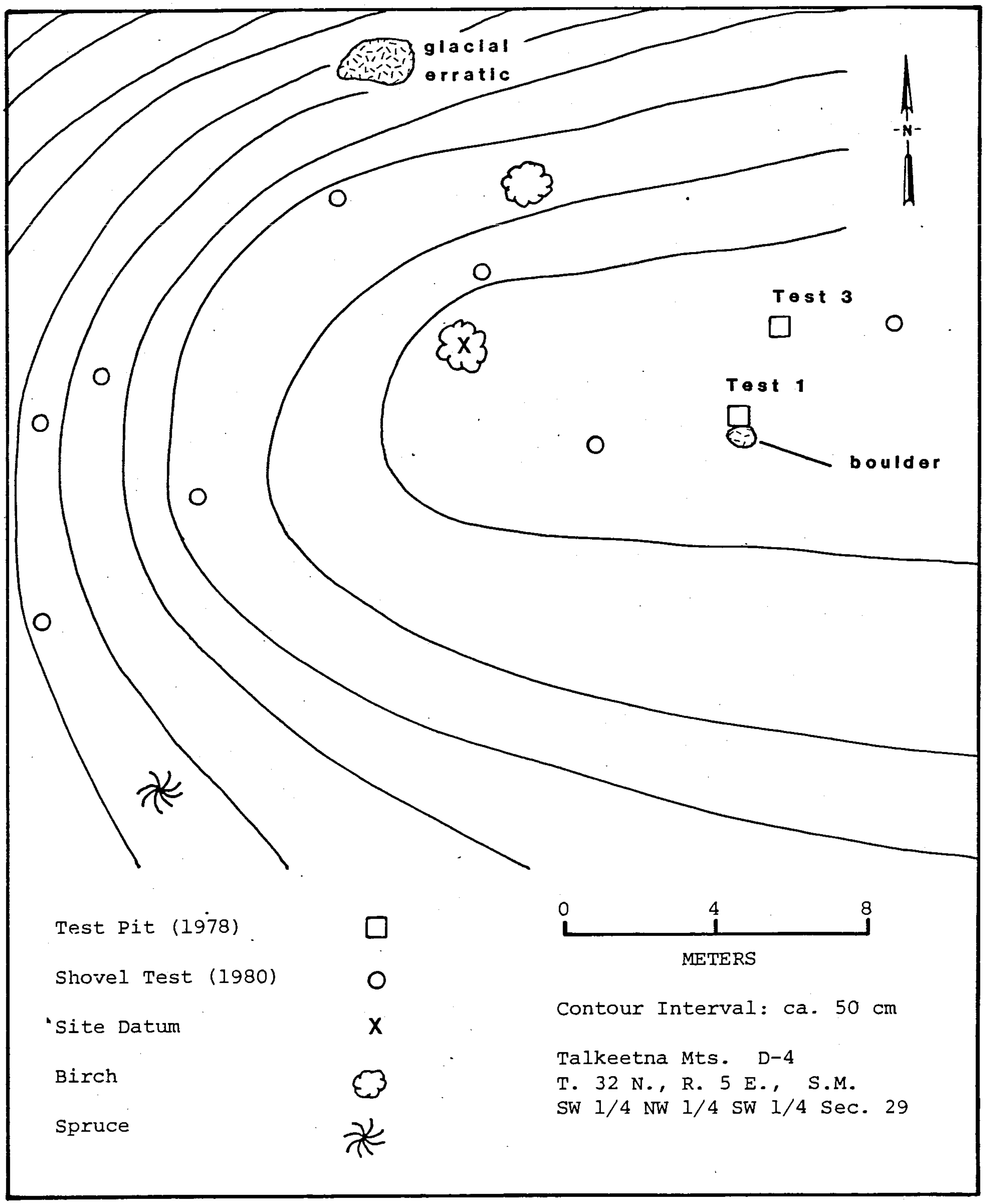


Figure 6. Site Map TLM 017

(iv) <u>AHRS Number TLM 018, Accession Numbers UA78-60, UA80-165, UA81-283</u>

Area: ca. 4 km Northeast of Tsusena Creek Mouth
Area Map: Figure 157; Location Map: Figure 290
USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 421550 Northing 6967450

Latitude 62°49'50" N., Longitude 148°32'20" W.

<u>T. 32 N., R. 5 E., Seward Meridian</u>
Sec. 28, NE¼SW¼SW¼

Site Map: See Section 4, Figure 109

<u>Setting</u>: The site is located at an elevation of approximately 716 m asl (2350 feet) and is 3 km east of Tsusena Creek and 800 m north of the Susitna River (Figure 157). Situated on a discrete kame which is a part of a 1 km long east-west trending ridge, the site is located approximately 800 m east of a 1978 Corps of Engineers Camp on one of the highest points of relief along this ridge. The site is exposed in a blowout on the north and east slopes just below the top of the easternmost knoll. A terrace is located at the base of the slope to the north of the knoll approximately 15 m to 30 m lower than the elevation of the site. Beyond this terrace a glacially scoured plain capped by drift extends for several km to the northeast. West of the site the slope descends for approximately 50 m until it levels out and forms the portion of the main ridge extending westward. The highest elevation on this ridge is 729 m asl (2391 feet) which is located approximately 400 m west-southwest of the site (Figure 290). To the north and east the ground slopes continuously, affording an expansive view of the broad plain extending northeast of the site which is characterized by kettle and kame topography. A concentration of kettle lakes is situated approximately 2 km to 4 km to the northeast. The closest of these lakes, approximately 8 hectares in size and 1.5 km distant, is in view,

as is a small .5 hectare pond located approximately 800 m to the northeast. To the southeast the ground is fairly flat for approximately 40 m to the edge of the Susitna Valley shoulder where it begins to slope steeply down towards the river located approximately 274 m below the site. Direct access to the Susitna River is difficult because the steep valley walls are sheer bedrock cliffs in places. Vegetation at the site consists of scattered black spruce, shrub and dwarf birch, and includes several varieties of low berry bushes, moss, and lichen. Large blowouts occur on the northern slope of the knoll where much of the ground surface is deflated. In the lower drainages and on the plain to the north, open white and black spruce forest occurs with muskeg, denser black spruce stands are in the poorly drained areas, and white spruce and shrub birch are located on the better drained ground. Much of the plain extending to the northeast is moist tundra and ice stagnation terrain.

Reconnaissance Testing: This site was the last and the most extensive of the prehistoric sites identified by Mr. Glenn Bacon during his 1978 preliminary survey (Bacon 1978b:28). The site is partly exposed by blowouts covering an area of approximately 10 m by 20 m on the north and northeast slopes near the top of a low knoll (Figure 109). Bacon surface collected 29 flakes from these blowouts in 1978 and excavated an additional 138 flakes from a 20 by 20 cm test at the northern edge of one of the blowouts. The subsurface flakes were excavated from a depth of 20 cmbs and appeared to be associated with a buried paleosol (Bacon 1978:28). A single tool was surface collected at the site in 1978. This is a complete bifacially flaked triangular basalt projectile point exhibiting a ground concave base (UA78-60-1). Two distinct lithologies are represented by the artifacts from the site: a fine grained black basalt and a low-grade blue-gray chert (Bacon 1978b:28).

The site was revisited in 1980 and three additional artifacts were surface collected at the site. These include the medial portion of a black basalt biface (UA80-165-1), a blue-gray chert flake with what appears to be a facet resulting from removal of a blade or blade-like flake (UA80-165-2), and a blue-gray chert burin spall (UA80-165-3). A high density of flakes was observed in blowouts at the site. Basalt flakes are concentrated on the southwest side of the knoll and chert flakes on the northwest side with a lower concentration of flakes between the two main scatters (Figure 109). Some flakes were observed downslope to the northeast of the main blowout, but whether the site extends further in that direction or the flakes were transported downslope in that direction by soil movement is not known.

(v) AHRS Number TLM 026, Accession Number UA80-73, UA81-218

Area: Across from Mouth of Goose Creek, Survey Locale 45
Area Map: Figure 162; Survey Locale Map: Figures 216, 217
USGS Map: Talkeetna Mts. C-1, Scale 1:63,360

Site Location: UTM Zone 6 Easting 478150 Northing 6945900

Latitude 62°38'40" N., Longitude 147°25'35" W.

T. 30 N., R. 11 E., Seward Meridian
Sec. 32, NW¼NE¼SE¼

Site Map: Figure 7

Setting: The site is located on the north side of the Susitna River directly across from the mouth of Goose Creek (Figure 216). It is situated 677 m asl (2222 feet) at the southwestern point of a 1.5 km long peninsula. At this point the Susitna forms a tight bend, flowing almost completely around the site. Two abandoned stream channels cut across the point, one immediately northeast of the site and the other approximately 900 m northeast in the vicinity of site TLM 042. The site is 46 m above the Susitna with the point increasing in elevation to the northeast to 762 m asl (2500 feet). The view to the northeast is excellent for 3 km downriver and 4 km upriver. The view across the river encompasses approximately 1 km of the Goose Creek drainage. In this area the Susitna is wide and shallow with gravel bars and islands in sight. Several small kettle lakes are located 2 to 3 km northeast of the site and are easily accessible from it. The site area is level and open with scattered spruce, willow, Labrador tea, blueberry, mosses and lichens forming the major vegetation. The slopes leading down to the Susitna are steep, eroded, and poorly vegetated. Spruce are present at the bottom of the slope and increase in density with proximity to the river.

Reconnaissance Testing 1980: The site consists of isolated surface artifacts and a possible hearth, or other feature, all of which are exposed at the top of an eroded bank overlooking the Susitna River (Figure 7). A total of seven shovel tests and three test pits were excavated at the site in 1980. All observed surface artifacts were collected from the exposure and include an endscraper (Artifact Photo B-a), flakes, and two river cobbles observed out of geologic context and possibly the partial remains of a cultural feature. All of these artifacts were found on active erosional surfaces. Intensive surface reconnaissance did not locate any in situ artifacts and nine tests (Figure 7) revealed no subsurface artifacts. Two large river cobbles in the bluff exposure overlooking the river to the northwest were located in silt deposits where no other gravels or cobbles were present. Their position in a silt matrix may be the result of human activity. In an attempt to determine if these cobbles were part of a hearth, or other feature, the bank was troweled back (shovel test 9). No other cobbles, charcoal, or cultural material was observed while preparing the bank to draw a soil profile. However, two volcanic ash samples (UA80-73-5 and 6) were collected between 22 and 35 cmbs.

Collected Artifact Inventory

1 Light reddish-brown chert endscraper
1 Black chert flake
1 Light brown-white chert flake
1 Gray rhyolite flake
2 Cobbles

Reconnaissance Testing 1981:

Additional intensive surface reconnaissance and shovel testing were conducted prior to systematic testing because no subsurface or in situ cultural material had been found at the site. All material found was on the eroded bluff edge. Five people conducted 1 hour of intensive surface reconnaissance at the site without finding any additional surface material. Eighty-five shovel tests were dug, however only one shovel test, located 103°, 31 m from the 1980 site datum produced possible cultural material; 134 calcined bone fragments. This test was 20 cm deep--the bone occurred above 9 cmbs and seemed to be associated with a dark A horizon just below the humic mat. This test was ca. 4 m in from the bluff edge. No lithic material was found but some small charcoal fragments were present just below the humus but charcoal was observed in many of the eighty-five shovel tests just below the humus and it may be of material origin.

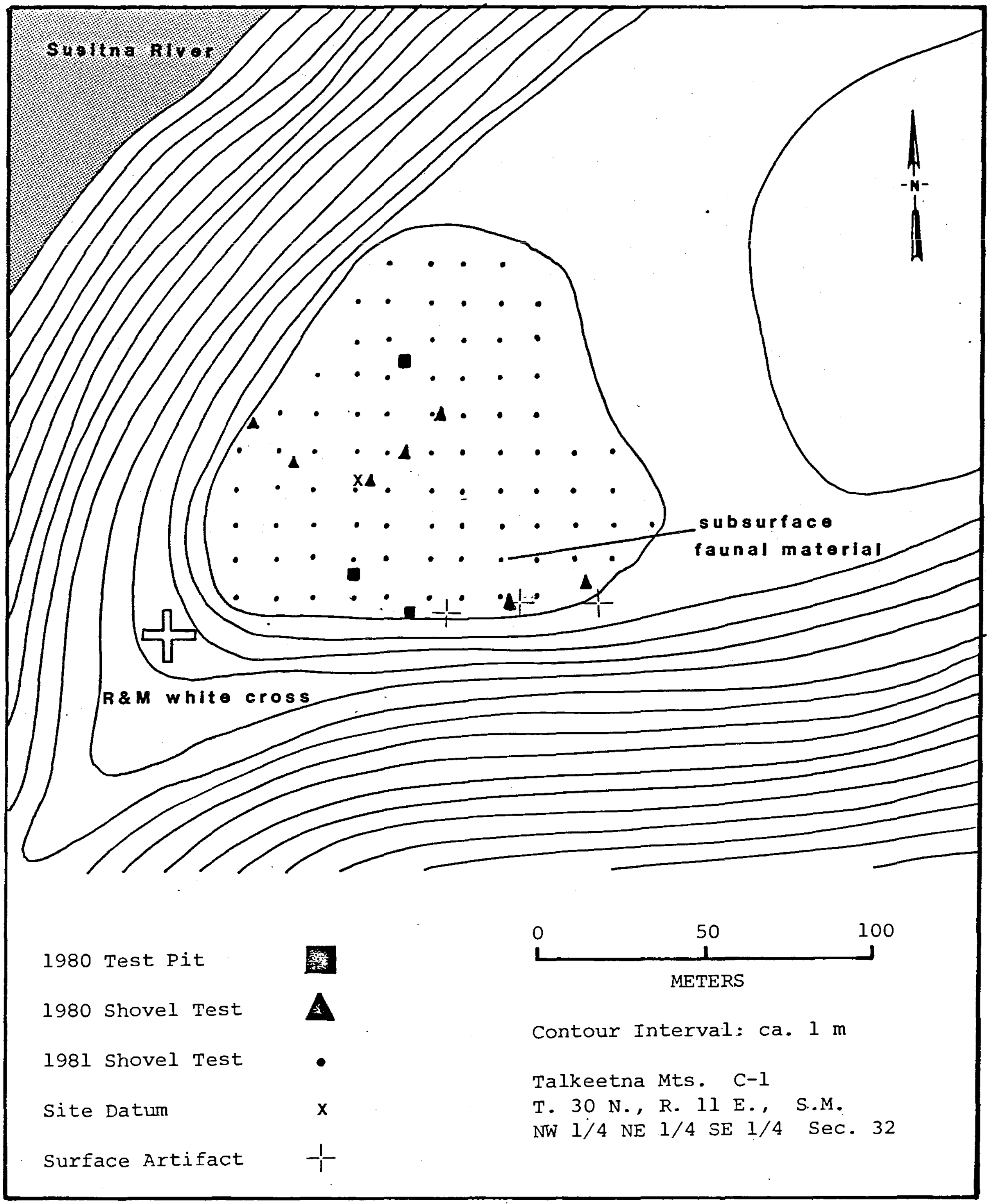


Figure 7. Site Map TLM 026.

(vi) AHRS Number TLM 033, Accession Number UA80-80, UA81-223

Area: ca. 4 km Downriver from Kosina Creek Mouth, Survey Locale 31

Area Map: Figure 158; Survey Locale Map: Figures 199, 200

USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 448250 Northing 6961950

Latitude 62°47'10" N., Longitude 148°00'52" W.

T. 31 N., R. 8 E., Seward Meridian

Sec. 7, SE¼SE¼SE¼

Site Map: See Section 4, Figure 115

Setting: The site is near the outlet of a small lake located 400 m north of the Susitna River approximately 4 km downriver from the mouth of the Kosina Creek (Figure 199). Situated on the point of a flat terrace approximately 200 m northeast of the mouth of the outlet stream, the site overlooks the stream drainage to the northwest and west. Located at an elevation of 549 m asl (1800 feet), the site is approximately 30 m higher than the river and higher than most of the terrain in the immediate vicinty. The site is at the western point of a continuous terrace which lies south and parallel to the lake outlet stream and extends approximately 400 m northeast toward the lake outlet. The level, open, well-drained edge of the terrace forms a natural route for pedestrian travel from the lake to the mouth of the outlet stream. A second lower terrace exists approximately 20 m below and south of the site and there is evidence of additional terraces between the site and the river. The view from the site is best to the west and northwest overlooking the next lower terrace and the stream drainage, although the stream and its confluence with the Susitna are not visible. Visibility in other directions is restricted by topography and trees. The lake to the east of the site is not visible although it and the stream are easily accessible from the site. The immediate area around the site is relatively flat and open with scattered spruce and birch growing on the terrace edge. Ground vegetation consists of a mat of lichens and mosses with some low bush cranberry and dwarf willows. Spruce trees increase in number in all directions from the site. High brush, aspen, and birch also become dense away from the terrace edge and the slopes below the terrace. With respect to known sites in the upper Susitna Valley this site location is unique due to its proximity to lake outlet and stream confluence and its position on a point of high relief overlooking a stream drainage and lower terrace.

Reconnaissance Testing: There is no surface indication of a site at this location, however a shovel test 1 exposed a brown chert biface fragment (UA80-80-1; Artifact Photo D-e) at the contact between two silt units 13 cmbs. Three test pits were excavated along the terrace edge near the point of the terrace (Figure 115) but no further cultural material was recovered.

Collected Artifact Inventory

1 Dark brown chert biface fragment

(vii) AHRS Number TLM 039, Accession Number UA80-146, UA81-277

Area: ca. 4 km Northeast of Watana Creek Mouth, Survey Locale 27

Area Map: Figure 158; Survey Locale Map: Figure 192

USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 439800 Northing 6967300

Latitude 62°49'57" N., Longitude 148°10'58" W.

T. 32 N., R. 7 E., Seward Meridian

Sec. 29, SW¼NW¼SE¼

Site Map: See Section 4, Figure 119

Setting: The site is located on the western margin of an 18 hectare lake approximately 4 km east of the mouth of Watana Creek on the north side of the Susitna River (Figure 192). Situated at an elevation of 610 m asl (2000 feet) on top of a knoll at the southern end of the lake where the shoreline curves to the southwest, the site is located at the highest point on the perimeter of the lake. This knoll is at the northeast end of an 800 m long discrete ridge system oriented northeast to southwest. The knoll rises approximately 20 m above the lake as well as most of the surrounding terrain. The view from the top of the knoll is panoramic, encompassing the entire lake and surrounding accessible terrain up to a distance of approximately 3 km. It is the only location on the lake from which the entire lake is visible. This lake is the largest one within a 10 km radius and is a natural attraction for wildlife and waterfowl. Moose (*Alces alces*), black bear (*Ursus americanus*), and grizzly bear (*Ursus arctos*) were observed around the lake margin and both grayling (*Thymallus arcticus*) and trout (*Salmo* spp. and *Salvelinus* spp.) are in the lake. The Susitna River is 1.3 km southwest at its closest point and approximately 152 m lower in elevation. An outlet stream drains the north end of the lake. Access to Watana Creek, approximately 2.5 km distant, along this stream is relatively easy. Site TLM 048 is also located on this lake, at the northern end near the outlet stream. Vegetation at site TLM 039 consists of scattered spruce, birch, and dwarf willow with ground vegetation including blueberry, bearberry, Labrador tea, wild rose, sphagnum moss, and lichen. Exposed soil and rock are found at the crest of the knoll on the eastern side where deflation is most pronounced. Surrounding vegetation is generally similar except that black spruce and birch are denser, especially closer to the lake margin, and willows are much denser in less well drained areas between knolls and ridges.

Reconnaissance Testing: The site is comprised of a subsurface lithic scatter. No cultural material was observed on the surface. A total of three test pits were excavated at the site, test pit 1 approximately 5 m southeast of the highest point of the knoll, test pit 2 at the highest point of the knoll, and test pit 3 on the crest of a ridge line approximately 10 m southeast of the highest point of the knoll (Figure 119). Only test pit 1 revealed subsurface cultural material. A total of 14 fine grained quartzite flakes and a primary burin spall of black chert (UA80-146-1; Artifact Photo F-a) were excavated between 3 to 16 cmbs. Preliminary analysis suggests that the site is multicomponent with a possible upper component consisting of very small fine grained dark quartzite flakes occurring in or just under the humus layer at a depth of 3 to 6 cmbs and a possible lower component consisting primarily of larger fine grained light grey quartzite flakes occurring between 12 to 16 cmbs. The deeper flakes appear to be associated with the contact between a light brown silt and a gray leached silt. The black chert primary burin spall (UA80-146-1; Artifact Photo F-a) was found at a depth of 12 cmbs associated with several flakes. Two sterile silt units may separate the two possible components, however, further testing is required to determine if there are two separate components or if cryoturbation or solifluction may be responsible for the multicomponent appearance of the site.

Collected Artifact Inventory

4 Dark quartzite flakes
10 Light gray quartzite flakes
1 Black chert burin spall

(viii) AHRS Number TLM 040, Accession Number UA80-147, UA81-226

Area: ca. 8 km Downriver from Kosina Creek Mouth, Survey Locale 29

Area Map: Figure 158; Survey Locale Map: Figure 194

USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 445050 Northing 6963350

Latitude 62°47'57" N., Longitude 148°04'35' W.

T. 31 N., R. 7 E., Seward Meridian

Sec. 11, NE¼NE¼NE¼

Site Map: See Section 4, Figure 121

Setting: The site is located at an elevation of 518 m asl (1700 feet) at the point of highest relief on an old river terrace on the south margin of the Susitna River, approximately 8 km downriver from the mouth of Kosina Creek (Figure 194). This terrace is approximately 80 m long by 10 m wide, and is situated approximately 30 m west of the Susitna River. It is approximately 20 m above the Susitna and primarily oriented northwest-southeast parallel to the river. The site is approximately equidistant from either end of this terrace remnant. Degree of slope varies downward in all directions from the site with a maximum slope of 25° to the east and a minimum of 5° to the north. The view is obstructed in all directions by vegetation although the Susitna River is visible to the north, east, and south through the trees. With lower vegetation the view would be panoramic. Access to the Susitna, although possible, is less than ideal due to bedrock exposures and steep alluvial slopes, however, access may have been easier in the past when the river flowed at a higher elevation. A small stream .5 m wide, which drains a marshy area to the northwest, is approximately 50 m south of the site. A lower alluvial terrace to the south is located approximately 5 m below and parallels the upper terrace. These two terraces appear to be part of a larger terrace system visible to the northwest and southeast for approximately 1 km in either direction from the site. Vegetation in the vicinity of the site is lowland spruce-hardwood forest with scattered birch and spruce near the site, however the site itself is clear of trees and is covered by sphagnum moss, lichens, grasses, Labrador tea and low bush cranberry. Surrounding vegetation is similar except tree cover is denser, especially west of the site where a dense stand of black spruce occupies what appears to be an old river channel.

Reconnaissance Testing: No surface artifacts were observed at the site. Test pit 1 revealed a red-brown chert blade-like flake with retouch on two margins (UA80-147-1; Artifact Photo F-b) and a tuffacious rhyolite flake. The chert blade-like flake came from either a burned soil or a medium brown silt at a depth of 5 to 22 cmbs. A total of two test pits were excavated at the site (Figure 121). The initial shovel test was enlarged into test pit 1 and a second test (test pit 2) was excavated 4.1 m northwest of test pit 1 (Figure 121). No additional artifacts were recovered from either test, however, charcoal was present in the northeastern corner of test pit 1 at a depth of 27 to 34 cmbs. Not enough charcoal was present to warrant collection for radiometric dating and it could not be ascertained whether the artifacts recovered from test pit 1 were associated with the charcoal. A possible ash layer which included a pocket of charcoal was also noted at a depth of 27 to 34 cmbs in the northeastern corner of test pit 1. The possibility of recovering additional artifacts which may be associated with datable organics make further testing at this site desirable.

A charcoal sample collected during systematic testing (6-15-81-3) produced a date of 1320 ±110 years: A.D. 630 (DIC 2248) (See Chapter 4).

Collected Artifact Inventory

1 Red-brown chert blade-like flake with retouch on two margins
1 White tuffacious rhyolite flake

(ix) AHRS Number TLM 042, Accession Number UA80-149, UA81-230

Area: Across from Mouth of Goose Creek, Survey Locale 45

Area Map: Figure 162; Survey Locale Map: Figures 216, 217

USGS Map: Talkeetna Mts. C-1, Scale 1:63,360

Site Location: UTM Zone 6 Easting 478550 Northing 6946400 (Locus A)

Easting 478750 Northing 6946450 (Locus B)

Latitude 62°38'58" N., Longitude 147°25'00" W. (Locus A)

Latitude 62°38'59" N., Longitude 147°24'52" W. (Locus B)

T. 30 N., R. 11 E., Seward Meridian

Sec. 33, NW¼SW¼NW¼ (Locus A)

Sec. 33, NE¼SW¼NW¼ (Locus B)

Site Map: See Section 4, Figure 123, Locus A; Figure 124, Locus B

Setting: The site, comprised of two loci (A and B), is located on the north side of the Susitna River on a 1.5 km long peninsula directly across from the mouth of Goose Creek (Figure 216). Located at an elevation of 686 m asl (2250 feet), both loci are situated on the southeastern crest of a high river terrace which forms the peninsula, or point, around which the Susitna River makes a tight bend, changing its general direction from southwest to northwest. Eroded and exposed bluffs of 30° to 40° form the northwest and southeast banks of this terrace, however, the top is relatively level and varies between 100 m to 300 m in width.

Locus A: Locus A, located approximately 900 m northeast of the point of the peninsula, is situated on the southeastern edge of the northeast to southwest trending terrace and overlooks a crescent-shaped alluvial terrace to the southeast which is approximately 46 m lower in elevation. Locus A is on the deflated crest of a relatively flat continuous terrace edge at a point where there is a 4 m drop resulting in a discrete point of relief overlooking both the relatively flat .5 km of peninsula above the 686 m asl elevation (2250 feet) to the southwest and the lower alluvial terrace to the southeast. The view from the locus is primarily to the southeast and approximately 1 km of the Susitna River (upriver) is in view. The view downriver is blocked by the peninsula itself. At its closest point the Susitna River is 300 m southeast of locus A and access is fairly easy. Locus A appears to be oriented toward the alluvial terrace directly below which is entirely in view and easily accessible. Vegetation immediately northwest of locus A, on the level terrace, is composed of black and white spruce, alder, dwarf birch, willow, and various low bush berries in addition to moss and lichen. The locus itself is relatively open and well drained with no vegetation restricting the view to the southeast. The terrace level below the site is poorly drained with dense black spruce and areas of muskeg and marsh containing sphagnum moss, sedges, and grasses.

Locus B: Locus B, approximately 150 m east-northeast of locus A, is also located on the edge of the terrace overlooking the same lower alluvial terrace which, from locus B is to the south and approximately 60 to 70 m lower. At locus B the terrace edge is oriented east-west having curved eastward from locus A. Locus B is located at the highest point on the terrace approximately 50 m west of a low saddle (possibly a former river channel) to the east of which the terrace terminates and the terrain rises steeply to the northeast to an elevation of 762 m asl (2500 feet). To the southwest the top of the terrace drops slightly in elevation towards locus A. The view from locus B, like that of locus A, is primarily to the south and southeast overlooking the lower alluvial terrace and the Susitna River approximately 300 m distant.

Like locus A, locus B appears to be oriented towards the immediately accessible lower alluvial terrace and river margin to the south and southeast. Ground vegetation at locus B is similar to that of locus A. At locus B a single large white spruce (the site datum) dominates the other vegetation. Spruce are dense on the descending slopes east of the locus and also on the top of the terrace to the west. Willows and other hardwood species are the predominant vegetation on the slopes surrounding the north and west sides of the open muskeg and marsh areas on the lower alluvial terrace.

Reconnaissance Testing:

Locus A: At locus A both surface and subsurface cultural material was found. Approximately 60 siltstone and basalt flakes were exposed in the eroding bluff edge encompassing an area approximately 2 m by 4 m (Figure 123) on the steep slope below the terrace edge. Approximately half of the surface artifacts were collected from this eroded surface. These included a siltstone biface fragment (UA80-149-2; Artifact Photo F-c), a basalt biface fragment (UA80-149-32), and two medial fragments of siltstone blade-like flakes (UA80-149-3 and 4; Artifact Photo F-d, e). In addition, 21 siltstone and 2 basalt flakes were surface collected. A single siltstone flake was surface collected 9.5 m below the exposure where it had apparently been transported by slumping or solifluction. Apparently erosion has transported many, if not all, of the surface artifacts downslope from the edge of the terrace. Two test pits were excavated at the top of the slope in an attempt to locate the origin of the artifacts found downslope (Figure 123). Test pit 2, approximately 5 m from the edge of the slope, did not reveal any subsurface cultural material, but test pit 1, located at the edge of the terrace, revealed 5 flakes and two fragments of the distal end of a blade-like flake at a depth of 0 to 3 cmbs, in and just under the humus at the contact between the humus and a red-gray mottled silt. Apparently erosion has exposed only part of the activity area and further testing may reveal additional artifacts in stratigraphic context.

Locus B: Locus B, also consisting of both surface and subsurface cultural material, is very similar to locus A in that surface artifacts are exposed along the eroding bluff edge on a 35° slope just below the edge of the terrace (Figure 124). Artifacts surface collected from locus B include a side-notched basalt projectile point base (UA80-149-31; Artifact Photo F-g), a chert flake retouched along one margin (UA80-149-30; Artifact Photo F-f), a basalt flake core fragment, and a dark gray chert flake.

Five basalt flakes were observed on the surface but not collected. Flakes were observed on the ground surface outside the perimeter of the eroding bluff edge (Figure 124) and apparently slumping and erosion have disturbed the original context of the surface artifacts. Two subsurface tests were excavated north of the eroding bluff edge and at a slightly higher elevation (Figure 124). Test pit 2 did not reveal cultural material but test pit 1 produced a basalt endscraper fragment (UA80-149-34; Artifact Photo F-h) at a depth of 15 to 16 cmbs in a light brown silt. A possible paleosol containing charcoal and organics occurs at a depth of 16 to 20 cmbs. A possible volcanic ash, not apparent in the east wall profile, was recorded at a depth of 5 to 10 cmbs in the west wall of test pit 1.

Charcoal sample (UA81-230-121) collected during systematic testing produced a modern date (DIC 2282) (See Chapter 4).

Collected Artifact Inventory

Locus A:

1 Black basalt biface fragment
1 Light brown siltstone biface fragment
2 Gray siltstone blade-like flake fragments (medial sections)
7 Gray siltstone flakes
16 Light brown siltstone flakes
2 Black basalt flakes
2 Gray siltstone blade-like flake fragments (articulating)
5 Gray siltstone flakes

Locus B:

1 Black basalt flake core fragment
1 Gray chert flake
1 Black basalt side-notched projectile point base
1 Dark gray retouched chert flake
1 Black basalt endscraper fragment

(x) AHRS Number TLM 043, Accession Number UA80-150, UA81-221

Area: ca. 3 km Downriver from Watana Creek Mouth, Survey Locale 21

Area Map: Figure 158; Survey Locale Map: Figure 186

USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 432800 Northing 6968100

Latitude 62°50'20" N., Longitude 148°19'10" W.

T. 32 N., R. 6 E., Seward Meridian

Sec. 27, SE¼NW¼NW¼

Site Map: See Section 4, Figure 127

Setting: The site is located on a river terrace on the north side of the Susitna River, 200 m west of a tributary creek that joins the Susitna River from the north, approximately 3 km downriver from the mouth of Watana Creek (Figure 186). The site is approximately 400 m north of the Susitna River, between 488 m and 518 m asl (1600 to 1700 feet), and is approximately 23 m above the river. The orientation of the terrace is northwest-southeast and the site is located on a relatively flat surface approximately equidistant from the northeast and southwest edges. A higher ridge system is located to the north, northwest, and west of the site which is situated approximately 20 m from the point where these higher slopes meet the terrace. The site area is open but the view is restricted to approximately 30 m in all directions by trees which limit visibility to the immediate clearing. Both the Susitna River and the unnamed tributary creek to the east are easily accessible from the site and the mouth of the tributary lies approximately .5 km to the southeast. The clear water tributary is fast but shallow, draining several lakes northwest and northeast of the site. Vegetation on the site consists of willow, Labrador tea, blueberry, and sphagnum moss with black and white spruce scattered around the perimeter. Birch is present on the slopes of the terrace and birch and spruce become denser in all directions from the site with the understory becoming thicker closer to the creek and river.

Reconnaissance Testing: There was no cultural material observed on the surface at the site location. A shovel test expanded into test pit 1 revealed a dense concentration of bone fragments at a depth of 7 to 11 cmbs in silty sand directly below the humus. A total of 48 long bone fragments, 1 rib fragment, 3 caribou (*Rangifer tarandus*) phalanges, and approximately 380 very small bone fragments were recovered from test pit 1. A dark stain immediately below the sediment containing the faunal material appears to be a paleosol. Two additional test pits were excavated in the immediate vicinity of test pit 1 (Figure 127, test pits 2 and 3). No additional faunal material was recovered from test pit 2 and only one bone fragment, found 11 cmbs, was recovered from test pit 3. None of the three subsurface tests at the site revealed lithic cultural material and no charcoal was observed in the tests.

Collected Faunal Material Inventory

Test pit 1, 7-11 cmbs:

3 phalanges, distal portions, calcined, large mammal, caribou (*Rangifer tarandus*)
4 long bone fragments, calcined, large mammal
43 long bone fragments, calcined, medium-large mammal
1 rib fragment, calcined, medium-large mammal
1 long bone fragment, heavily burned, medium-large mammal
ca. 380 small fragments, calcined, small-large mammal

Test pit 3, 11 cmbs:

1 small fragment, calcined, small-large mammal

(xi) <u>AHRS Number TLM 048, Accession Number UA80-155, UA81-278</u>

Area: ca. 4 km Northeast of Watana Creek Mouth, Survey Locale 27
Area Map: Figure 158; Survey Locale Map: Figure 192
USGS Map: Talkeetna Mts. D-3, Scale: 1:63,360

Site Location: UTM Zone 6 Easting 439650 Northing 6967950

Latitude 62°50'18" N., Longitude 148°11'10" W.

<u>T. 32 N., R. 7 E., Seward Meridian</u>
Sec. 29, SE¼NE¼NW¼

Site Map: See Section 4, Figure 131

<u>Setting</u>: The site, at an elevation of approximately 640 m asl (2100 feet), is located at the northern end of an 18 hectare lake approximately 3 km east of Watana Creek and 1.1 km north of the Susitna River (Figure 192). Situated at the top of a 20 m high discrete rounded knoll, approximately 100 m east of the lake's outlet stream, the site is located at the point of highest relief on the relatively flat summit at the northwestern end of the knoll. The knoll itself is approximately 100 m long by 40 m wide and is oriented to the northwest. The view from the site is panoramic and varies in distance from .5 km to 1 km depending on topography. To the west and south, the view encompasses the outlet stream and the entire northern margin of the lake and to the northeast it includes a low marshy area where the lake outlet stream joins a small slow-moving creek. Access to the lake, outlet stream, and all of the immediate surrounding terrain is excellent and access to Watana Creek would be fairly easy by following the outlet stream which joins Watana Creek approximately 2.6 km northwest of the site. The knoll upon which the site is located is one of several knolls around the lake which offers excellent views of the lake and the surrounding kettle and kame topography. Site TLM 039 is located at the southeastern end of the lake on the highest knoll on the lake margin (Figure 192). The

immediate vicinity of the site is well drained with ground vegetation consisting primarily of dwarf birch, Labrador tea, low bush cranberry, crowberry, and a deep mat of moss and lichen. A few scattered white spruce and birch occupy the top of the knoll. Brush on the slopes of the knoll is higher and much denser than on the relatively open summit. The surrounding terrain varies from well drained ridges and knolls with white spruce, birch, and high brush to low marshy areas with muskeg, sphagnum moss, grasses, and dense black spruce.

Reconnaissance Testing: No cultural material was observed on the surface at the site location. A total of three shovel tests and two test pits were excavated on the summit of the knoll (Figure 131). Shovel tests 1 and 2 did not produce cultural material, however, shovel test 3, expanded into test pit 1, produced a gray chert biface (UA80-155-1; Artifact Photo H-g) between 15 to 20 cmbs associated with a dark gray volcanic ash. Glacial drift was encountered below the ash. An ash sample (UA80-155-2) was collected. A dark organic lens, possibly a paleosol, was present directly above the ash between 12 to 17 cmbs. Test pit 2, located 6 m northwest of test pit 1, did not reveal additional cultural material. The relatively flat summit of this knoll makes available a large surface area which could have been utilized and the site may be more extensive than initial testing indicates.

Collected Artifact Inventory

1 Gray chert biface
1 Ash sample

(xii) <u>AHRS Number TLM 050, Accession Number UA80-157, UA81-229</u>

Area: ca. 8 km Upriver from Watana Creek Mouth, Survey Locale 29a
Area Map: Figure 158; Survey Locale Map: Figure 195
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 445300 Northing 696365

Latitude 62°48'05" N., Longitude 148°04'20" W.

<u>T. 31 N., R. 7 E., Seward Meridian</u>
Sec. 1, NW¼SW¼SW¼

Site Map: See Section 4, Figure 133

<u>Setting</u>: The site is located at 518 m asl (1700 feet) near the mouth of an unnamed creek which joins the Susitna River from the northeast, approximately 8 km upriver from the mouth of Watana Creek (Figure 195). Situated on a small alluvial bench on the east bank of the 4 meter wide creek, the site is approximately 40 m upstream from the mouth of the creek and 4 m east of the creek margin. This small bench, the only relatively flat area in an otherwise irregular ground surface, makes an excellent camping place overlooking the creek. The bench is approximately 2 m above the creek and 4 m above the Susitna. The site is in an area of low topographic relief in relation to the surrounding terrain which slopes steeply upward to the northeast towards a high plateau (Survey Locale 30, Figures 196, 197, 198) approximately 3 km distant, where a total of seven sites have been identified to date. A ridge crest ascends to the west-northwest from the immediate vicinity of the site, and appears to be the easiest access route between the river and the higher terrain to the northeast. The creek near the site is fast and shallow and emerges from a narrow bedrock canyon containing cascades and falls upstream from the site. The view is limited to the immediate vicinity of the site and encompasses the creek and the opposite bank for a distance of 30 m to 40 m. Approximately 100 m of the north bank of

the Susitna River is visible to the southwest, although the view is largely obstructed by trees.

Even with less dense vegetation the view would be restricted by topography to less than 100 m except to the southwest across the relatively shallow river which is approximately 200 m wide at this location and contained numerous forested islands. Vegetation is dense in the immediate vicinity of the site and consists of large white spruce, birch, and alder with low bush and high bush cranberry, wild rose, Labrador tea, blueberry, equisitum, and various grasses. Surrounding vegetation is similar but includes cottonwood and willow along the bank of the Susitna River and greater concentrations of white and black spruce to the southeast toward the river.

Reconnaissance Testing: No cultural material was observed on the surface at this site, however, a shovel test 1 revealed thermally fractured rock approximately 10 cmbs associated with burned bone and charcoal. This shovel test was expanded to test pit 1 (Figure 133) which revealed a concentration of charcoal, burned bone, and thermally fractured rock between 14 to 30 cmbs between the humus and a yellow sand. A lens of light brown silt also containing bone occurs approximately 15 cmbs within the charcoal concentration and it appears that more than one activity area may be present at the site. Hearth #1 occurs between 13 to 15 cmbs and is located between the humus and the light brown silt. A radiocarbon determination of 280 ± 110 years: A.D. 1670 (DIC-1905) was obtained on a charcoal sample (UA80-157-3) from this hearth collected betweem 18 to 27 cmbs above the light brown silt. Hearth #2 located at a depth of 16 to 30 cmbs is located between the light brown silt and a culturally sterile yellow sand. A concentration of burned bone, charcoal, and thermally cracked rock are associated with this hearth. Another charcoal sample (UA80-157-1) collected from hearth #2 between 28 and 35 cmbs was considered too small, after cleaning, to give a reliable date, but was run and produced a date of 280 ± 245 years: A.D. 1670 (DIC-1904). A third charcoal sample (UA80-157-2), a mix of charcoal from hearth #1 and hearth #2 was not submitted for radiocarbon dating. The presence of two hearths was not recognized until the north wall of the test was prepared for a soil profile and consequently part of the faunal material from the two hearths was mixed. Test pit 1 was then extended 17 cm west and additional faunal material and charcoal was collected. In addition to 6 long bone fragments and 17 small bone fragments recovered from the initial shovel test, test pit 1 produced 2 skull fragments, 2 rib fragments, 3 caribou (Rangifer tarandus) phalanges, 3 metatarsal fragments (1 bird, 2 caribou Rangifer tarandus), 1 tibia fragment (possibly caribou Rangifer tarandus), 54 long bone fragments, and about 227 small fragments. One of the bone fragments (Lot UA80-157-7) recovered between 17 to 30 cmbs exhibits a distinct cut mark. Other than 34 thermally fractured rock fragments, no lithic material of cultural origin was found in test pit 1. Two additional test pits (test pits 2 and 3) excavated to the northeast and southeast of test pit 1 (Figure 133) did not reveal additional cultural material. Only part of the hearths exposed by test pit 1 were excavated and additional testing at the site may clarify the relationship of the subsurface features at the site.

Collected Faunal Material Inventory

Shovel test 1 (before expanding into test pit 1), 0-29 cmbs:

5 Long bone fragments, calcined, medium-large mammal
1 Long bone fragment, heavily burned, medium-large mammal
17 Small fragments, calcined, small-large mammal

Test pit 1, 14-30 cmbs:

1 Skull fragment, large mammal
1 Skull fragment, calcined, medium-large mammal
1 Rib fragment, medium-large mammal
1 Rib fragment, heavily burned, medium-large mammal
1 3rd phalanx, calcined, large mammal, caribou (Rangifer tarandus)
1 2nd phalanx, proximal 1/5, calcined, large mammal, caribou (Rangifer tarandus)

1 1st phalanx, proximal 1/3), calcined, large mammal, caribou (Rangifer tarandus)

1 Metatarsal fragment, distal 1/10, calcined, bird

1 Long bone fragment, heavily burned and calcined, medium-large mammal

4 Long bone fragments, medium-large mammal

6 Long bone fragments, heavily burned, medium-large mammal

2 Long bone fragments, 1 rodent/canid gnawed, calcined, medium-large mammal

3 Long bone fragments, 1 rodent/canid gnawed, calcined, medium-large mammal

ca. 100 Small fragments, calcined, small-large mammal

Test pit 1, West 17 cm of test, 18-27 cmbs:

7 Fragments, 1 calcined, small-large mammal

22-30 cmbs:

2 Metatarsal fragments, proximal 1/6, proximal 1/10, heavily burned, large mammal, caribou (Rangifer tarandus)

1 Tibia fragment, proximal 1/20, heavily burned, large mammal, possibly caribou (Rangifer tarandus)

5 Long bone fragments, heavily burned, medium-large mammal

1 Long bone fragment, calcined, medium-large mammal

ca. 20 Small fragments, calcined, small-large mammal

(xiii) AHRS Number TLM 058, Accession Number UA81-204

Area: ca. 3 k Downriver from Watana Creek Mouth, Survey Locale 21
Area Map: Figure 158; Survey Locale Map: Figure 186
USGS Map: Talkeetna Mtns. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 433200 Northing 6 968150

Latitude 62°50'22" N., Longitude 148°18'45" W.

T. 32 N., R. 6 E., Seward Meridian
Sec. 27, SE¼NE¼NW¼

Site Map: Figure 8

Setting: The site is located on one of a series of terraces 3 km downriver from the mouth of Watana Creek (Figure 158). The terrace is ca. 38 m asl (125 feet) above the present level of the river, at an elevation of 510 m asl (1675 feet). The site is located on the northwest corner of this northwest-southeast trending terrace, ca. 40 m north and 20 m east of a channel dividing this terrace from a slightly lower terrace. At the eastern end of the terrace the terrain ascends to the northeast and descends to the southeast. The site overlooks a tributary creek to the northwest, including a basin vegetated with open spruce forest which constitutes a former channel of the creek. The Susitna River is ca. 400 m south of the site, but is not visible due to vegetation and topography. The site is within 100 m of the creek, and ca. 25 m above it. The terrace on which the site is located forms a natural access route from higher terrain to both the Susitna and the tributary creek. Vegetation at the site consists of open white spruce/birch forest with heath and lichen covering the terrace between isolated spruce trees. Spruce stands also occur to the south in the intervening channel, and beyond the eastern end of the terrace.

Reconnaissance Testing: No surface material was observed at the site. A shovel test and subsequent widening into test pit 1 revealed two brown chert flakes, one with bifacial end-retouch (UA81-204-3; Artifact Photo I-c), a black chert flake, and a white chalcedony(?) flake. The brown chert and white flakes were recovered from a dark gray tephra bracketed by a charcoal-humic unit above and a tephra unit below. A tephra sample was collected (UA81-204-5). Six additional shovel tests and a second test pit (test pit 2) on the terrace revealed no further cultural material (Figure 8).

Collected Artifact Inventory

1 Black chert flake
1 Brown chert flake
1 Brown chert flake with retouch
1 white chalcedony(?) flake

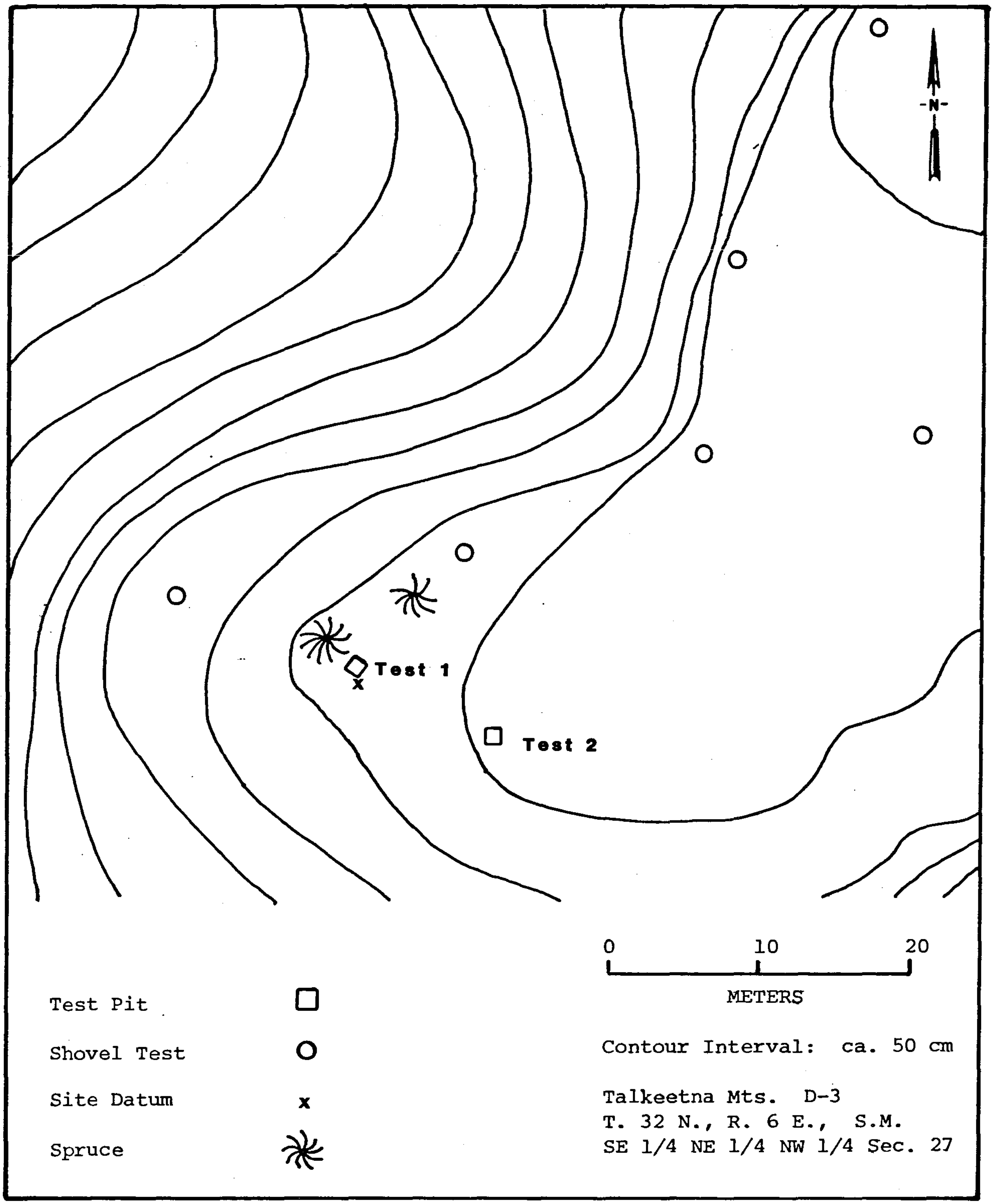


Figure 8. Site Map TLM 058.

(xiv) AHRS Number TLM 059, Accession Number UA81-205

Area: Between Deadman and Watana Creeks, Locale 69
Area Map: Figure 158; Survey Locale Map: Figure 239
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 433700 Northing 6969700

Latitude 62°51'15" N., Longitude 48°18'15" W.

T. 32 N., R. 6 E., Seward Meridian
Sec. 22, SE¼NW¼NE¼

Site Map: See Section 4, Figure 135

Setting: The site is located on a system of knolls between Deadman and Watana creeks, ca. 400 m east of an unnamed creek and 2 km north of the Susitna River. It is ca. 640 m asl (2100 feet) and 183 m above the Susitna River (Figure 158). The site is situated at the top of a low rounded knoll, flanked on the southwest by a slightly higher knoll on the northwest by a descending slope, and on the east by a shallow channel, beyond which is a knoll slightly lower than the site. This channel drains into a small creek ca. 300 m north of the site, which flows west into the clear-water unnamed creek which runs south through the knoll system to the Susitna. Neither creek is visible from the site. The predominant view is to the east looking up the Susitna Valley, and to the northeast, overlooking the channel and knolls below. A revegetating lake basin lies to the south of the site, bounded by low knolls, of which the site knoll is one, although this basin is not entirely in view from the site. Vegetation in the site vicinity is classified as "woodland white spruce". At the site the vegetation consists of scattered white spruce, low shrub ground cover, including mosses and lichens, heath and dwarf birch, with little or no exposed ground surface. A stand of black spruce fills a channel to the southwest, between the site and the higher knoll.

Reconnaissance Testing: The site is characterized by a 2x1.8 m depression ca. 35 m deep, oriented 45° on the long axis (Figure 135). A diffuse, level berm 30 cm high circumscribes the depression. This feature (feature 1, Figure 135), located at the top of the knoll, does not appear to be natural due to the regularity of the dimensions. No cultural material was observed on the surface of the site. A 40 x 40 cm test pit was dug in the floor of the depression adjacent to the southwest side (Figure 135, test 1). Burned and unburned bone fragments and partially burned wood appearing as timbers were encountered in a gravelly sand-peat matrix between 16 cmbs and 45 cmbs. Charcoal was also encountered in peat units above the bone and between the gravelly sand. Charcoal samples were collected at 12 cmbs (UA81-205-1), 25 cmbs (UA81-205-13), and 28 cmbs (UA81-205-14). Charcoal sample (UA81-205-14) produced a date of 740 ±70 years: A.D. 1210. A sample of a possible tephra lense (UA81-205-6) was taken from the southeast corner of test pit 1 at 30 cmbs.

Bone was encountered closer to the surface in the southeast quarter of test pit 1 than elsewhere in the test. Burned and decaying timbers underlie the highest bone occurrence in this section, while elsewhere the wood overlies and is contiguous with the bone. The stratigraphy of test pit 1 comprises alternating units of peat with charcoal and gravelly sand. By contrast, the stratigraphy of test pits 2 and 3, and shovel tests in the vicinity, show three possible tephra units under the humic mat as a horizon above glacial drift, without the occurrence of gravelly sand or peat.

Test pit 2, 7.5 m northeast of feature 1, was sterile. Test pit 3, on the knoll 2.1 m northeast of feature 1, revealed a bone fragment between 9 and 10 cmbs in a layer of black divided organics (unit 2) below humus and above a light gray tephra unit.

Collected Artifact Inventory

1 Fire cracked rock

Collected Faunal Material Inventory

Test pit 1, 15-20 cmbs:

1 Radius fragment, proximal 1/5, lightly burned, cut marks, caribou (Rangifer tarandus)
6 Long bone fragments, lightly burned, medium-large mammal
1 Sesamoid bone, calcined, caribou (Rangifer tarandus)
9 Long bone fragments, calcined, medium-large mammal
4 Long bone fragments, heavily burned, medium-large mammal
1 Long bone fragment, heavily burned, large mammal
150 Long bone fragments, calcined, small-large mammal

20-25 cmbs:

7 Long bone fragments, medium-large mammal
99 Long bone fragments, calcined, medium-large mammal
1 Metacarpal/metatarsal fragment, proximal 1/3, calcined, large mammal
3 Long bone fragments, calcined, large mammal

25-30 cmbs:

140 Long bone fragments, calcined, medium-large mammal
1 Long bone fragment, calcined, cut marks, medium-large mammal
93 Long bone fragments, heavily burned, medium-large mammal
1 3rd phalanx, heavily burned, caribou (Rangifer tarandus)
1 Ulna fragment, left, proximal 1/5, heavily burned, caribou (Rangifer tarandus)
1 Phalanx fragment, heavily burned, caribou (Rangifer tarandus)
2 Vertebrae fragments, heavily burned, large mammal

1 Radius fragment, proximal 1/5, heavily burned, caribou (Rangifer tarandus)

1 Ulna fragment, left, proximal 1/4, heavily burned, caribou (Rangifer tarandus)

1 Pelvis fragment, ishium, heavily burned, large mammal

6 Long bone fragments, heavily burned, medium-large mammal

1 2nd phalanx, heavily burned, caribou (Rangifer tarandus)

1 3rd phalans, heavily burned, caribou (Rangifer tarandus)

1 Femur fragment, distal 1/3, calcined, medium-large mammal

1 3rd phalanx, proximal 1/4, calcined, caribou (Rangifer tarandus)

1 Flat bone fragment, large mammal

74 Long bone fragments, calcined, medium-large mammal

14 Long bone fragments, heavily burned, medium-large mammal

1 Phalanx fragment, distal 2/3, calcined, possible caribou (Rangifer tarandus) or black bear (Ursus americanus), likely caribou

35-40 cmbs:

2 Long bone fragments, large mammal

141 Long bone fragments, heavily burned, medium-large mammal

105 Long bone fragments, calcined, medium-large mammal

1 1st phalanx, proximal 1/5, heavily burned, caribou (Rangifer tarandus)

1 Caudal vertabrae, heavily burned, large mammal

2 Vertebrae, heavily burned, large mammal

1 1st phalanx, proximal 1/4, heavily burned, caribou (Rangifer tarandus)

1 2nd phalanx, distal 1/4, heavily burned, caribou (Rangifer tarandus)

1 1st phalanx, proximal 1/6, heavily burned, caribou (Rangifer tarandus)

1 3rd phalanx, proximal 3/4, heavily burned, caribou (Rangifer tarandus)

1 Ulna fragment, heavily burned, caribou (Rangifer tarandus)

1 Sesamoid bone, heavily burned, large mammal

1 Rib fragment, heavily burned, medium-large mammal

1 3rd phalanx, proximal 1/5, heavily burned, caribou (Rangifer tarandus)

40-45 cmbs:

4 Long bone fragments, heavily burned, medium-large mammal
2 Long bone fragments, calcined, small-large mammal

Shovel Test 7, 0-10 cmbs:

1 Long bone fragment, heavily burned, small-large mammal

(xv) AHRS Number TLM 060, Accession Number UA81-206

Area: ca. 5 km northwest of Watana Creek Mouth, Survey Locale 68
Area Map: Figure 158; Survey Locale Map: Figure 238
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 432300 Northing 6968650
Latitude 62°50'35" N., Longitude 148°19'45" W.

T. 32 N., R. 6 E., Seward Meridian
Sec. 21, SE¼SE¼SE¼

Site Map: Figure 9

Setting: The site is located on the northern shoulder of the Susitna River canyon at an elevation of 650 m asl (2133 feet). It is situated on the northwestern and highest end of a 100 meter long northwest-southeast trending ridge located approximately 800 m west of a major unnamed tributary creek which joins the Susitna River from the north, 3 km downstream of the mouth of Watana Creek (Figures 158, 238). The Susitna River is ca. 800 m south of the site location and ca. 192 m lower in elevation at its closest point. Rolling upland hills consisting of poorly drained kettle and kame topography, characterized by low relief rounded ridges and knolls, forms the topographic setting in the site vicinity. A 1 hectare kettle lake lies ca. 200 m west of the site and is approximately 20 m lower in elevation. The ridge upon which the site is located is well drained and is 20 to 30 m higher in elevation than the adjacent terrain, forming the highest and most prominent topographic feature in the vicinity of the kettle lake. The view from the site encompasses the entire lake margin of the small lake to the west and ca. 1 km of forested lower elevation terrain to the northeast, both areas being easily accessible from the site. The creek drainage to the east is visible although the creek itself is out of view. The Susitna River is not in view at its closest point directly south of the site but is visible for several kilometers upstream to the southeast although this portion of the river is not readily accessible.

Vegetation in the site vicinity consists of low shrub and woodland black spruce with scattered white spruce, birch, lowbush blueberry and labrador tea forming the principle site specific vegetation. A generally continuous mat of moss and lichen covers the ground surface with soil exposed in only a few locations along game trails or in areas of slumpage.

Reconnaissance Testing: The site consists of both surface and subsurface cultural material and appears to occupy the relatively flat and open crest of the northeastern end of the ridge. A black chert biface fragment (UA81-206-1; Artifact Photo I-b) was surface collected from an exposed soil slump on the western side of the ridge crest approximately 15 meters southeast from the end of the ridge (Figure 9). Intensive survey along the entire ridge line did not reveal any other cultural material on the surface. Eight shovel tests were dug along the ridgecrest only one of which revealed subsurface cultural material, a single light olive brown welded tuff flake with possible retouch along one margin (UA81-206-2), found 15 to 20 cmbs in a matrix of dark gray ash. This shovel test was expanded into a 40 x 40 cm test (test pit 1) and a site datum was established at the southwest corner. No additional cultural material was found in test pit 1. Two additional test pits were excavated at the site. Test pit 2 was placed at the northwestern end of the ridgecrest and test pit 3 was excavated at the location where the biface fragment was found on the surface (Figure 9). No additional subsurface cultural material was found in these tests. Two tephra samples were collected at the site. A dark gray ash sample (UA81-206-3) was collected from 10 cmbs in test pit 1 and another dark gray ash sample (UA81-206-4) was collected from one of the shovel tests on the ridge crest southeast of the site area.

Collected Artifact Inventory

1 Biface fragment, black chert
1 Flake with possible retouch, light olive brown welded tuff

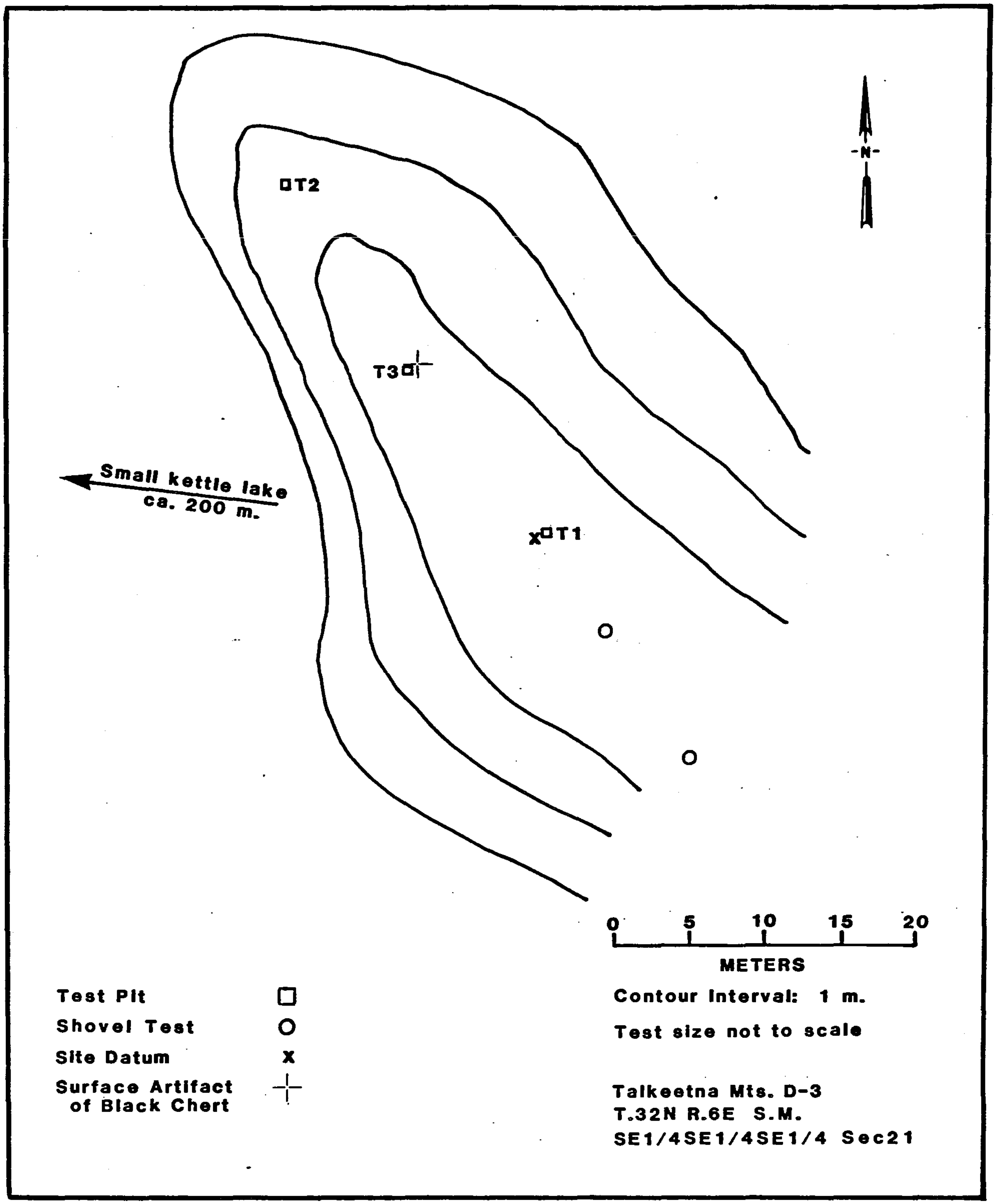


Figure 9. Site Map TLM 060.

(xvi) AHRS Number TLM 061, Accession Number UA81-207

Area: ca. 3.5 km Northwest of Watana Creek Mouth, Survey Locale 68
Area Map: Figure 158; Survey Locale Map: Figure 238
USGS Map: Talkeetna Mts. D-3, Scale 1:63:360

Site Location: UTM Zone 6 Easting 432700 Northing 6968700
Latitude 62°50'40" N., Longitude 148°19'25" W.

T. 32 N., R. 6 E., Seward Meridian
Sec. 22, SW¼SW¼SW¼

Site Map: Figure 10

Setting: The site is located approximately 4.3 km west of Watana Creek on the northern shoulder of the Susitna River canyon at an elevation of 610 m asl (2000 feet) (Figure 158). It is situated at the summit of a discrete 20 m high kame knoll located 300 m northeast of the ridge where site TLM 060 is located (Figure 238). A 1 hectare kettle lake lies approximately 500 m southwest. The site is situated near the center of the relative flat summit of this knoll, approximately 5 m southeast of the highest elevation which occurs at the northwest end of the summit. The top of the knoll occupies an area of approximately 10 m by 15 m with extremely steep slopes to the north and east. This knoll is the highest point of land between site TLM 060 to the west and an unnamed tributary creek 300 m to the east. The view from the site is panoramic but somewhat obscured by fairly dense tree growth. Gradually rising terrain to the southwest limits the view to less than 500 meters in that direction. Immediately east of the site the terrain drops steeply 91 m to the south flowing tributary creek. Another eastward flowing creek, originating as an outlet from the lake 2.3 km to the northwest, joins the southward flowing tributary 300 meters northeast of the site. These two creeks are not in view from the site due to the steepness of the terrain and fairly dense forest growth. The kettle lake to the southwest is also obscured from view by intervening higher terrain.

The terrain in the vicinity of the site is undulating and poorly drained with numerous knolls and ridges and kettle depressions characteristic of ice stagnation terrain. The Susitna River lies approximately 1 km south of the site at its closest point and is in view for approximately 6 km upstream to the southwest. It is 152 m lower in elevation and not easily accessible due to the distance and difference in elevation. The stream drainage to the east occupies a deep v-shaped valley with exposed bedrock present. Two alluvial terrace levels are present on the west side of the stream below the site knoll.

Vegetation in the site vicinity consists of low shrub and woodland white spruce. The slopes of the knoll support a mixed birch, aspen and spruce tree cover and the lower terrain around the base of the knoll consists of sphagnum moss, grasses and wet tundra with areas of marsh. Black spruce are also present on this wetter terrain. On site vegetation consists of low shrubs including dwarf birch and blueberry. Aspen and birch occur on the slopes of the knoll along with a few large white spruce. Bearberry, labrador tea, moss and lichen form a solid ground mat at the summit of the knoll, which is relatively open with only low vegetation present.

Reconnaissance Testing: A shovel test near the center of the knoll summit revealed subsurface charcoal and bone. This shovel test was expanded into test pit 1 (Figure 10) which produced ca. 200-300 burned mammal bone fragments. Charcoal and 15 fragments of possible fire cracked rock (UA81-207-5) were associated with these bone fragments which occured between 12 and 25 cmbs in two distinct soil units in test pit 1 (Figure 10). A gray brown sand occurs only in the south half of the test between 12-22 cmbs and may represent a cultural feature intrusive into older deposits. A gray brown silty sand occuring 13 to 25 cmbs is truncated by and therefore older than the gray brown sand. It appears that the faunal material and charcoal and the gray brown sand and the brown silty sand may represent different occupations of the site. A charcoal sample (UA81-207-6) was collected 12 cmbs in the gray brown sand. A dark gray ash horizon occurs 23 cmbs in test pit 1 and a sample (UA81-207-8) was collected. This ash is present directly above the brown silty sand. This ash should, therefore, represent a time parallel marker horizon between the two cultural units at the site.

The concentration of burned bone and charcoal in test pit 1 appears to extend to the southwest of the test. A single possible basalt flake (UA81-207-2) was recovered from the backdirt of one shovel test prior to its enlargement into test pit 1. The shovel test (Figure 10) adjacent to test pit 1 produced several small fragments of what may be red ochre (UA81-207-4).

Seven additional shovel tests (Figure 10) were placed at the summit of the knoll but none of these produced faunal material or charcoal. No cultural material was observed on the surface of the knoll.

<u>Collected Artifact Inventory</u>

1 soil sample with bone fragments
15 possible fire cracked rock fragments
1 possible basalt flake
3 pieces possible red ochre

<u>Collected Faunal Material Inventory</u>

Test pit 1, 12-17 cmbs:

1 Metatarsal fragment, right, heavily burned, caribou (<u>Rangifer tarandus</u>)
1 Sesamoid bone, calcined, caribou (<u>Rangifer tarandus</u>)
1 3rd phalanx, proximal 1/4, calcined, caribou (<u>Rangifer tarandus</u>)
10 Long bone fragments, heavily burned, large mammal
250+ Long bone fragments, calcined, medium-large mammal

Below 20 cm:

35 Long bone fragments, calcined, medium-large mammal

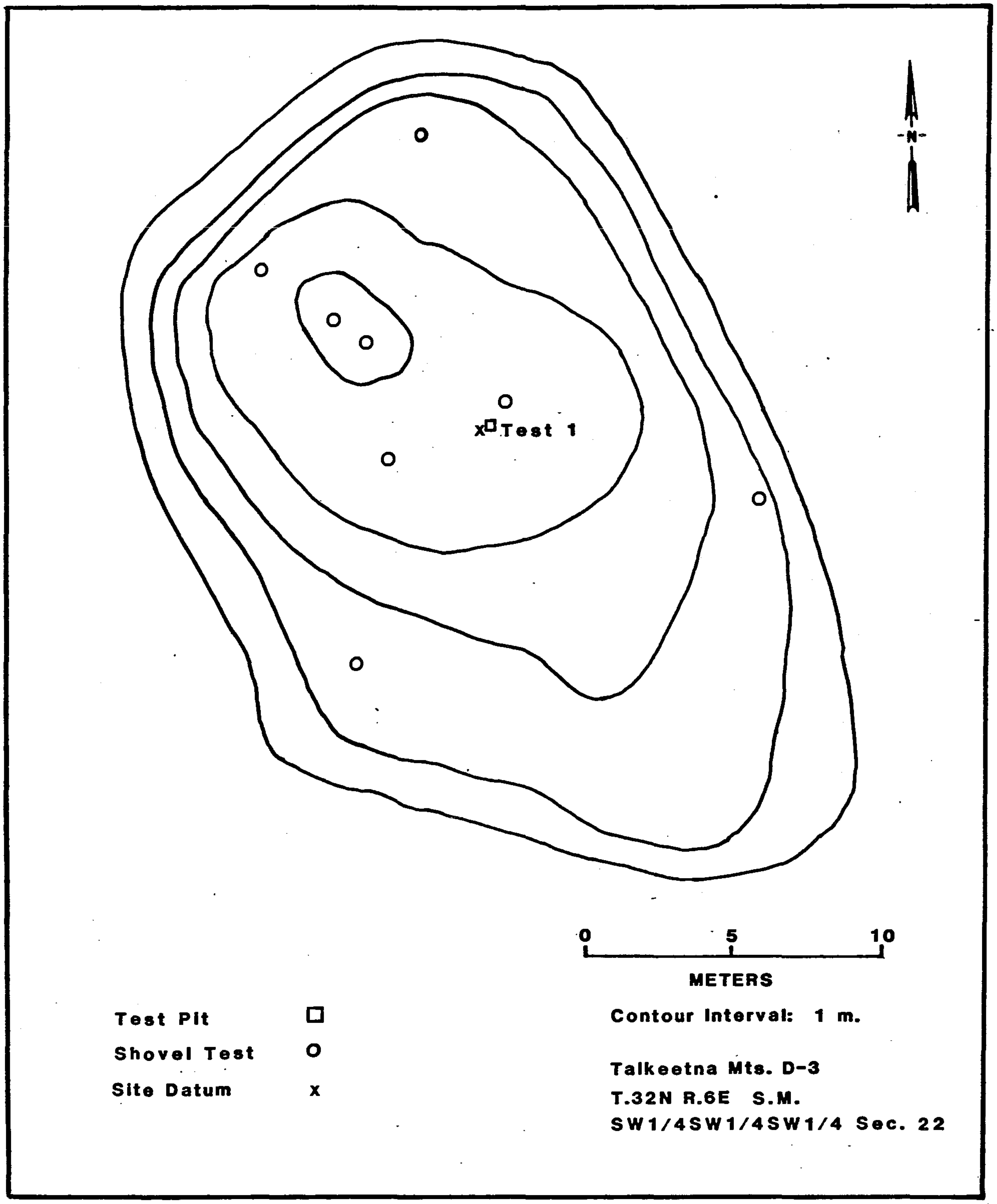


Figure 10. Site Map TLM 061.

(xvii) AHRS Number TLM 062, Accession Number UA81-208

Area: ca. 4 km West of Kosina Creek Mouth, Survey Locale 78
Area Map: Figure 158; Survey Locale Map: Figure 248
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 448000 Northing 6961650
Latitude 62°46'59" N., Longitude 148°01'10" W.

T. 31 N., R. 7 E., Seward Meridian
Sec. 18, NW¼NE¼NE¼

Site Map: Figure 11. Also see Section 4, Figure 137

Setting: The site is located on the south margin of the Susitna River approximately 4 km west of the mouth of Kosina Creek (Figure 158). It is situated on the relatively flat, densely forested edge on a continuous alluvial terrace at an approximate elevation of 549 m asl (1800 feet). The site location is on the extreme northeastern point of the terrace where it changes direction from an east-west trending terrace to a north-south trending terrace (Figure 248). The site elevation is ca. 50 m above the river level. The Susitna is approximately 150 m northeast of the site at its closest point. The terrace point on which the site is situated is the highest and most prominent landform in the immediate site vicinity.

Areas of exposed bedrock are visible on the steep eastern slope of the terrace immediately below the site location. The mouth of an unnamed creek located 500 m east of the site is not visible from the site location due to the dense forest cover.

The northern terrace edge slopes steeply down to a broad lower terrace level approximately 30 m lower in elevation. This lower terrace edge arcs northwest from the site location following the Susitna River margin. The view from the site encompasses both the lower terrace to the northwest and the marshy wet tundra terrain below. The view extends across the Susitna encompassing the mouth of the outlet stream from a small lake located 800 m northeast of the site on the north side of the Susitna and the terrace and ridges in the vicinity of site TLM 033 which is located directly across the river at almost the same elevation. A small forested island is also visible 600 m east of the site at the confluence of the unnamed creek with the Susitna River.

Site vegetation consists of open black spruce forest with birch and some white spruce present. Ground vegetation in the site vicinity includes dwarf birch, lowbush cranberry, labrador tea and a thick lichen and moss mat. Surrounding vegetation is open mixed forest which includes fairly dense birch and willow in the vicinity of the creek drainage east of the site. White spruce occur on higher better drained ground and primarily black spruce occupy the flat terraces.

Reconnaissance Testing: Initial testing at the site was restricted to the extreme northeastern edge of the terrace. One shovel test exposed a gray chert core (UA81-208-1) 17 cmbs within a matrix of whitish gray tephra. This probe was expanded into test pit 1 (Figure 11), a 40 x 40 cm test oriented north-south. Test pit 1 produced two unifacially retouched red jasper endscraper fragments (UA81-208-2, -3; Artifact Photo I-d) found 6 cm apart 12-16 cmbs within the same whitish gray tephra horizon from which the gray chert core was excavated. These two endscraper fragments articulate to form a complete tool. The tephra horizon which produced the cultural material in test pit 1 is located 9-19 cmbs directly below the humus layer and above a medium to dark red mottled silt (possibly a tephra). Charcoal was present within this tephra and a sample of both the charcoal (UA81-208-7) and the tephra (UA81-208-5) was collected 13-18 cmbs. Charcoal sample (UA81-208-7) produced a date of 1380 ±155 years: A.D. 570 (DIC 2246). A second dark gray tephra horizon was present in test pit 1 19-24 cmbs. This lower tephra was present directly above a reddish brown coarse sand with pebbles and cobbles and was separated from the upper whitish gray ash by 5 cm of red mottled silt. No cultural material or charcoal was observed associated with this lower ash. Tephra Sample #2 (UA81-208-6) was collected 20-23 cmbs from this lower dark gray ash.

The only other cultural material collected at the site was a black basalt waste flake found on the top of the moss and lichen mat next to the southernmost shovel test (Figure 11). The surface provenience of this flake is unclear as it may have dropped out of the back dirt from the first shovel from this test. This test was enlarged into test pit 2 (Figure 11) but no subsurface cultural material was observed in this test. Intensive surface reconnaissance in the immediate vicinity of test 2 did not produce any additional surface artifacts. Six additional shovel tests at the site (Figure 11) were all sterile.

Collected Artifact Inventory

1 Core, gray chert
2 Endscraper fragments, red jasper
1 Flake, black basalt

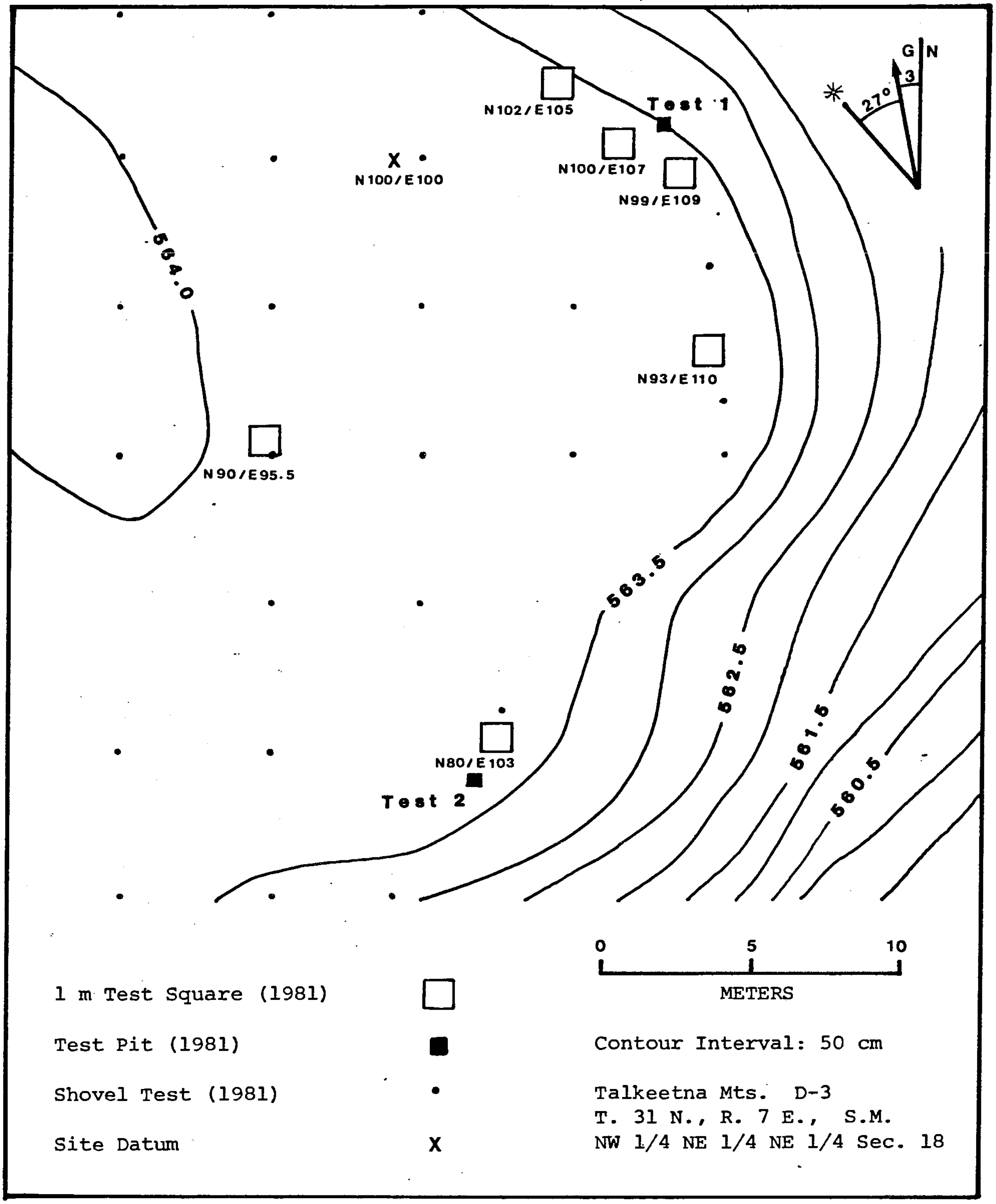


Figure 11. Site Map TLM 062.

(xviii) AHRS Number TLM 063, Accession Number UA81-209

Area: ca. 1.8 km Southeast of Watana Creek Mouth, Survey Locale 55
Area Map: Figure 158; Survey Locale Map: Figure 227
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 437650 Northing 6966500

Latitude 62°49'34" N., Longitude 148°13'25" W.

T. 32 N., R. 7 E., Seward Meridian
Sec. 31, SW¼NE¼NW¼

Site Map: Figure 12

Setting: The site is located on the top of a 20 m high, fairly steep sided (15°) isolated kame knoll 75 m southwest of the Susitna River on a low glacial outwash terrace (Figures 158, 227). The mouth of Watana Creek is 1.8 km to the northwest on the opposite side at the Susitna River. This flat, poorly drained terrace rises 10 m at the river bank and extends southwest approximately 400 m from the site to where the steep slope of the valley wall is encountered. An esker ridge and a one hectare kettle lake are located 200 m south of the site on this terrace. The lake outlet stream 300 m to the northwest, eight small tributaries and numerous low rises occupy the stretch of the terrace 1 km west and 4.5 km east of the site. Vegetation on the knoll summit and slopes consists of birch, juniper, aspen and white spruce. Low ground cover includes grasses, dwarf birch, blueberry and sphagnum moss.

Reconnaissance Testing: No cultural material was observed on the surface of the knoll. Only one of eleven shovel tests on the 35 m x 4 m knoll top revealed cultural material. This test was expanded into a 40 x 40 cm test (Figure 12, test pit 1).

Test pit 1 was located on the east edge of the knoll top on slightly sloping ground. Cultural material consists of ca. 700 pieces of small burned bone fragments and one jasper(?) flake recovered from within a 6 cm thick band of medium reddish brown loess at a depth of 9-14 cmbs. The majority of the bone was calcined. Charcoal fragments were present with the bone, however, direct association with cultural activity cannot be established due to the absence of a hearth feature and presence of charcoal in other tests which did not contain cultural material.

Test pit 2 located 2 m northwest of test pit 1 failed to reveal any cultural material, however, charcoal fragments were present in this test.

Collected Artifact Inventory

1 Red jasper(?) flake

Collected Faunal Material Inventory

Test pit 1, 0-8 cmbs:

250+ Long bone fragments, calcined, medium-large mammal

9-13 cmbs:

500+ Long bone fragments, calcined, medium-large mammal

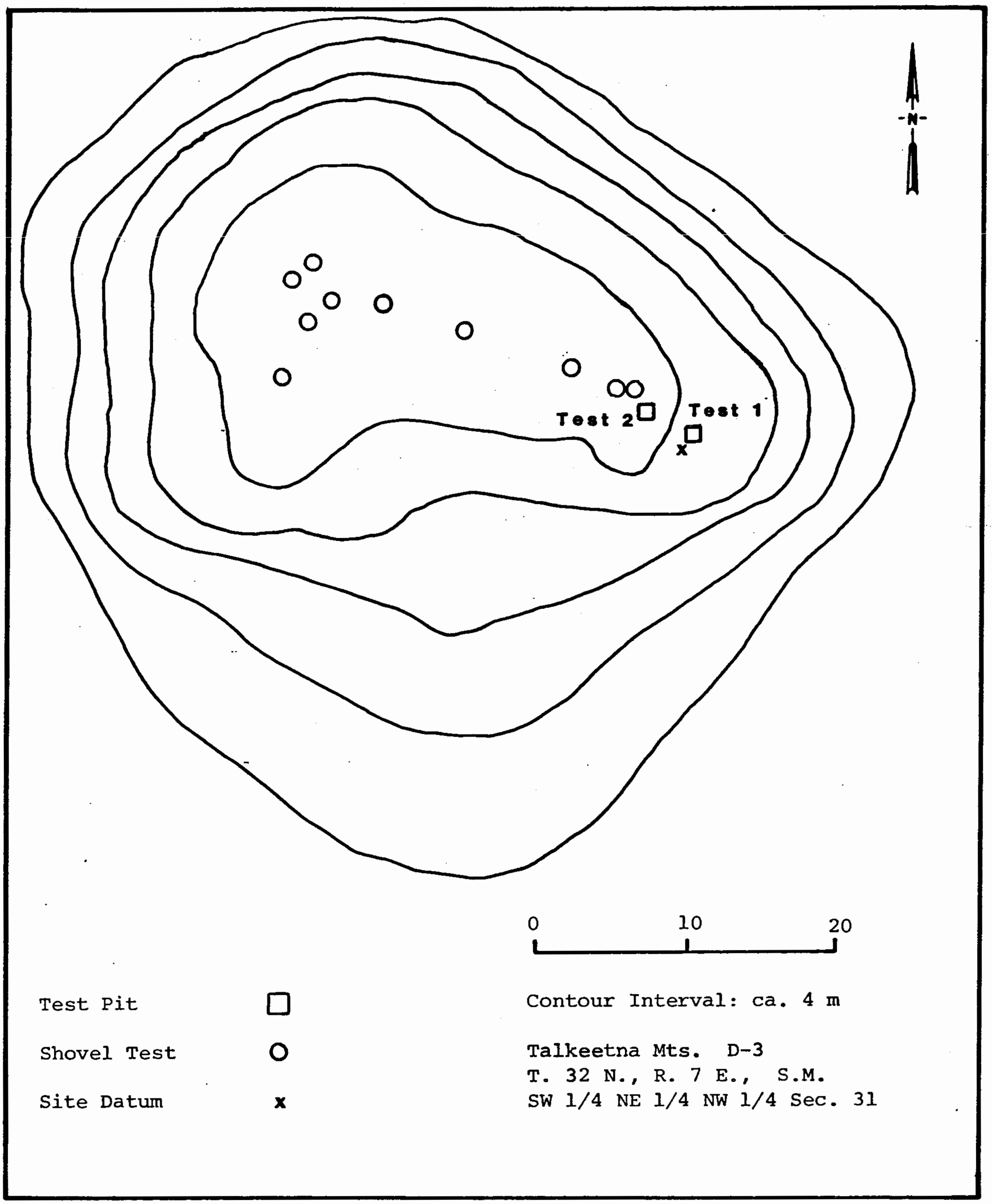


Figure 12. Site Map TLM 063.

(xix) AHRS Number TLM 064, Accession Number UA81-220

Area: ca. 2.8 km Southeast of Watana Creek Mouth, Survey Locale 72
Area Map: Figure 158; Survey Locale Map: Figure 242
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 437050 Northing 6964500

Latitude 62°48'30" N., Longitude 148°14'05" W.

T. 31 N., R. 6 E., Seward Meridian
Sec. 1, NE¼SE¼NE¼

Site Map: Figures 13 and 14

Setting: The site is located south of the Susitna River ca. 2.8 km southeast of the mouth of Watana Creek (Figures 158, 242). Two site loci (A, B) are located on two knolls ca. 90 m apart on a northeast-southwest axis. These knolls comprise part of a series of low, rounded knolls on a relatively flat, gently northward sloping lacustrine plain at an elevation of 670-686 m asl (2200-2250 feet), and 183-213 m (600-700 feet) above the Susitna River at its nearest point. A small lake (less than 1 hectare) lies ca. 500 m to the southwest of the site. A tributary creek cuts a steep canyon 500 m west of the site through which access to the Susitna River could be obtained. The flake scatter which represents Locus A is situated on the southwestern knoll, ca. 1 m above the surrounding plain, and about .5 m lower than the top of the knoll. The slope of the knoll is estimated to be less than 10°. Locus B, 90 m northeast of Locus A, is on a knoll rising ca. 4 m above the surrounding terrace on the north, while only ca. 1 m on the south and east. The cultural material is located ca. .5 m below the top of the knoll on the southeast slope. The view, while panoramic from the tops of the knolls, is predominantely south from both lithic scatters. The broad expanse of open black spruce on the plain is in view from both loci. Vegetation on the knolls consists of lichen, low heath, dwarf birch, and scattered spruce. Small deflated and undeflated frost boils occur sporadically.

Reconnaissance Testing: The lithic scatter which characterizes the site contains both surface and subsurface material. Several basalt waste flakes were discovered on the surface of Locus A, six on the southwest end, the remainder (Scatter 2) on the northwestern portion on undeflated frost boils (Figure 13). A 50 cm x 50 cm test was dug at Locus A with negative results. A shovel test at the southwest base of the knoll was sterile. Locus B material consists of a scatter of 21 basalt waste flakes in an undeflated frost boil on the southeast slope of the knoll. The slope inclines at an estimated 10° or less. Test pit 2 was dug a meter northwest and uphill from this scatter (Figure 14). A light brown rhyolite flake and a basalt projectile point base fragment (UA81-220-14; Artifact Photo I-e) were recovered from the test at 6 cmbs and 8 cmbs, respectively, at the contact between a black humic soil and a possible tephra unit. The stratigraphy of the test indicates a black organic horizon with charcoal flecks over a light gray tephra unit overlying an oxidized tephra, which overlies a sand unit. No charcoal was collected. Two shovel tests and deflated frost boils on the flat surface of the knoll revealed no artifacts.

Collected Artifact Inventory

12 Basalt flakes
1 Basalt projectile point base fragment
1 Light brown rhyolite flake
1 Quartz flake

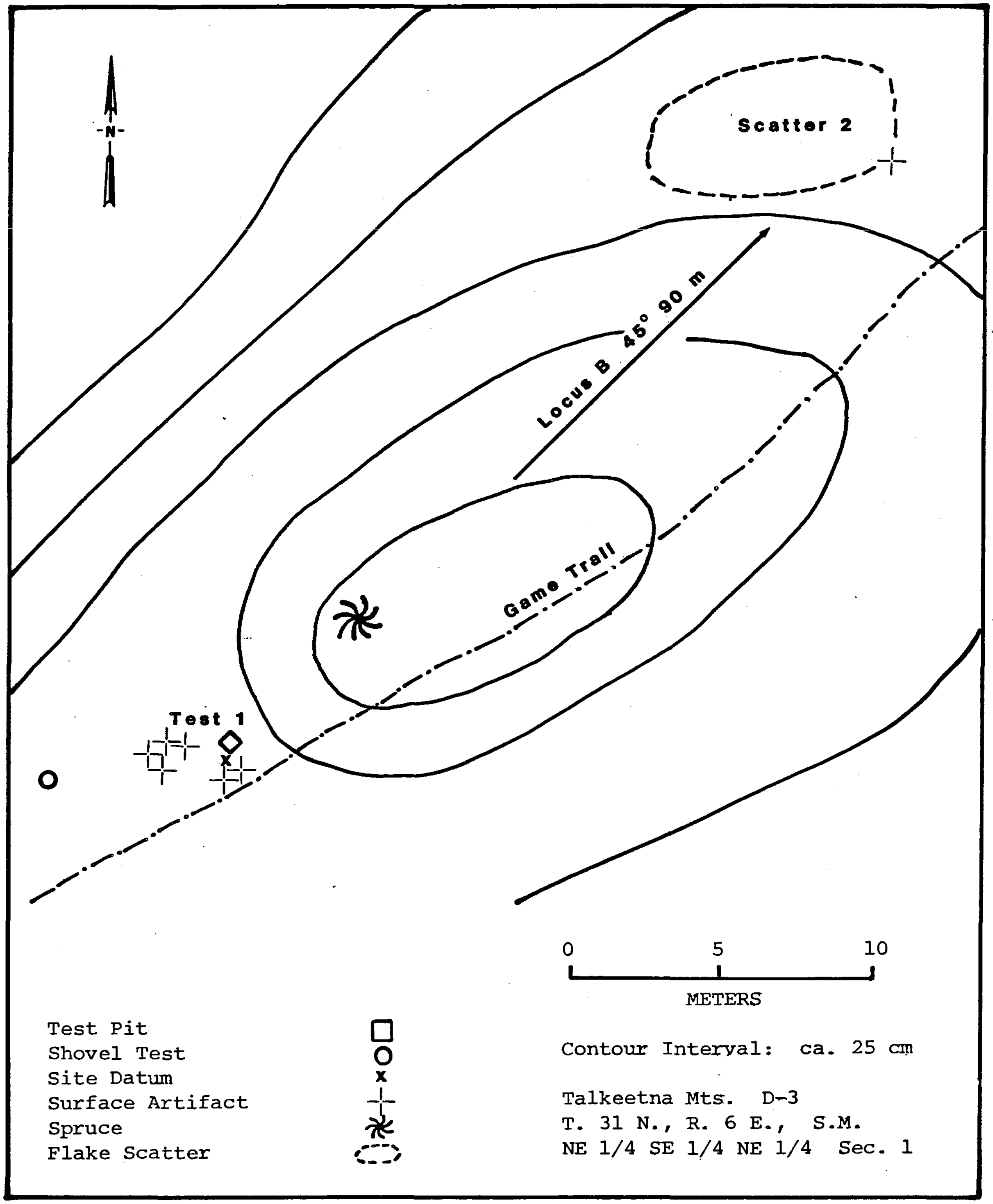


Figure 13. Site Map TLM 064 A.

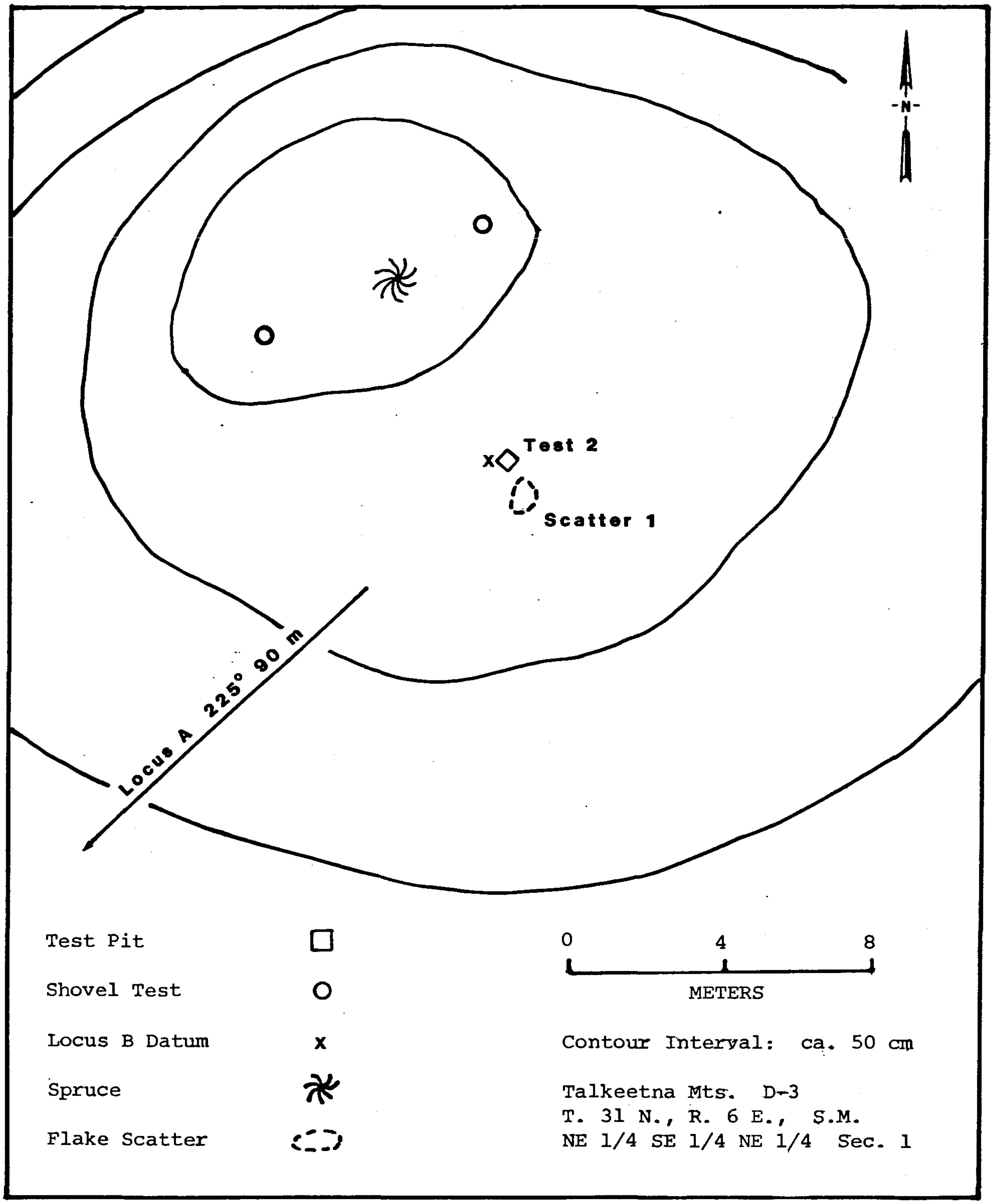


Figure 14. Site Map TLM 064 B.

(xx) AHRS Number TLM 065, Accession Number UA81-222

Area: ca. 1 km South of Kosina Creek Mouth, Survey Locale 85
Area Map: Figure 159; Survey Location Map: Figures 254, 255
USGS Map: Talkeetna Mts. D2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 452100 Northing 6960600

Latitude 62°46'30" N., Longitude 147°56'20" W.

T. 31 N., R. 8 E., Seward Meridian
Sec. 15, SW¼NE¼SW¼

Site Map: See Section 4, Figure 139

Setting: The site consists of two loci (A & B) located on a broad terrace approximately 900 m south of the confluence of Kosina Creek and the Susitna River (Figure 159). Located at about 585 m asl (1920 feet), it is approximately 46 m higher than Kosina Creek where it flows 400 m west of the site, and approximately 67 m higher than the present elevation of the Susitna River. The terrace descends steeply on its north and west faces, then slopes gradually upwards to the base of a steeply ascending slope to the south. The terrace, about 60 m wide (east-west) and 75 m deep (north-south), is demarcated by a creek drainage on the east.

Locus A is situated on the eastern edge of the terrace overlooking the drainage creek about 30 m further east (Figure 254). It lies about 40 m back from the north edge of the terrace, from which edge a narrow ridge descends to the floodplain below, along the west bank of the creek. Visual coverage of the Susitna River to the northeast from Locus A is good, as well as of the terrain to the east, south, and west toward Locus B. However, the floodplain to the northwest is only seen from the terrace edge north of Locus A. Vegetation at Locus A consists of a birch-spruce grove with heath and moss on the ground surface.

Locus B is located 60 m southwest of Locus A at the western edge of the terrace (Figure 254). It constitutes a 15 m peninsular extension toward the eastern slopes of the Kosina Creek drainage. The view is limited to the main body of the terrace east of Locus B, and to shallow channels and sections of the terrace to the south and west of the locus. As at Locus A, a birch-spruce gorve hinders the view to the north. Heath and moss cover the ground surface at the locus. Scattered spruce, dwarf birch and heath shrubs constitute vegetation between the loci.

Reconnaissance Testing: Locus A is characterized by a rectangular depression approximately 2.3 m x 2.7 m x 30 cm oriented north-south on the long axis (feature 1), a circular depression ca. 1 m in diameter (feature 2), and an area, ca. 2 m x 5 m, of sedges, moss, and grass, comprising a discontinuity in the general vegetation (feature 4) (Figure 139). No surface artifacts were observed during reconnaissance testing and none of the features were tested during the reconnaissance survey. Two 40 cm x 40 cm test pits within 6 m of feature , however, revealed bone and fire cracked rock. Test pit 1 yielded 15 unburned bone fragments including parts of a mandible, one burned bone fragment, and one piece of possible fire cracked rock, at 5-7 cmbs in dark charcoal flecked humus. Test pit 2 contained 1 unburned bone fragment at 3 cmbs in dark humus. Four additional shovel tests in the vicinity of Locus A were sterile.

Locus B consists of a single circular depression 43 cm in diameter and 20 cm deep (Figure 139, feature 3). It was tested prior to the discovery of Locus A by means of a shovel test, and revealed two unburned fragments of the innominates of caribou (Rangifer tarandus) at 8 cmbs in humus. Three additional shovel tests in the vicinity were sterile. No surface artifacts were noted. Fourteen shovel tests placed between the loci on the terrace were likewise sterile.

Inventory of Collected Artifacts

Locus A:

1 Possible fire cracked rock

Collected Faunal Material Inventory

Locus A, 3 cmbs:

1 Long bone fragment, medium-large mammal

5-7 cmbs:

1 Mandible fragment, right, teeth present, caribou (*Rangifer tarandus*)
11 Long bone fragments, medium-large mammal
3 Flat bone fragments, medium-large mammal
1 Metatarsal fragment, caribou (*Rangifer tarandus*)

Locus B, feature 3:

1 Pelvis fragment, left, acetabulum, caribou (*Rangifer tarandus*)
1 Pelvis fragment, ilium, caribou (*Rangifer tarandus*)

(xxi) AHRS Number TLM 072, Accession Number UA81-233

Area: ca. 1 km Northwest of Jay Creek Mouth, Survey Locale 88
Area Map: Figure 159; Survey Locale Map: Figure 257
USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 455700 Northing 6961100

Latitude 62°46'49" N., Longitude 147°52'10" W.

T. 31 N., R. 8 E., Seward Meridian
Sec. 13, NE¼SW¼NE¼

Site Map: Figure 15

Setting: The site, a large circular depression, is located ca. 900 m northwest of the mouth of Jay Creek at an elevation of ca. 479 m asl (1900 feet) on a 15° to 20° southwest facing slope (Figure 159). The site is situated at the southwestern end of an isolated low rounded ridge which extends for 30 m to 50 m downslope before leveling out for ca. 6 m and then terminating abruptly in a 30° slope which descends to the west, south and east (Figure 257). This subdued ridge line is only 3 m to 4 m higher than the adjacent slope at its northeastern end but becomes higher in relief as it descends in elevation up to the point at which it terminates, where it drops ca. 10 m, forming a rounded point of relief on an otherwise undifferenciated amorphous slope. This point of relief is located ca. 300 m north of the Susitna River margin and ca. 46 m higher than a 400 m long by 100 m wide grassy alluvial terrace and former river channel which lies between the bottom of the slope and the river. To the north of the site the slope continues to rise 20° to 30° for approximately 300 m before leveling out at ca. 470 m asl (2200 feet). The view from the site is to the south but is restricted by dense forest cover to less than 50 m except for a few openings through which portions of the lower river terrace and the Susitna River are visible. Without the present dense vegetation, visibility from the site would be excellent, encompassing much of the lower terrace and former river channel.

Vegetation at the site consists of dense mixed spruce and birch. On the berm of the depression and within the pit are a number of very small white spruce. These young spruce are unique in the immediate vicinity of the site and may indicate a relatively young age for the depression since no larger trees are growing in the distributed area although there are large trees just outside of it. Grass is also present in and adjacent to the depression but does not occur elsewhere in the site vicinity. A single aspen 18 cm in diameter, is present adjacent to the depression on the southwestern permimeter of the berm. Ground cover on the slope around the site and in gently sloping swales to the east and west of the depression includes willow, Labrador tea, mountain cranberry, wild rose and horsetail. At the base of the slope below and to the south of the site, the flat poorly drained terrain is characterized by wet muskeg and sphagnum moss with scattered black spruce.

Reconnaissance Testing: A 90 cm deep circular depression (feature 1) was observed at the southeastern end of a low ridge running generally parallel with a southwestern slope (Figure 15). What appears to be a berm occurs around the edges of the depression but is most evident to the west, south and east sides. The north side is flat and relatively level. The diameter of the depression, measured from the inside of the berm, is 4.2 m north-south by 4.5 m east-west. Within this circular depression is an apparently rectangular pit measuring 2.2 m east-west by 2 m north-south. The straight vertical walls of this pit are most evident on the west and south sides, where a 30-40 cm wide shelf or "bench" is present ca. 50 cm above the deepest part of the depression. It is not clear whether this bench was initially part of feature 1, or whether it is due to soil slumpage around the inside walls of the depression--although this seems unlikely due to the vertical nature of the inner walls; especially on the western side of the feature.

A site datum was established on the 18 cm diameter aspen at the edge of the berm on the southwest edge of the depression and seven shovel tests were dug around the outside of the pit (Figure 15). None of these revealed cultural material although one of them (shovel test 3) produced large pieces of burned wood and charcoal in the horizon just below the humus mat. An eighth shovel test was started near the center of the depression and a complete unburned moose (Alces alces) metacarpal was exposed embedded in the vegetative mat at the bottom of the pit. This metacarpal was left in place and shovel test 8 was discontinued so as not to disturb the feature. An intensive reconnaissance failed to reveal other features or surface artifacts in the vicinity of feature 1.

Test pit 3, initially a shovel test, was subsequently enlarged into a 40 x 40 cm test. No faunal or lithic material was revealed in this test, however additional charcoal was encountered in two soil units and two charcoal samples were collected. Sample 1 (UA81-233-1) was collected 4 cmbs at the base of the humus unit and sample 2 (UA81-233-2) was collected from 10-12 cmbs from a buried paleosol. This paleosol occurs 10-16 cmbs in test pit 3 between a yellow-brown silty sand and an oxidized light gray clayey silt. Until further testing is done it is unclear whether or not this charcoal is natural or cultural, although the fact that it was not observed in other nearby probes suggests it may be cultural. Further testing of feature 2 is necessary to determine the nature and age of this feature.

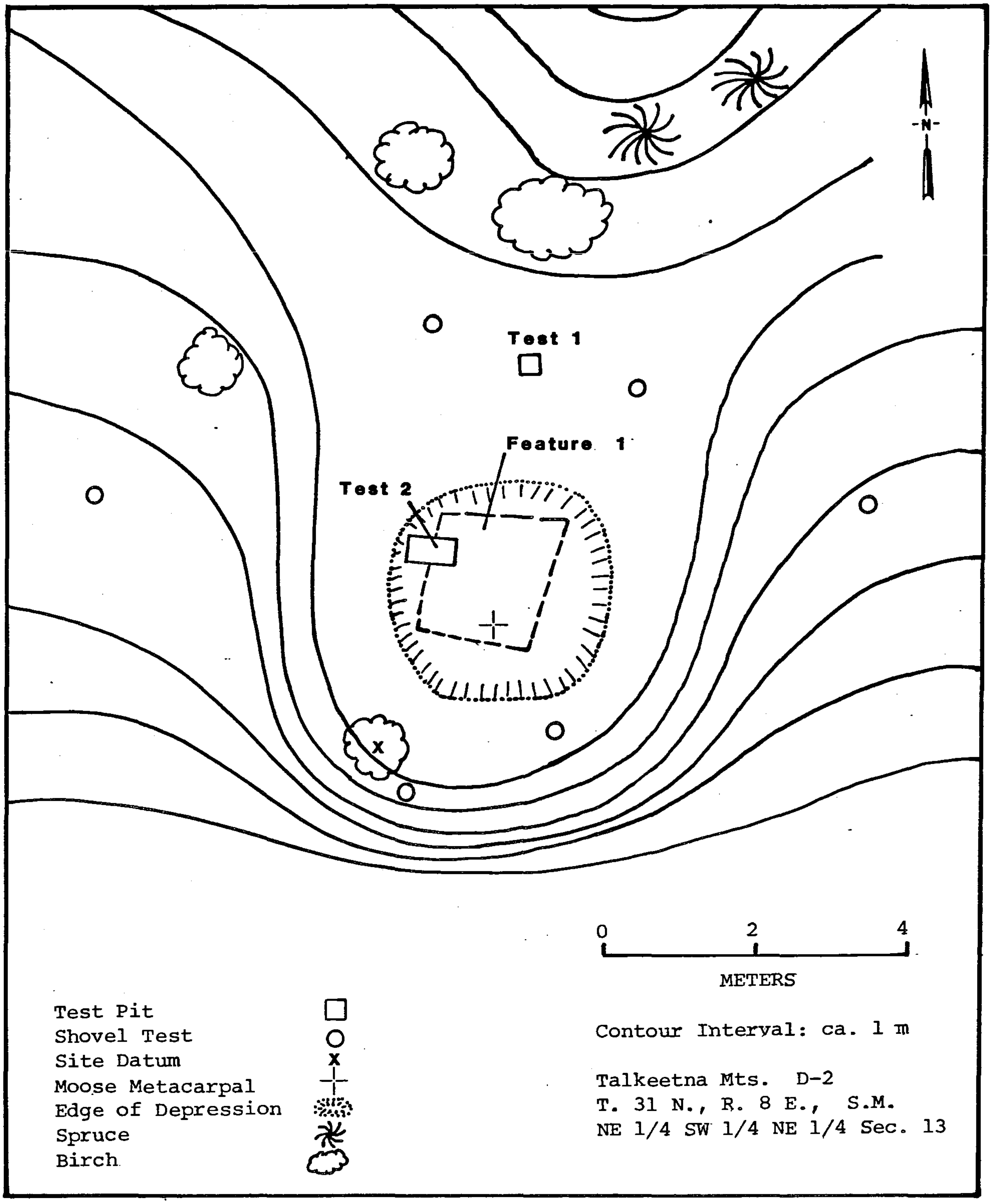


Figure 15. Site Map TLM 072.

(xxii) AHRS Number TLM 073, Accession Number UA81-227

Area: ca. 1 km Southeast of Oshetna River Mouth, Survey Locale 103
Area Map: Figure 162; Survey Location Map: Figure 269
USGS Map: Talkeetna Mts. C1, Scale 1:63,360

Site Location: UTM Zone 6 Easting 481300 Northing 6944800

Latitude 62°38'07" N., Longitude 147°21'50" W.

T. 29 N., R. 11 E., Seward Meridian
Sec. 3, NE¼SW¼NE¼

Site Map: Figure 16

Setting: The site is located at an elevation of 670-685 m asl (2200-2250 feet) approximately 200-300 m east of the Oshetna River and 1 km south of the Susitna River (Figures 162, 269). The landform associated with the site appears to be a series of river terraces presenting steep slopes to the west and north. The highest terrace, oriented north-northwest and south-southeast has a broad flat surface (400 m x 800 m) with little local relief. The south and east portion of the landform slopes downward to an area of undulating relief bordered to the east by a pond system and to the south by a landform of much higher elevation. Numerous boulders are visible through surface vegetation throughout the landform, particularily the east portion where they are found in high concentration with little or no covering vegetation. The view from the west perimeter of the landform is panoramic, but the depth of view is most extensive to the north, west, and south with the Susitna River, the Oshetna River and their confluence visible. Landforms associated with TLM 042A and B to the northwest, and TLM 049 to the northeast are visible. Access to the Susitna River and the Oshetna River is good. The Oshetna River course is bending, with at least 100 m of comparitively flat land on either bank, intermittently forested. The Susitna River's course is serpentine, with a cutback north of the confluence with the Oshetna River. The two ponds to the east are not visible from the site, but are within 500 m distance. The nearer pond, approximately 6 hectares in size, is at a distance of approximately 400 m, and drains southwest into the Oshetna River. The smaller pond, approximately 3 hectares in size, is at a distance of approximately 500 m, and drains northwest into the Susitna River. Both ponds appear to be eutrophic, and are being reclaimed as marsh and bog. Site vegetation consists of small scattered white spruce, tundra, Labrador tea, shrub birch, willow, and lichens. Lower elevation and terrace slope contain denser stands of shrub willow and white spruce; as well as poorly drained soil and muskeg in the vicinity of the Oshetna River.

Reconnaissance Testing: No surface artifacts were observed at the site. A total of two test pits and one shovel test were placed at the site location (Figure 16). TLM 073 is defined entirely by the subsurface lithic material recovered from test 1, a 40 x 40 cm square excavated to a depth of approximately 33 cm below ground surface. Lithics recovered are not characterized by any functional or typological criteria, all appear to be "waste flakes." Six flakes were removed by a shovel test and are therefore unprovenienced, but probably were located from 0-17 cm below ground surface. Twelve flakes were uncovered *in situ*. Lithologies represented at the site include basalt, chert and chalcedony. Lithics recovered were excavated from four tentatively defined soil units, from 5 to 23 cm below ground surface.

Collected Artifact Inventory

12 Basalt flakes
2 Brown chert flakes
2 Rhyolite flakes
1 Cryptocrystaline flake
1 Flake, unknown lithology

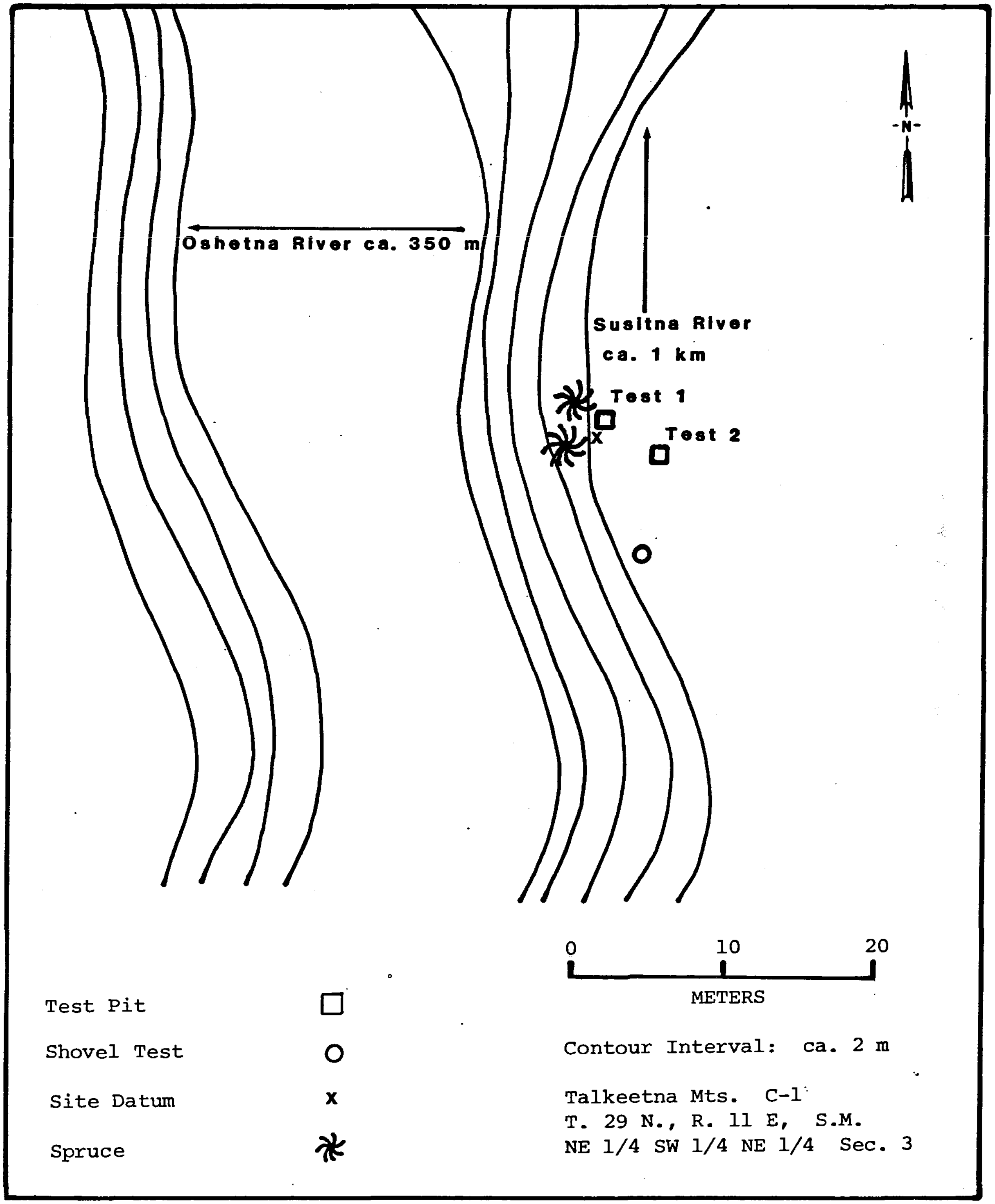


Figure 16. Site Map TLM 073.

(xxiii) AHRS Number TLM 075, Accession Number UA81-231

Area: ca. 1.3 km Southwest of Jay Creek Mouth, Survey Locale 89
Area Map: Figure 159; Survey Locale Map: Figure 258
USGS Map: Talkeetna Mts. D-2, Sclae 1:63,360

Site Location: UTM Zone 6 Easting 455800 Northing 6960400

Latitude 62°46'25" N., Longitude 147°51'58" W.

T. 31 N., R. 8 E., Seward Meridian
Sec. 13, NE¼SW¼SE¼

Site Map: Figure 17

Setting: The site is located on the south side of the Susitna River 1.3 km southwest of the mouth of Jay Creek (Figures 159, 258). It is situated at 610 m asl (2000 feet) in elevation on a discrete ridge and knoll system. There are three such ridge-knoll systems that trend east-west for a distance of 500 m on the north facing slope of the valley wall. These ridge systems are separated from one another by drainages on the east and west sides which flow north 200 m down an amorphous 15° slope to a flat alluvial terrace 300 m below. The site ridge rises ca. 20 m above its surrounding terrain and has a crescent shape. It travels from a high narrow east-west trending ridge (4 x 20 m) and then descends ca. 4 m to the south, after another 40 m it turns again back to the west descending another 4 m to complete the crescent on a rounded knoll (10x15 m). The open end of the crescent faces west and drops down immediately into a drainage. The site occupies both the higher narrow ridge and the lower rounded knoll. The site datum is on the lower knoll, the ridge is 8 m higher and 36 m to the north of datum. Views from the two areas differ with the higher ridge affording the more encompassing view. The view from the ridge encompasses the slope below, the lower alluvial terrace and the Susitna River. To the west of the adjacent drainage is visible. Less dense tree cover would allow views of the nearby knolls and expanded views of nearby drainages. The lower datum knoll overlooks the drainage to the west and affords a restricted view to the northwest of the Susitna River. The south trending portion of the higher ridge line to the north curves around the knoll on its eastern side sheltering it from wind. Vegetation in the lower knoll consists of dry white lichens mat interspersed with patches of dwarf birch, Labrador tea, and mountain cranberry. White spruce occur along the perimeter of the knoll. The drainage to the west is more intensely vegetated and includes willow sp., aspen, mosses and other herbaceous plants. The higher ridge has a dry white lichenous mat as well, with deflated soils and gravel at the surface. The slope leading north down to the Susitna River is covered in dwarf birch, low woody plants, with white spruce with a few aspen trees present. The entire site ridge-knoll system is lightly covered with white spruce and woody shrubs with clearing areas where the white lichenous mats prevail.

Reconnaissance Testing: The site is comprised of two areas of subsurface lithic artifacts, no surface indication of the site was observed. Two 40 x 40 cm test pits were excavated, test pit 1 (datum) on the lower knoll and test pit 2 on the higher ridge (Figure 17). Test pit 1 produced artifacts only in the original shovel test; a black chert flake possibly a core tablet (UA81-231-1), and a small black chert waste flake of the same material. The provenience of these artifacts appears to be 5-7 cmbs under the humic mat lying in association with charred wood above a white tephra layer. A charcoal sample (UA81-231-5) was collected from 5-7 cmbs from within this tephra unit. Test pit 2 produced one very pale brown rhyolite waste flake 0-7 cmbs. Another very pale brown rhyolite waste flake was excavated from test pit 2 at 4 cmbs in a yellow-brown tephra-silt unit.

Collected Artifact Inventory

1 Black chert flake (possible core tablet)
1 Black chert flake
2 Very pale brown rhyolite flakes

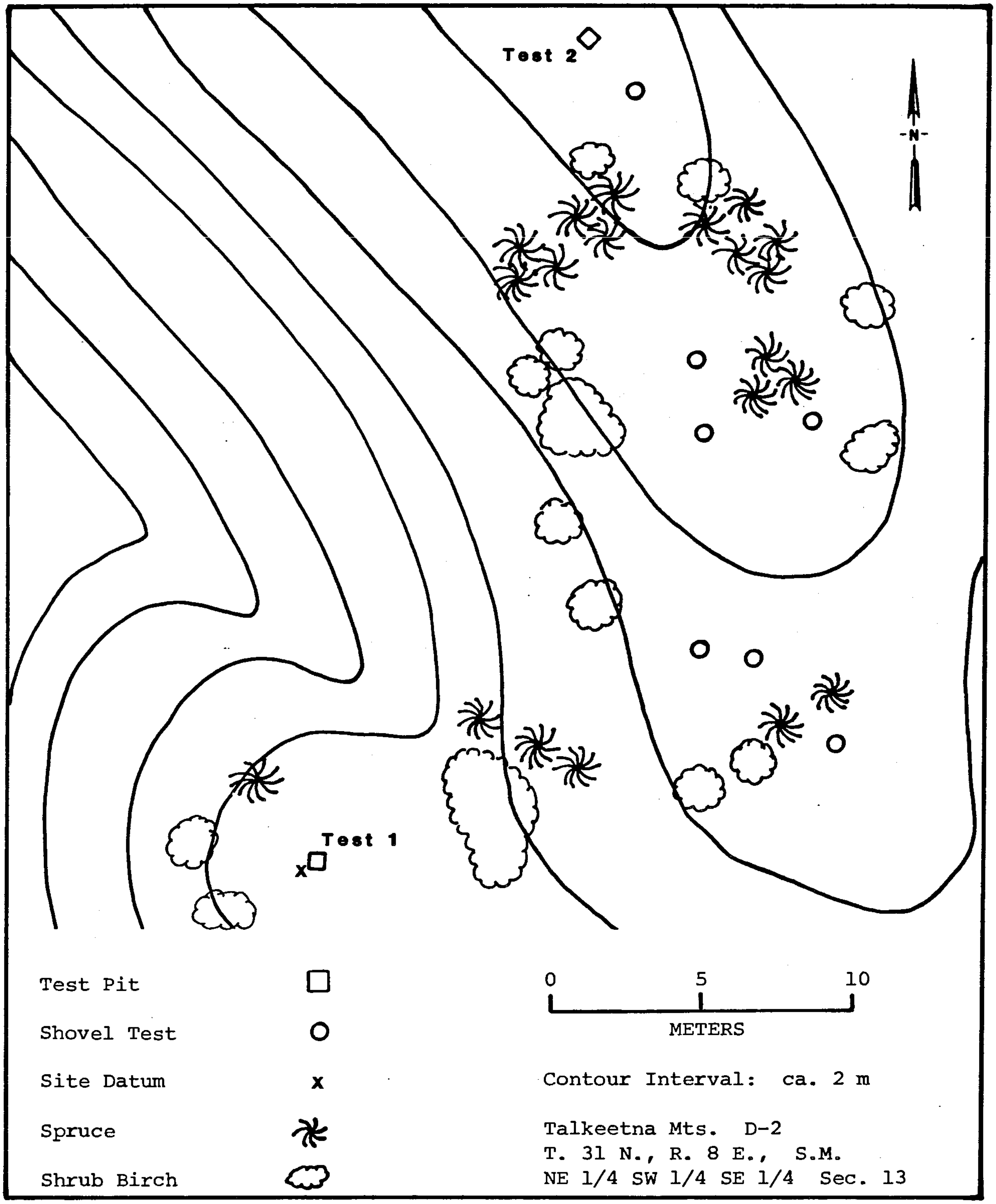


Figure 17. Site Map TLM 075.

(xxiv) AHRS Number TLM 077, Accession Number UA81-234

Area: ca. 600 m South of Kosina Creek Mouth, Survey Locale 84
Area Map: Figure 159; Survey Locale Map: Figure 253
USGS Map: Talkeetna Mts. D2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 452050 Northing 6960900

Latitude 62°46'40" N., Longitude 147°56'30" W.

T. 31 N., R. 8 E., Seward Meridian
Sec. 15, NW¼NE¼SW¼

Site Map: Figure 18

Setting: The site is located 600 m south of the confluence of Kosina Creek and the Susitna River. Situated on the southern end of a discrete esker which runs approximately north-south across the present Susitna floodplain, the site is on the highest point of relief, about 5 m above the floodplain (Figures 159, 253). It is between 518 m and 549 m asl (1700 and 1800 feet). The site occupies the southern end of the esker, a relatively flat and broad section of approximately 40 m x 80 m. The rest of the esker descends gently toward the Susitna River to the north. The view from the site is hampered by dense black spruce and birch forest in all directions except northward across the esker itself, where the forest is open. Labrador tea, blueberry, lowbush cranberry, cranberry and moss, including sphagnum and lichen cover the ground surface, which is hummocky in addition to the relatively level aspect. Looking south and uphill, the terrace containing site TLM 065 is partially visible.

Reconnaissance Testing: No surface indication of the site was observed. The site is characterized by two flakes. One basalt flake was found in test pit 1 at 25 cm to 30 cmbs, and the other in the backdirt of the initial shovel probe of test 1 at ca. 15 cmbs (Figure 18). They are both stratigraphically associated with a coarse yellow-brown sandy gravel (modified drift), which underlies three tephra units. Charcoal flecks occur at the contact of the middle and lower tephras, indicating a possible paleosol. No charcoal was collected. Five additional shovel tests within a 10 m radius of test pit 1 revealed no further cultural material.

Collected Artifact Inventory

1 Gray flake
1 Basalt flake

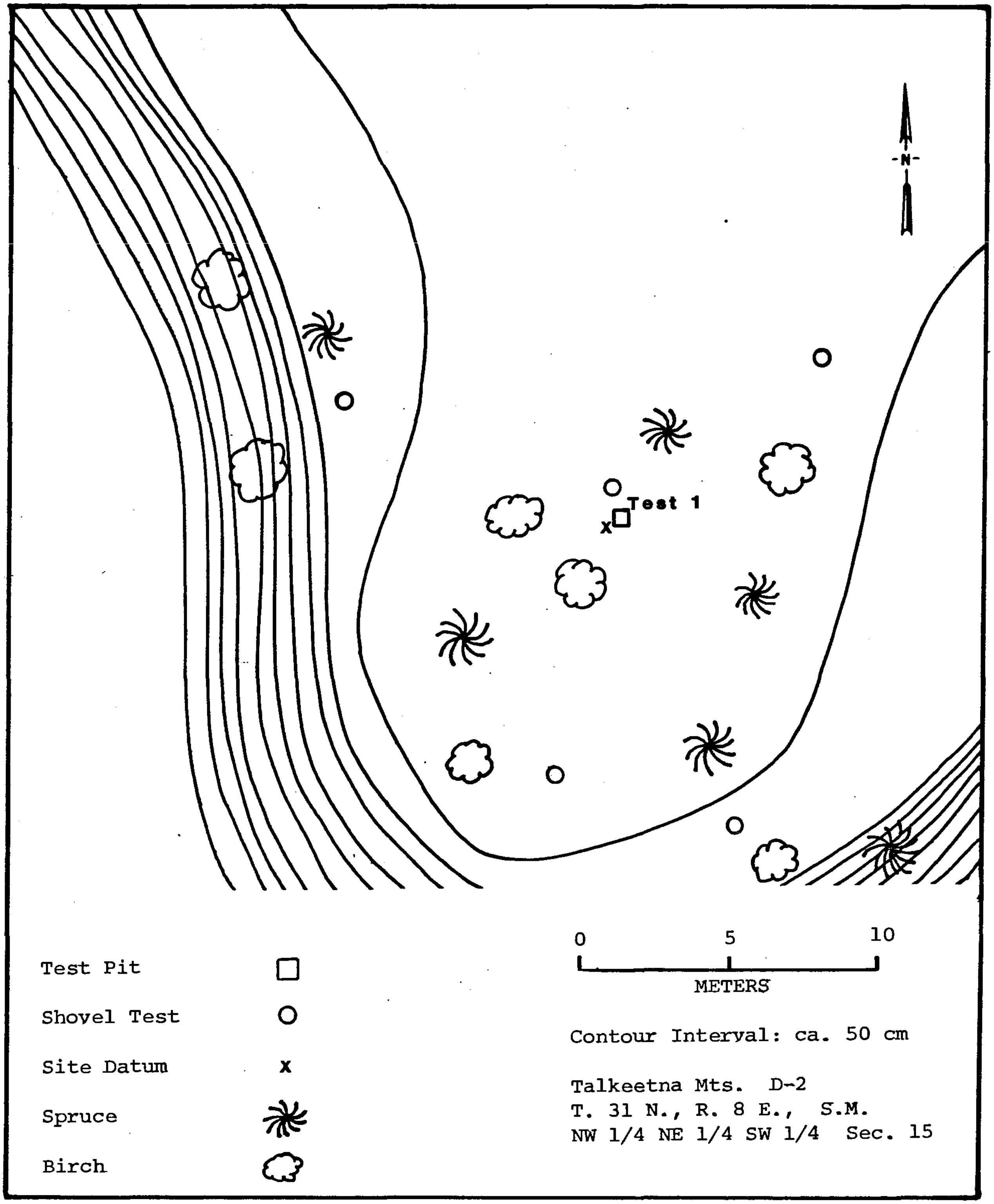


Figure 18. Site Map TLM 077.

(xxv) AHRS Number TLM 102, Accession Number UA81-260

Area: ca. 5.3 km Downriver from Kosina Creek Mouth, Survey Locale 77
Area Map: Figure 158; Survey Locale Map: Figure 247
USGS Map: Talkeetna Mts. D3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 446800 Northing 6961800

Latitude 62°47'04" N., Longitude 148°02'40" W.

T. 31 N., R. 8 E., Seward Meridian
Sec. 7, SW¼SW¼SW¼

Site Map: Figure 19

Setting: This site is located at an elevation of 518 m asl (1700 feet) on the western end of a ridge crest on the northern side of the Susitna River, 5.3 km downriver from the mouth of Kosina Creek (Figures 158, 247). This ridge extends and widens for several hundred meters to the east and is oriented east-west, parallel to the river. The site is located approximately 60 m east of the western terminus of the ridge. The degree of slope varies downward to the north, south, and west with a maximum slope of about 30° south towards the river, and an average slope of about 10° north and west on the ridge terminus. The site directly overlooks the river and visibility is only partially obscured through trees up and down river for between 0.5 and 1 km. The view to the north is limited by an older, higher vegetated terrace at a distance of about 130 m. A change in vegetation would not drastically alter visibility from the site although denser forestation would obstruct upstream and downstream views of the river. Access to the river is easy to the west down the more gentle slopes of the ridge terminus. A currently used game trail passes along the ridge crest, through the site, and down the end of the ridge to a gravel bar approximately 100 m west of the site. Vegetation in the vicinity of the site is lowland spruce-hardwood forest with scattered mixed spruce and birch on the ridge top. Some dwarf birch, labrador tea, bush berries, sphagnum moss and lichens also characterize site and surrounding vegetation. Black spruce and some marsh grasses also occur in more poorly drained surrounding areas.

Reconnaissance Testing: No surface artifacts were observed at the site. A black chert waste flake was found in the backdirt of a shovel test, which was then expanded to become test pit 1 (Figure 19). This single test located another three waste flakes. A black chert waste flake was located just under the humic mat at 15 cmbs, atop a brown tephra layer. Two additional black chert waste flakes were located at 30 cmbs, in a rusty-orange oxidized tephra.

Collected Artifact Inventory

4 Black chert flakes

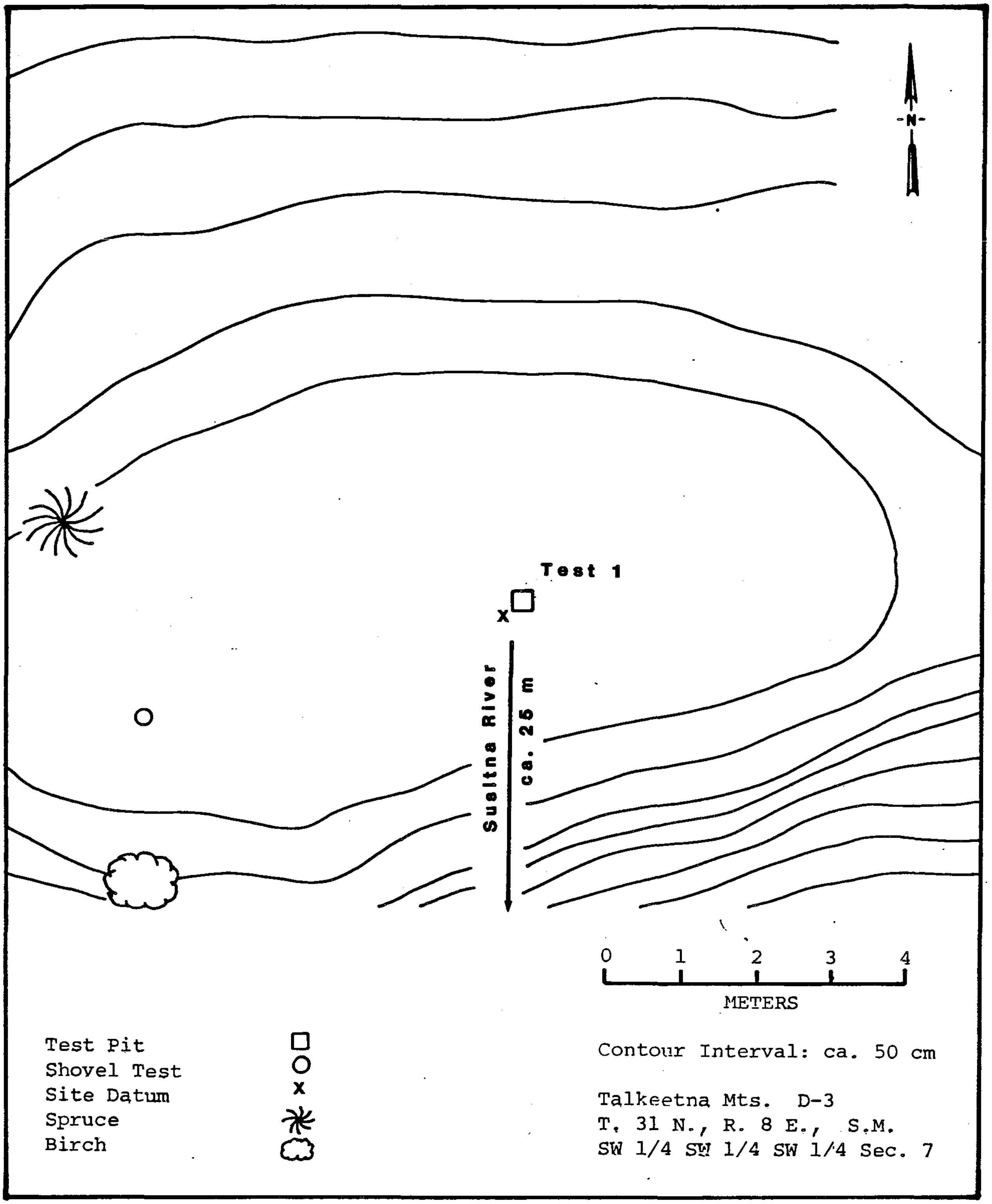


Figure 19. Site Map TLM 102.

(xxvi) AHRS Number TLM 104, Accession Number UA81-274

Area: ca. 1 km West of Watana Creek Mouth, Survey Locale 22
Area Map: Figure 158; Survey Locale Map: Figure 187
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 436100 Northing 6968100

Latitude 62°50'20" N., Longitude 148°15'25" W.

T. 32 N., R. 6 E., Seward Meridian
Sec. 25, SE¼NW¼NW¼

Site Map: Figure 20

Setting: The site is located approximately 500 m west of Watana Creek and 1 km northwest of the confluence of Watana Creek and the Susitna River (Figures 158, 187). The terrain bordering the lower west side of Watana Creek consists of undulating glacial kames, eskers, and small lakes. The site is situated on the southern slope at the southwestern end of one northeast trending esker which curves around the northern edge of a 2 hectare lake at 570 m asl (1870 feet). The site is about 20 m from the edge of the lake, and about 10 m above it. Visibility is restricted to about 50 m to the southwest and southeast, toward a low, presently marshy area and toward the lake, by dense vegetation on the slopes of the esker. To the northeast and northwest the view is limited to the immediate slope of the esker. An open forest of white spruce and birch covers the site and surrounding terrain. Labrador tea, high bush cranberry, blueberry, and dwarf birch cover a thick ground mat of sphagnum moss and lichens.

Reconnaissance Testing: The site consists of a rectangular depression (Feature 1) of horizontal dimensions 1.4 m x 1.2 m, oriented northeast about 5 m below the top of the ridge on the south face (Figure 20). It is approximately 65 cm deep and overgrown with sphagnum moss and heath, with a diffuse berm visible on all but the northwest side. A 15 cm diameter spruce tree is growing from the southwest wall; a rotting birch is present in the northeast wall. A test (test pit 1) was expanded from an initial shovel test about 70 cm east of the depression, which revealed charcoal and partially burned wood in a sand and gravel matrix underneath the moss cover. Test pit 1 further yielded two unmodified bone fragments and additional scattered pockets of charcoal, from which a sample was collected. The bone and charcoal were encountered in the gravelly sand matrix between 12 and 18 cmbs. Three tephra units with a possible paleosol unit between each, all lying above a sand and cobble unit, occur below the upper gravelly sand unit. Additionally, small units of silt or tephra occur stratigraphically above the cultural unit. The cultural unit and the overlying silt-tephra units are tentatively interpreted as fill from the original excavation of the depression.

A small amount of moss within feature 1 was carefully pulled away from the southeast wall and the floor of the feature. No structural remains were noted. Four shovel tests were dug within 20 m of feature 1; all were sterile.

Collected Faunal Material Inventory

Test pit 1, 12 cmbs:

1 Rib fragment, large mammal

10-18 cmbs:

1 Rib fragment, large mammal

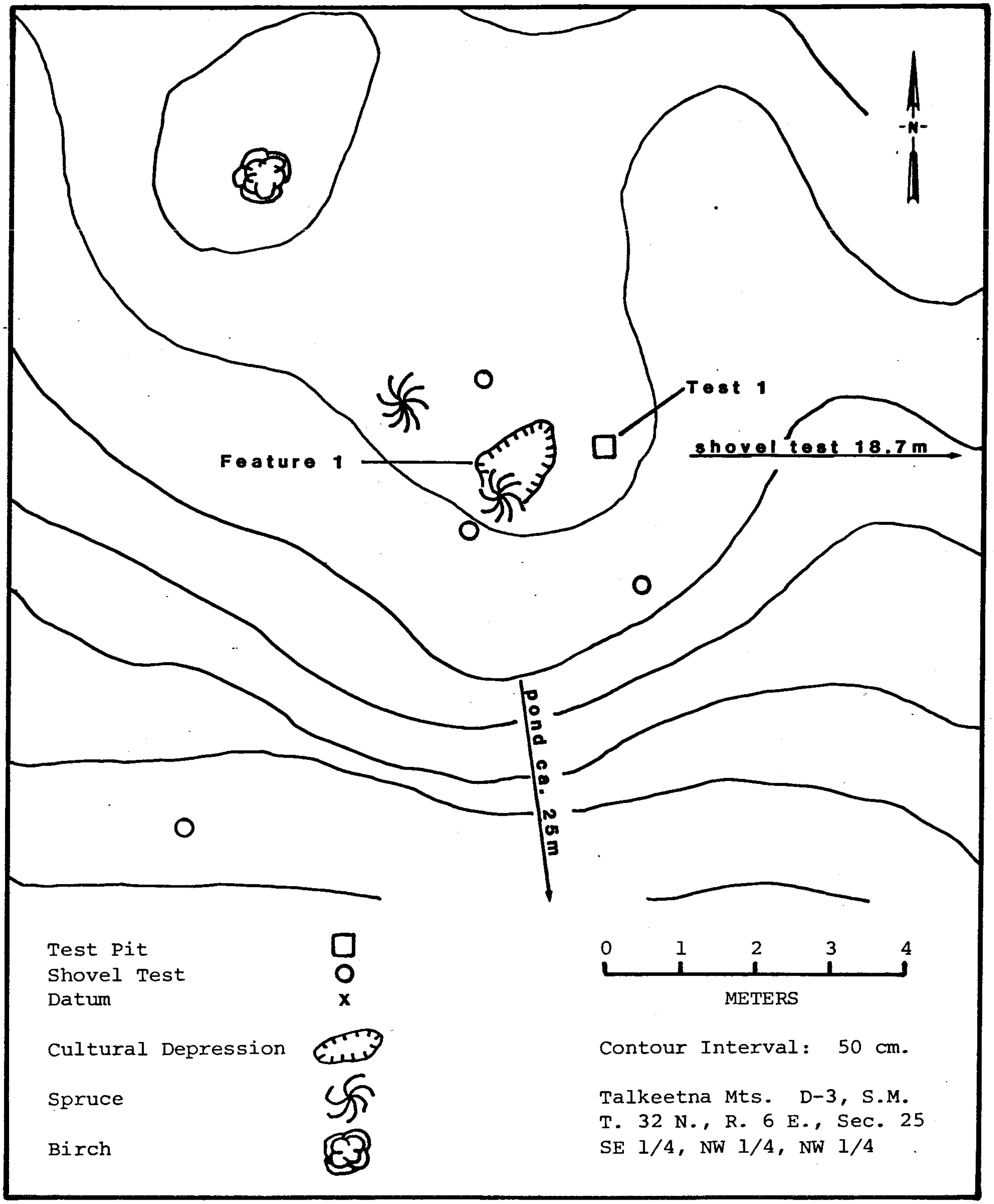


Figure 20. Site Map TLM 104.

(b) Historic Sites - Results and Discussion

(i) AHRS Number TLM 079

Area: ca. 200 m East of Jay Creek Mouth, Survey Locale 33
Area Map: Figure 159; Survey Locale Map: Figure 203
USGS Map: Talkeetna Mts. D2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 454950 Northing 6960950

Latitude 62°46'45" N., Longitude 147°53'00" W.

T. 31 N., R. 8 E., Seward Meridian
Sec. 13, SE¼SW¼NW¼

Site Map: Figure 21

Setting: The site, a trapper's line cabin complex built by Elmer Simco in the mid-1930's, is located on a low alluvial plain approximately 200 m east of the confluence of Jay Creek and the Susitna River (Figures 159, 203). Jay Creek, approximately 130 m to the north, and the Susitna River, 100 m to the south border the site complex. Occasional flooding of the slightly lower terrain west of the cabin is apparent due to the presence of driftwood debris and the displacement of a dog kennel structure. Toward the northwest, the fairly level plain continues for approximately 600 m before reaching the steep (20-30°) slope of the valley wall. Vegetation in the vicinity of the site consists of large white and black spruce, tall alder, dwarf birch, mosses and grasses.

Reconnaissance Documentation: Documentation consisted of the documentation of the cabin, three outbuildings, a tree cache structure, a garbage dump and associated historic debris (Figure 21). No subsurface tests were excavated. This site complex was camp number 3 on the trap line of Elmer Simco, as indicated by a map found in another of Simco's cabins (see site TLM 076, headquarters).

The cabin consists of a 13 foot by 9 foot one room, dirt floored structure built of horizontally stacked spruce logs. The corner joints are triangularly notched with the logs extending past their point of intersection. On the interior of the cabin the logs have been hewn square. Moss and dirt chinking was used between the logs. The roof is peaked, supported by five log beams (two of which are the top wall logs) which extend more than 2 feet past the front of the cabin, providing a protected overhang. Roof covering consists of sawed boards, flattened stove pipe and large pieces of sheet metal. Openings into the cabin include: two small (21" x 16½" and 19" x 21") formerly glazed windows in the southwest wall; two small (approximately 4" x 5") gable vents at either end of the cabin near the roof; a screened, clear polyethylene tarp covered, 17" x 22" skylight near the peak above the door and a 4'3" tall by 2'7" wide door in the southeast wall. The very few interior supplies present consist of fairly modern (1960's and later) cooking utensils and cans. Two granite enamalware pots were noted which may date to the 1930's. The cabin is sparsely furnished with a stacked bunk with springs along the northwest wall, a three-tiered shelf between the windows on the southwest wall and a table in the south corner.

There is a small sheet metal Yukon stove in the southeast section of the cabin with a shelf beside it on the northeast wall. Another recent shelf is above the door. Many pencil inscriptions with dates are on the interior walls. Above the door is "Simco Aug 28, 19__ (date illegible) Built Cabin." The earliest dated inscription is "Aug 18-36 ELMER." Bush pilot Don Sheldon's name from Talkeetna is also present. Generally, the cabin is in good condition, having been protected by the sheet metal roof. Two sections of the bottom wall logs are displaced and may cause subsequent collapse of the walls. Dry rot was noted on the ends of the five horizontal roof support logs.

Outbuilding number 1 is a 3' x 3'8" interior dimension horizontal spruce log walled outhouse with square notched corner joints. The roof slopes toward the rear of the structure and is sod covered. The structure is in good condition.

Outbuilding number 2 is completely collapsed and covered with vegetation. Many structural elements are recognizable and have been used to reconstruct the building layout and discription. A rope with wooden floats, possibly the remains of a fishing net, was found with the structural debris. The structure consisted of a 5' x 6'6" interior dimension horizontal spruce log walled shed with saddle notched corner joints. The roof was peeked and covered with two layers of split logs. The structure is similar to outbuilding number 1 at site TLM 071. Its probable function was a harness and general storage shed.

All that appears to remain of outbuilding number 3 are the front two cut logs of a dog kennel. These were found displaced near a ditch north of the cabin. Fitted together, the logs have two 11" square openings and notched ends. The size of the openings correspond to those found in the kennel at TLM 071. This structure was apparently a two-bay dog kennel that has been destroyed by flooding.

The tree cache is represented by two widely separated fallen support posts located on the low, occasionally flooded plain north of the cabin. These 11-foot logs have a square notch at the top for the cross beam and two diaginal support notches 3 feet lower (Figure 21). One square 7-foot long cross beam with notches for the diagonal supports was noted near the first cache post. A 4-foot section at the middle of both posts is sheathed with flattened sheet metal cans to prevent animals from climbing up them to reach cached foodstuffs. Written on one of the sheet metal areas was what appears to be the name of Elmer Simco and the word cache along with other illegible writing. Although separated, the support posts were probably the uprights from a single cache.

A deposit of historic debris was found northeast of the cabin. Included in this deposit were recent items such as plastic, a sleeping bag and cans, as well as a sheet metal stove and oven similar to that found at TLM 071, a cream colored enamalware pail and a metal cot with springs.

This site complex is a good example of a 1930's line cabin and associated structures of the trapping industry in the Susitna River Valley.

Based on the potential information at this site, one would be able to reconstruct the essential structures, furnishings and supplies for fall and winter utilization of the valley's resources. No collection of cultural material was made at this site.

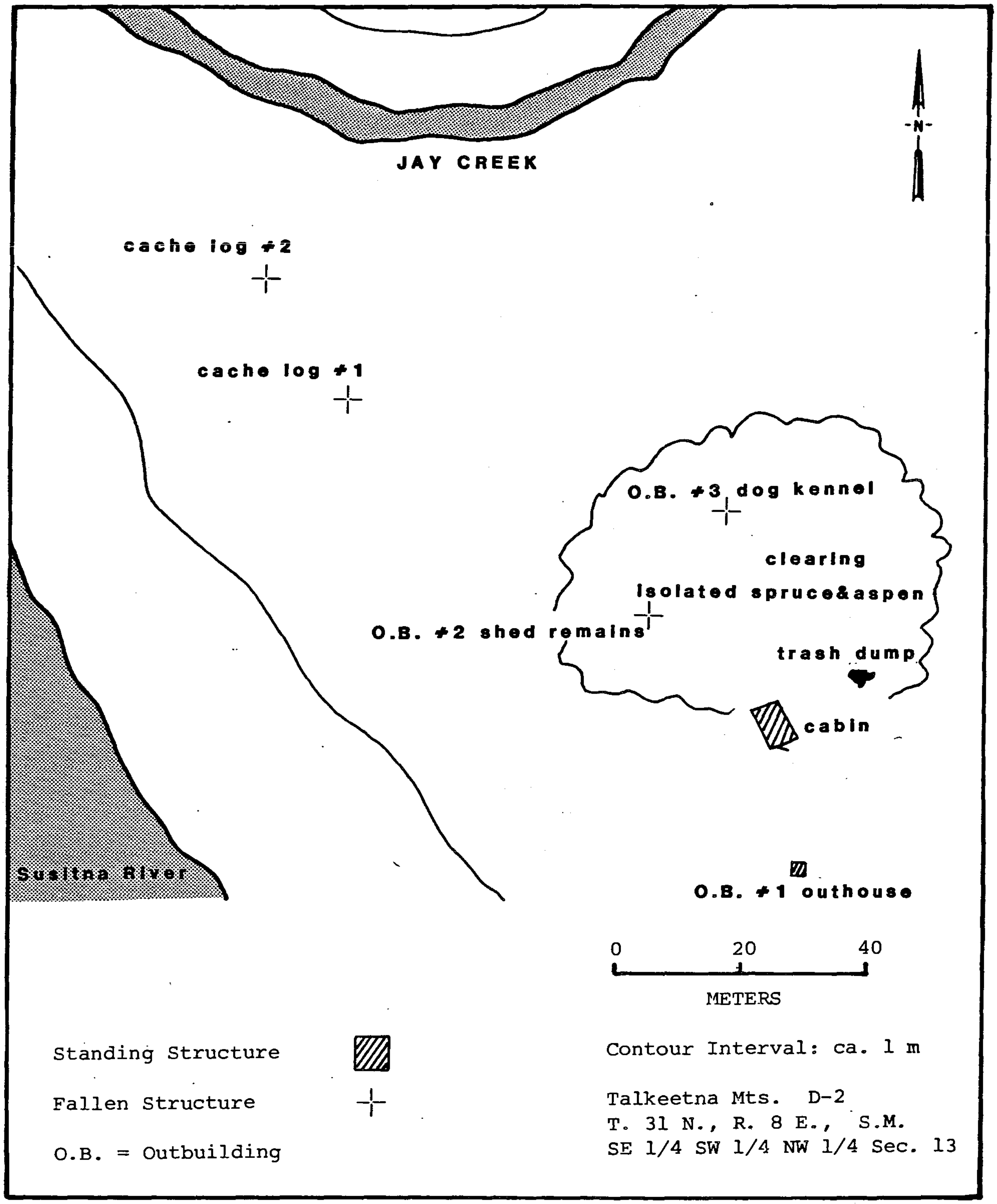


Figure 21. Site Map TLM 079.

(ii) AHRS Number TLM 080

Area: ca. 1 km East of Watana Creek Mouth, Survey Locale 55
Area Map: Figure 158; Survey Locale Map: Figure 227
USGS Map: Talkeetna Mts. D3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 437150 Northing 6966950

Latitude 62°49'40" N., Longitude 148°14'10" W.

T. 32 N., R. 6 E., Seward Meridian
Sec. 25, SE¼SE¼SE¼

Site Map: Figure 22

Setting: The site is a historic trapper's line cabin located on the first unnamed drainage 1 km east of the Watana Creek confluence on the south side of the Susitna River (Figures 158, 227). The cabin is situated on a low, flat, poorly drained alluvial terrace 40 m east of a small braided stream at an elevation of 465 m asl (1540 feet). The Susitna River is 2 m lower and 60 m to the north. Intermittent drainages of the small stream surround the cabin to the east, north, and west subjecting the site to occasional flooding. Vegetation in the vicinity of the site consists of lowland black spruce forest with some white spruce, alder and occasional cottonwood. Willow predominate in thickets along the creeks. Ground cover is grass, sphagnum and a sparse understory of dwarf birch, Labrador tea and bearberry.

Reconnaissance Documentation: The site consists of a single cabin and a stacked pile of spruce logs partially cut for firewood. No out buildings or historic debris scatter was noted, however the area was flooded and heavily vegetated which may have obscured additional features.

The cabin is a one room, dirt floored, 7' x 10'6" structure built of horizontal moss chinked spruce logs with the interior side of the logs hewn flat (Figure 22). The corner joints are square notched and the logs extend past their point of intersection. The side walls are 4'4" high at the eaves. The roof is low and peaked, supported by a central ridge beam 6'3" above the floor. It is covered with three layers of split logs and extends past the front approximately four feet, providing a protected area over the doorway. The roof also overhangs the side walls.

Openings in the cabin include a 2' x 4' door in the southeast wall, a 12" x 13" formerly glazed window centered on the southwest wall and a small square opening in the southeast section of the roof for a stove pipe exit.

Interior furnishings are sparse, consisting of: a built-in bunk along the northeast wall supported by a beam and round wooden slats covered with spruce boughs; a low bench and two shelves and a table constructed out of wooden boxes along the southwest wall; and a rusted stove and pipe (Pacific Stove and Fdry Co., Seattle, Wash.). Supplies included coffee cans, aviation gas cans modified for use as water buckets, granite enamelware wash basins and a coffee and tin pots (see cabin inventory list). Pencil inscriptions are by O. H. Voyel and range in date from September 11, 1945 to 1949.

The cabin is in fair condition with the exception of half of the southeast front wall which has collapsed.

No cultural material was collected at the site.

<u>Non-collected Artifact Inventory</u>

1 Standard aviation 5 gal. square can with top cut open and rope handle
1 20 lbs. square tin of Hills Bros. coffee, red can brand with top cut out
1 Cheveron aviation gasoline 5 gal. square can with top cut open
1 Small round can Hill Bros. coffee, 1 lb.

1 1 lb. round can of Darigold sweet cream butter
2 1 pt. cans of Eagle brand condensed milk
1 Tin kettle, art deco style
1 Small coffee percolator pot with faceted sites
2 Small granite enamalware wash basins
1 9½" white with blue trim enamalware plate
1 Small round can of MJB regular grind coffee, 1 lb.
Portions of a magazine on bunk; no date, ca. 1940's
Small file
Small wood stove (rusted)

Cabin was flooded when inventory was taken, so additional items may have been present under the water.

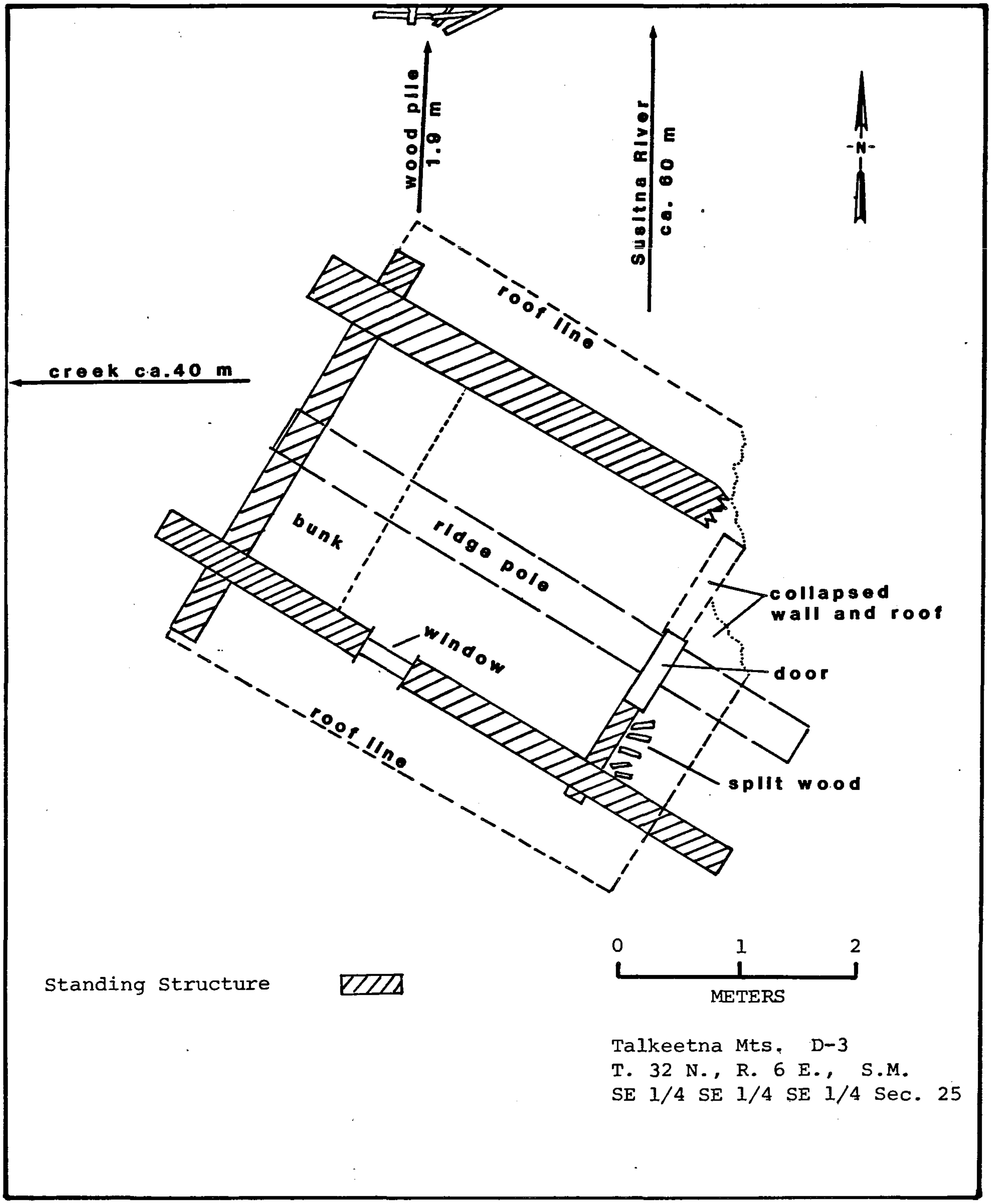


Figure 22. Site Map TLM 080.

3.3 - Devil Canyon Dam and Impoundment

(a) Archeological Sites - Results and Discussion

(i) AHRS Number TLM 022, Accession Number UA80-69, UA81-238

Area: Mouth of Tsusena Creek, Proposed Borrow E, Survey Locale 15
Area Map: Figure 157; Survey Locale Map: Figure 179
USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 417900 Northing 6966850

Latitude 62°49'28" N., Longitude 148°36'35" W.

T. 32 N., R. 4 E., Seward Meridian
Sec. 36, SW¼NE¼NE¼

Site Map: See Section 4, Figure 111

Setting: The site located in proposed Borrow Area E, is situated on the east bank of Tsusena Creek at its confluence with the Susitna River (Figures 157, 179). At this location Tsusena Creek is a shallow, fast flowing, clear water stream approximately 15 m wide. The site is on the bank of a flat alluvial terrace overlooking the creek and the Susitna River to the south and southwest. The alluvial terrace, which has been downcut by Tsusena Creek at its eastern end, extends southwestward along the north bank of the Susitna River for 3.2 km, varies from approximately 400 to 800 m in width, and is 451 m asl (1480 feet). From the site location both the north and south banks of the Susitna River are in view for approximately 800 m to the west. The terrain rises steeply to the north and northeast of the site where the elevation is 61 m higher than the site. Immediately to the northeast, Tsusena Creek emerges from a deep canyon with almost vertical bedrock walls. Travel upstream is extremely difficult or impossible due to the narrow canyon and a 30 m waterfall approximately 3 km upstream from the mouth of the creek. The site is mantled by a mature forest of mixed white spruce, birch, aspen, and cottonwood. Some black spruce occurs in poorly drained areas. Thick mat ground cover consisting of sphagnum moss, lichens, and grasses covers the floor of the forest.

Reconnaissance Testing: There are no surface indications of a site at this location, however a shovel test revealed charcoal and burned bone at 15 cmbs. This initial test was expanded to test pit 1 (Figure 111) which was excavated to a depth of 35 cmbs and revealed a charcoal lens and fragments of burned large mammal bone between 14 and 15 cmbs. Test pit 1 also exposed three river cobbles at the same depth, and this feature may be a hearth. The cobbles were left *in situ*. No lithic material other than the cobbles was revealed by test pit 1. A total of four shovel tests were excavated at the site (Figure 111). Both tests 3 and 4 (Figure 111) produced subsurface charcoal and shovel test 4 exposed a possible fire cracked rock in the humus layer which was left *in situ*. Shovel tests 2 and 5 (Figure 111) did not reveal charcoal or cultural material. A radiocarbon determination collected during systematic testing on a charcoal sample (UA81-238-2) produced a date of 300 ±70 years: A.D. 1650 (DIC 2252). Sample (UA80-69-1a collected in 1980 produced a modern date (DIC 1879).

Inventory of Faunal Material

Test pit 1, 0-5 cmbs:

10 long bone fragments, medium-large animal
1 phalanx fragment, 1st or 2nd, large mammal,
possible caribou (*Rangifer tarandus*)

5-10 cmbs:

25 long bone fragments, calcined, medium-large mammal
1 phalanx, 3rd, caribou (*Rangifer tarandus*)
1 canine tooth fragment, calcined, possible bear (*Ursus* spp.)
7 tooth fragments, calcined, medium-large mammal

14-15 cmbs:

6 long bone fragments, calcined, medium-large mammal

(ii) AHRS Number TLM 024, Accession Number UA80-71

Area: ca. 1.5 km Northwest of Tsusena Creek Mouth, Proposed Borrow E
Area Map: Figure 157; Location Map: Figures 283, 284
USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 416400 Northing 6966900

Latitude 62°49'33" N., Longitude 148°38'12" W.

T. 32 N., R. 4 E., Seward Meridian
Sec. 36, SW¼NW¼NW¼

Site Map: Figure 23

Setting: The site, located approximately 1.5 km northwest of Tsusena Creek in proposed Borrow Area E, is about .5 km upstream from the mouth of a small unnamed creek which joins the Susitna River from the north (Figures 157, 283, 284). It is situated on the end of a ridge approximately 150 m west of the creek, and overlooks an alluvial terrace to the south (Figure 283). The site is located about 3 m below the point of the ridge on a small bench and is about 30 m above the level of the alluvial terrace. To the northwest the ridge rises gradually for about 400 m and then becomes part of the slope of the main valley which rises steeply to the 762 meter asl (2500 foot) elevation. The site is situated in a dense stand of birch, white spruce, and alder which restrict the view from the site, and a thick carpet of moss covers the ground. However, in the absence of trees the creek and most of the alluvial terrace between the site and the Susitna River would be visible. Other ground vegetation in the vicinity of the site includes forbes, Labrador tea, and high bush berries. Black spruce are present on the alluvial terrace below the site.

Reconnaissance Testing: There is no surface indication of a site at this location; however, a shovel test produced a single cortex flake at a depth of 20 to 30 cmbs. This black basalt flake has a white patina on the dorsal surface. The shovel test was expanded (test pit 1) but no additional cultural material was found although some charcoal was present between 5 and 10 cmbs in the humus layer. It was probably not cultural in origin because charcoal was found in all other tests. A total of three shovel tests and two test pits were excavated at the site, four of which were located on the small bench where the cortex flake was found and one (shovel test 2) on the point of the ridge (Figure 23). The cortex flake from test pit 1 was the only cultural specimen found at the site. Six rock fragments, three of which exhibit facets that appear polished, were collected from test pit 1. Laboratory analysis indicates that these rocks are silicious metasedimentary types and that the facets are natural cleavage planes.

Collected Artifact Inventory

1 Black basalt cortex flake
6 Silicious metasedimentary rock fragments

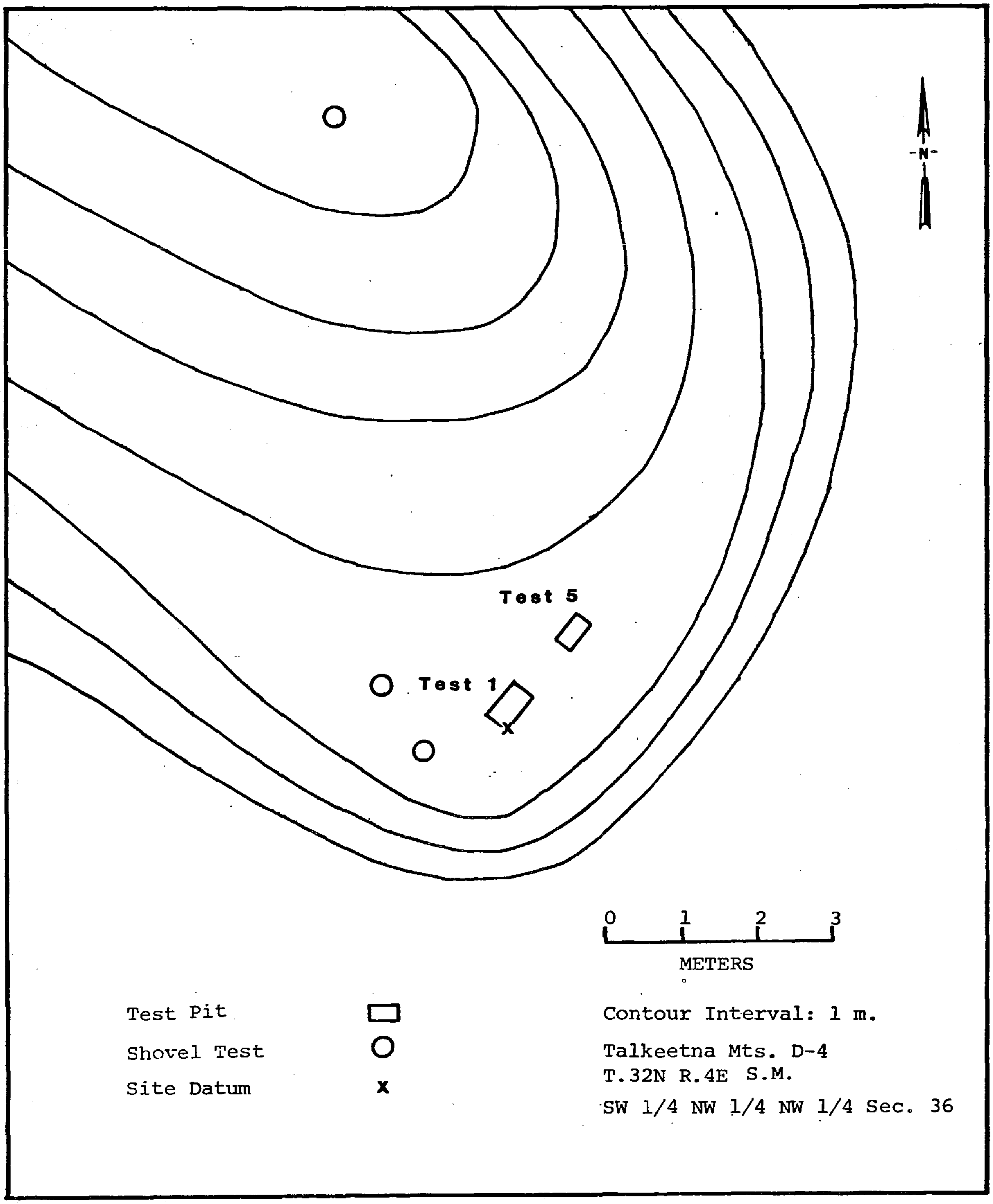


Figure 23. Site Map TLM 024.

(iii) AHRS Number TLM 027, Accession Number UA80-74, UA81-243

Area: ca. 4 km Upriver from Fog Creek Mouth, Survey Locale 14
Area Map: Figure 157; Survey Locale Map: Figure 178
USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 414800 Northing 6965100

Latitude 62°48'30" N., Longitude 148°40'20" W.

T. 31 N., R. 4 E., Seward Meridian
Sec. 3, NE¼SE¼NE¼

Site Map: See Section 4, Figure 113

Setting: The site is located on the south side of the Susitna River at the mouth of an unnamed stream which joins the Susitna from the east, approximately 4 km upriver from the mouth of Fog Creek (Figures 157, 178). Situated on the summit of a discrete cone shaped knoll approximately 100 m from the river margin, the site overlooks both the Susitna and the mouth of the small clear water stream approximately 50 m to the south. The knoll forms the end of a ridge which extends northeast towards higher ground. In all other directions the 30 m high knoll slopes steeply to the level of the Susitna River. The top of the knoll is approximately 20 m square, sparsely vegetated, and commands a good view in all directions, which is limited only by the tops of several trees rooted on the steep slopes below. The Susitna is in view for 5 km downstream and 1.6 km upstream. The views westward across the river and eastward along the ridge system behind the site are restricted by hills about 800 m asl. Below the site there is evidence of terracing by the Susitna. Tree growth on the slopes of the knoll is dense but only a few birch and aspen grow on top, along with dwarf birch, blueberry, Labrador tea, low bush cranberries, mosses, and lichens. The vegetation at the base of the knoll changes from birch and aspen to black spruce, high bush cranberries, grasses, and sphagnum moss.

Reconnaissance Testing: No surface indication of the site was observed, however cultural material was found in each of three test pits excavated on the relatively flat summit (Figure 113). Test pit 1 (Figure 113) produced two distinct lithologies, each associated with a different soil horizon. Three basalt flakes were discovered between 3 to 5 cmbs at the contact between the humus layer and a whitish-gray volcanic ash. Between 19 to 24 cmbs, and associated with the contact between a dark gray volcanic ash and glacial drift, 11 large patinated light green tuffacious flakes (Artifact Photo A-a through i), and a possible flake core (UA80-74-10; Artifact Photo A-j), were found. Due to the weathered and extremely soft nature of these artifacts, it is uncertain whether or not the larger flakes have been retouched. These specimens recovered from test pit 1 appear to be associated with a subsurface scatter which was only partly exposed by this test. Three ash samples were collected from test pit 1, one (UA80-74-36) from the upper ash horizon 3 cm to 7 cmbs and two (UA80-74-37 and 38) from the lower ash horizon 17 cm to 21 cmbs. Test pit 2 (Figure 113) produced 12 flakes 20 to 25 cmbs which appear to be struck from the same tuffacious material as the specimens recovered between unit 4 and unit 5 in test pit 1. Test pit 3 (Figure 113) produced 2 basalt flakes and 6 tuffacious flakes 22 to 28 cmbs. Results from the preliminary testing suggest that the site may encompass the entire top of the knoll and may contain vertically stratified cultural material bracketed by deposits of volcanic ash.

Samples collected during systematic testing produced dates of: 140 ±45 years: A.D. 1810 (DIC 2244), 1800 ±55 years: A.D. 150 (DIC 2284) and 3210 ±80 years: 1260 B.P. (see Chapter 4).

Collected Artifact Inventory

29 Light green tuffacious flakes (7 with possible retouch)
1 Possible light green tuffacious flake core
5 Black basalt flakes

(iv) AHRS Number TLM 029, Accession Number UA80-76

Area: ca. 4 km Upriver from Fog Creek Mouth, Survey Locale 14
Area Map: Figure 157; Survey Locale Map: Figure 178
USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 414800 Northing 6964900

Latitude 62°48'25" N., Longitude 148°40'20" W.

T. 31 N., R. 4 E., Seward Meridian
Sec. 3, NE¼NE¼SE¼

Site Map: Figure 24

Setting: The site is located on the south side of the Susitna River at the mouth of an unnamed stream which joins the Susitna from the east, approximately 4 km upriver from the mouth of Fog Creek (Figure 157). The site is approximately 200 m south of site TLM 027 and is situated on the edge of an alluvial terrace on the south side of the stream at a point where the direction of the ridge changes from a north-south to an east-west orientation (Figure 178). The elevation of the site above the level of the river is approximately 30 m and both the stream mouth and the knoll upon which site TLM 027 is located are in view. The Susitna River is approximately 150 m west of the site and the deep, fast flowing stream lies approximately 100 m to the north. Both the Susitna River and the stream are visible and easily accessible from the site. The view to the east is restricted by the terrace in that direction. Views in all other directions encompass the terrain immediately accessible from the site with some visual restriction due to fairly dense black spruce. The primary orientation of the site is to the northwest overlooking the stream and stream mouth. Sign of moose (Alces alces) and other game is abundant and a well used game trail crosses the site. Vegetation at the site includes scattered birch, black spruce, high bush cranberry, Labrador tea, blueberry, sphagnum moss, and lichens. Surrounding vegetation varies between dense and open lowland spruce-hardwood forest with some white spruce and alder in the vicinity of the stream mouth. Sphagnum moss is thick near the stream and there are several moss-covered bedrock outcrops adjacent to the stream channel approximately 100 m upstream from the mouth.

Reconnaissance Testing: There is no surface indication of the site on this terrace, and cultural material was revealed by a shovel test (test pit 1). A total of five subsurface tests were excavated, four of which were on the terrace and one on a bench above the terrace (Figure 24). Only test pit 1 produced cultural material. A total of 224 flakes were excavated from test pit 1 which exposed a portion of a large flake scatter 14 to 34 cmbs. The stratigraphy of the site is somewhat distorted by solifluction, however, the flakes appear to be associated with a light orange silty clay stratigraphic unit mottled with gray ash. This gray ash appears to be similar in color and texture to the gray ash associated with the artifacts from the lowest cultural level at site TLM 027. Unfortunately no datable radiocarbon samples were obtained at either site and further testing will be required to clarify their temporal and spacial relationship. Three distinct lithic types were represented in the flakes from test pit 1: basalt, light brown chert, and translucent chalcedony. The majority of flakes are basalt, 10 are chert, and one is chalcedony. The frequency and lithic diversity of flakes from test pit 1 suggests the site may be more extensive than initial testing indicates.

Collected Artifact Inventory

213 Black basalt flakes
10 Light brown chert flakes
1 Translucent chalcedony flake

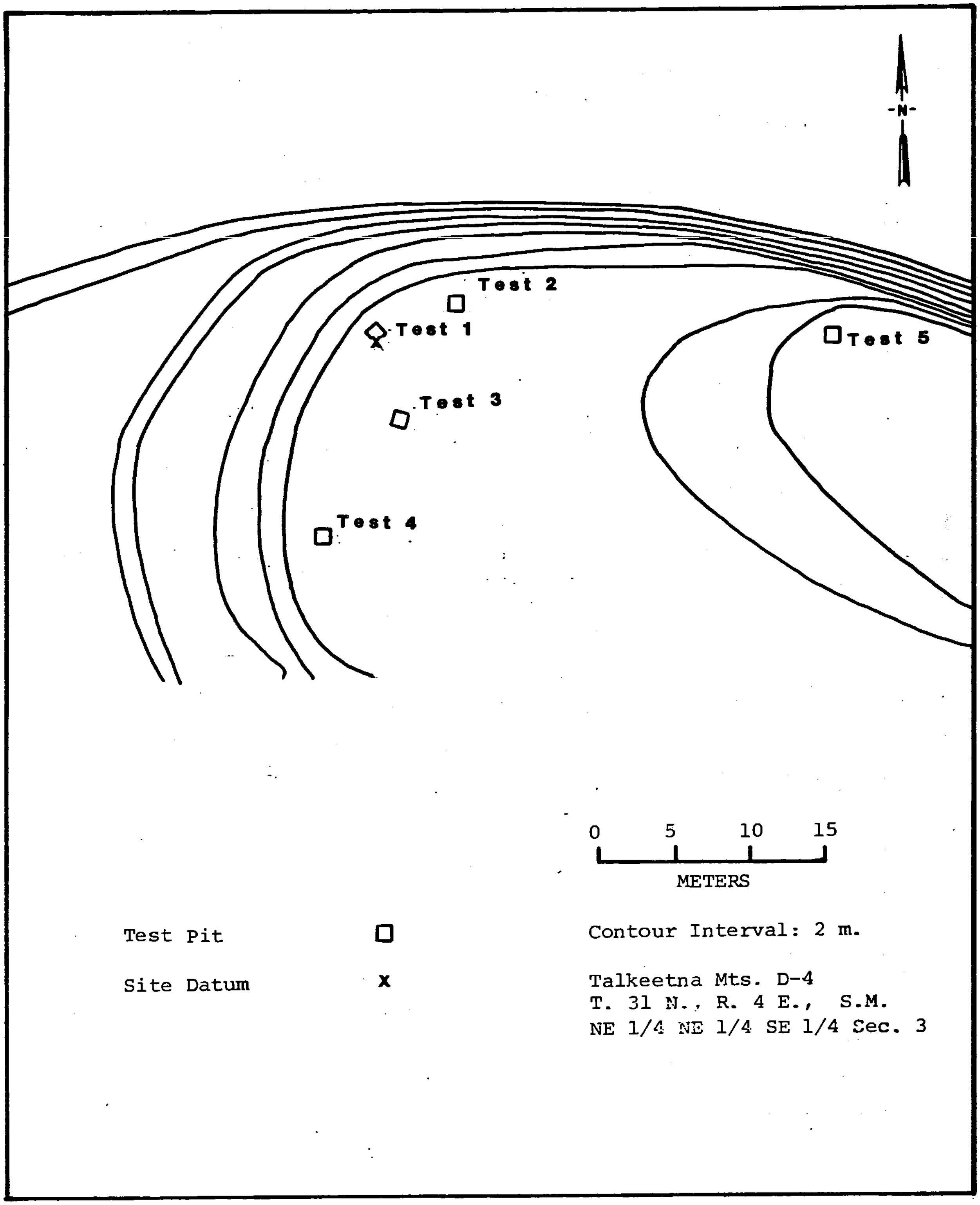


Figure 24. Site Map TLM 029.

(v) AHRS Number TLM 030, Accession Number UA80-77, UA81-217

Area: Fog Creek, Survey Locale 13

Area Map: Figure 157; Survey Locale Map: Figure 232

USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 413350 Northing 6961400

Latitude 62°46'32" N., Longitude 148°41'50" W.

T. 31 N., R. 4 E., Seward Meridian

Sec. 15, SW¼NW¼SW¼

Site Map: Figure 25

Setting: The site is located at an elevation of 457 m asl (1500 feet) on the south margin of Fog Creek approximately 900 m upstream from the confluence of Fog Creek and the Susitna River (Figures 157, 232). Situated on the point of an alluvial terrace, the site is approximately 46 m above Fog Creek and overlooks the deeply incised bedrock canyon through which Fog Creek emerges to join the Susitna River. Fog Creek drains a large area including the Fog Lakes region and is a major tributary of the Susitna River. Below the site the creek is shallow with braided channels and is approximately 10 m wide. The site occupies the rounded bend of a continuous terrace where it changes from an east-west orientation, parallel to Fog Creek, to a north-south orientation parallel to the Susitna River. East of the site the terrace joins a ridge which rises parallel to Fog Creek. West of the site the terrace edge drops off steeply for 30 m to a broad, relatively flat alluvial flood plain. The view from the site is primarily northeast up Fog Creek and west down Fog Creek to its mouth, encompassing a distance of approximately 1.5 km. Visibility in other directions is limited by the terrain and dense spruce forest. Both Fog Creek and the Susitna are easily accessible from the site. A deeply incised game trail traverses the terrace on which the site is located and continues up the ridge east of the site. A recent moose (Alces alces) kill is located on the alluvial plain immediately below the site where a grizzly bear (Ursus arctos) has partially eaten and buried an adult moose (Alces alces). Scattered spruce and birch are present at the site but do not block the view. Low bush cranberry, blueberry, Labrador tea, mosses, and lichens form the principal ground vegetation. The surrounding vegetation is a relatively dense lowland spruce-hardwood forest with white spruce and alder present along the creek.

Reconnaissance Testing: The site contains both surface and subsurface cultural material. Artifacts are eroding out of the game trail that traverses the site. A complete side-notched basalt projectile point (UA80-77-520; Artifact Photo C-h) was surface collected from the trail. Flakes observed along the game trail were left in place, and total of five test pits were excavated at the site, four of which produced cultural material (Figure 25). Only test pit 2, placed on a bench below the main terrace near the surface flake scatter, did not produce cultural material. All test pits on the main terrace produced cultural material, and it appears that the site occupies an area at least 20 m square including portions of the terrace several m from the edge. Over 500 flakes and 6 tools are represented in the artifact assemblage, and radiocarbon determinations and stratigraphy from test pits 1 and 4 suggest that the site may be multi-component.

Test pit 1 (Figure 25) produced 356 flakes, a complete side-notched basalt biface (UA80-77-327; Artifact Photo C-b) and a slightly concave base of a side-notched chert projectile point (UA80-77-89; Artifact Photo C-a). The artifacts from test pit 1 (Figure 25) appear to be associated with a light gray volcanic ash and an orange brown pebbly silt at a depth of 10 to 17 cmbs. A radiocarbon determination of 2310 ± 220 years: 360 B.C. (DIC-1877) was obtained on charcoal (UA80-77-1a) 10 to 13 cmbs in test pit 1. Test pit 3 (Figure 25) produced 105 flakes, three basalt blade fragments (UA80-77-427, 428, and 429; Artifact Photo C-c, d), two of which articulate to form the proximal portion of a blade, a basalt blade core fragment (UA80-77-430; Artifact Photo C-e) and a large black argillite blade-like flake (UA80-77-437; Artifact

Photo C-f). In addition, three possible fire-cracked rock fragments (UA80-77-434, 435 and 436) were found in association with the artifacts from test pit 3. Cultural material from test pit 3 was excavated between 16 to 21 cmbs from light brown silt and dark gray volcanic ash. Solifluction has distorted the stratigraphy, and the silt and ash units lie directly above glacial drift. Test pit 4 (Figure 25) produced 65 flakes 25 to 28 cmbs apparently associated with charcoal (UA80-77-2a) from which a radiocarbon determination of 4720 ± 130 years: 2770 B.C. (DIC-1880) was obtained. A whitish gray volcanic ash is 9 cm above the charcoal, and a sample of this ash was collected (UA80-77-538). Test pit 5 (Figure 25) produced two flakes and a retouched flake (UA80-77-517; Artifact Photo C-g) at 20 to 22 cmbs. Lithologies represented at the site include basalt, reddish-brown, brown and gray chert, argillite, tuff and tuffacious rhyolite. Radiocarbon dates from two charcoal concentrations (test pits 1 and 4) may possibly suggest that this site is multicomponent, however further testing will be required to clarify the relationship of the two radiocarbon determinations and to ascertain the temporal and spacial extent of the site.

<u>Collected Artifact Inventory</u>

1 Gray basalt side-notched projectile point (complete)
482 Black basalt flakes
17 White tuff flakes
12 Light brown tuffacious rhyolite flakes
1 Gray chert flake
1 Reddish-brown chert flake
1 Brown chert flake
1 Black basalt retouched flake
1 Reddish-brown chert side-notched projectile point base
1 Black basalt side-notched biface
1 Black basalt blade core fragment
3 Black basalt blade fragments
1 Black basalt blade-like flake
3 Fire-cracked rock fragments

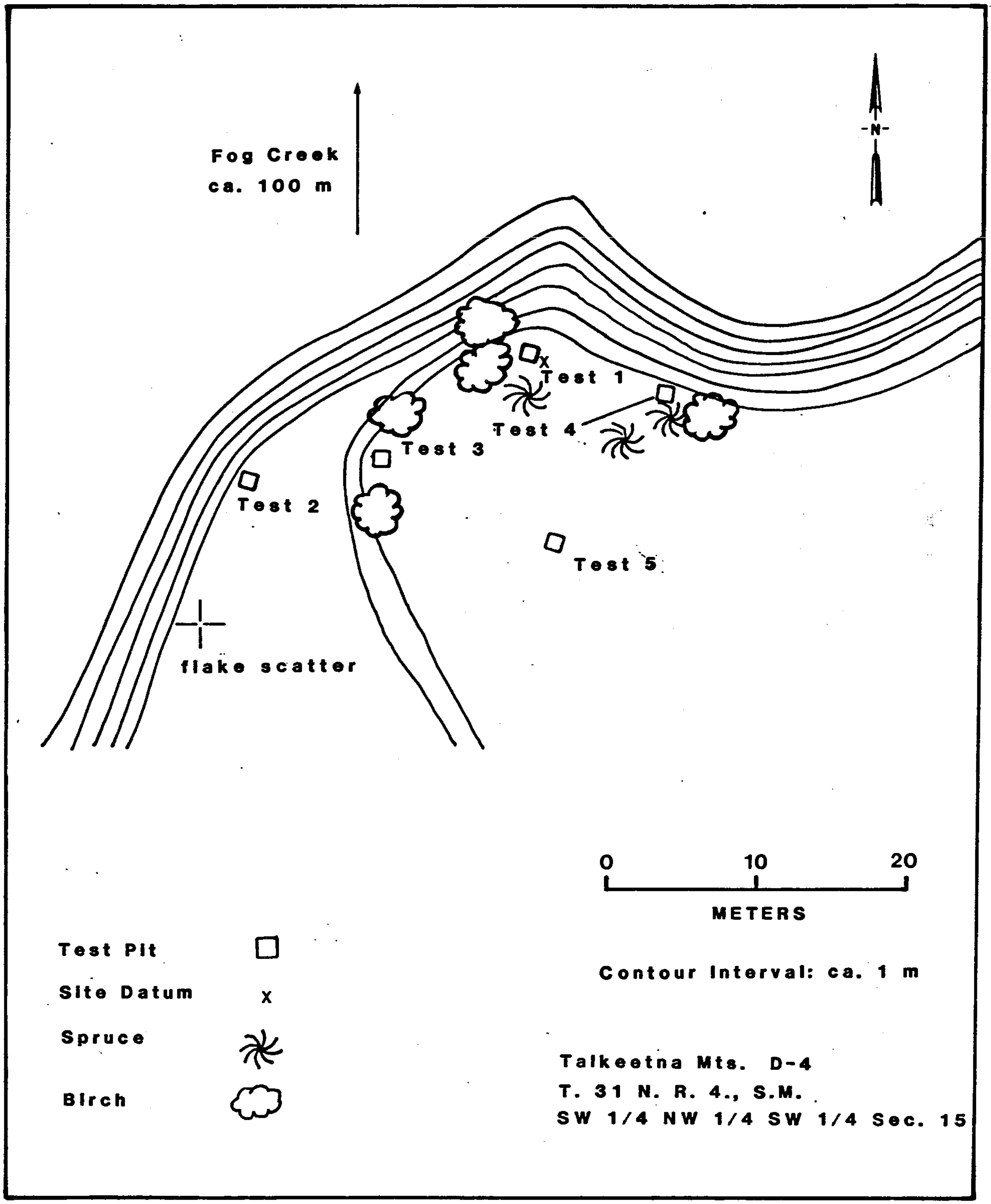


Figure 25. Site Map TLM 030.

(vi) AHRS Number TLM 034, Accession Number UA80-141

Area: 1.5 km Downriver from Fog Creek Mouth, Survey Locale 11
Area Map: Figure 157; Survey Locale Map: Figure 176
USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 411750 Northing 6960400

Latitude 62°45'57" N., Longitude 148°43'45" W.

T. 31 N., R. 4 E, Seward Meridian
Sec. 21, NW¼SW¼NW¼

Site Map: Figure 26

Setting: The site is located on the west side of the Susitna River approximately 1.5 km downriver from the mouth of Fog Creek and 600 m upriver from a sharp westward bend of the Susitna (Figure 157). Situated approximately 200 m west of the river margin at an elevation of 427 m asl (1400 feet), the site is located on an east-west ridge 30 m east of the junction of the ridge with a higher terrace. A small pond, 10 m lower in elevation, is located approximately 30 m northeast of the site (Figure 176). The site rests on a small, open, relatively flat location on the crest of the ridge from which the terrain slopes down 30° to the southwest, dropping 20 m to a broad alluvial river terrace. The ridge continues to the northeast bending around the pond. To the west the ridge terminates, joining with a slope at an elevation of approximately 40 m above the Susitna River. A game trail follows the crest of the ridge with side slopes ranging from 20° to 30° and ending on alluvial fans on either side of the ridge. Vegetation at the site location is sparse, limited to bog blueberry, sphagnum moss, and lichen. Scattered black spruce and birch grow on the slopes of the ridge and dense forests of predominantly black spruce occur to the north and south of the site. To the west, a stand of birch marks the termination of the ridge at which point it joins an uphill slope.

Reconnaissance Testing: No cultural material was found on the surface at the site location. A shovel test which was expanded into test pit 1 produced the proximal end of a pale yellow rhyolite blade-like flake 6 cmbs in an orange-brown mottled silt directly under the humus. A flake of similar lithology was found 11 cmbs in the same silt unit. A second test pit 2 did not reveal additional cultural material (Figure 26). Additional shovel tests along the ridge system away from the immediate vicinity of the site did not produce additional artifacts, and the site appears to be limited to the immediate area of test pit 1. Additional surface reconnaissance and shovel testing along the ridge and further subsurface testing at the site will be required to define site size.

Collected Artifact Inventory

1 Pale yellow rhyolite blade-like flake (proximal end)
1 Pale yellow rhyolite flake

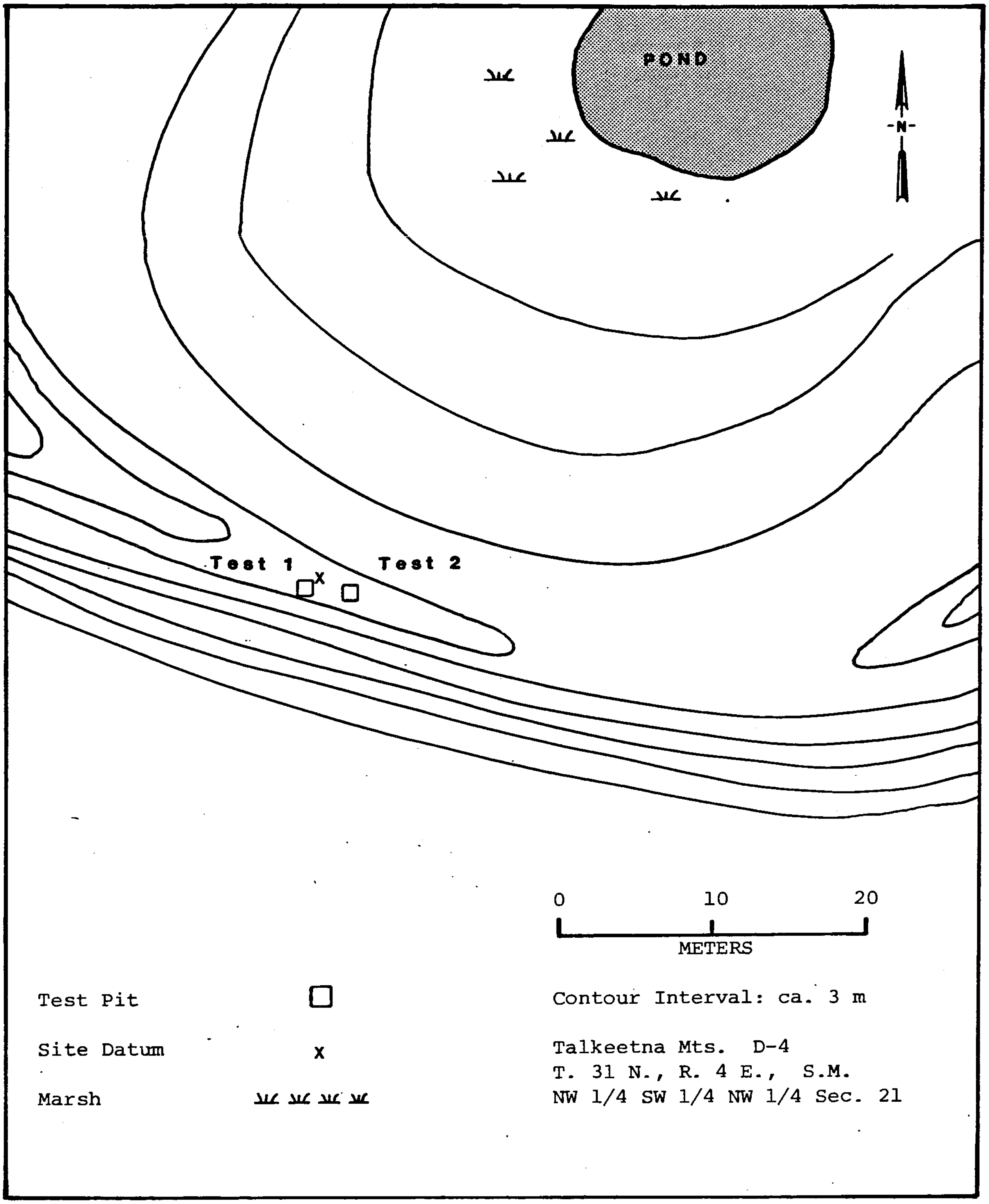


Figure 26. Site Map TLM 034.

(b) Historic Site - Results and Discussion

(i) AHRS Number TLM 023, Accession Number UA80-70

Area: ca. 1 km West of Tsusena Creek Mouth, Proposed Borrow E
Area Map: Figure 157; Location Map: Figure 284
USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 416950 Northing 6966800

Latitude 62°49'27" N., Longitude 148°37'50" W.

T. 32 N., R. 4 E., Seward Meridian
Sec. 36, NE¼SW¼NW¼

Site Map: Figure 27

Setting: The site, a collapsed trapper's cabin, is located in proposed Borrow Area E approximately 1 km west of the mouth of Tsusena Creek at the mouth of an unnamed clear water creek which joins the Susitna River from the north (Figures 157, 284). The cabin remains, not visible from the river, are located on a relatively flat alluvial terrace approximately 50 m east of the braided mouth of the creek and about 15 m north of the Susitna River. The terrain in the vicinity of the site has little topographic relief although immediately west of the cabin a narrow dry 1.5 m deep abandoned channel cuts into the terrace. The alluvial terrace is approximately 1.2 km wide at the site location and is bounded to the north by the main river valley wall which rises steeply 152 m and then continues to rise at a more moderate slope. Vegetation in the vicinity of the site consists of large white spruce, cottonwood, and birch. Ground cover consists of high brush with thick moss, blueberry, wild rose, grasses, and a litter of fallen logs and upturned stumps.

Reconnaissance Testing: This cabin is collapsed and the wall logs are partially decomposed and covered with soil and vegetation. The soil accumulation is probably due to a fallen sod roof. The lowest course of logs remains _in situ_ and enabled approximate measurement of the cabin to be made. The dimensions are 3.5 m by 5 m (11 by 16 feet) with the long axis oriented 306° north (Figure 27). The remains of a door measuring 66 cm by 140 cm (26 by 55 inches) is evident in the southwest wall facing the Susitna River. The logs exhibit saddle notching at the ends. The ground in the immediate vicinity of the cabin is littered with historic cultural debris (Figure 27), which includes a frying pan, coffee cans, metal plates and dishes, glass jars, stove pipe, canvas, cans, milled lumber, nails, wire, a #6 trap, the rubber sole of a shoe, and various wooden and metal pieces of what appear to be the remains of a dog sled. One glass jar with the inscription "NUXATED IRON" was collected. All other historic artifacts were left in place. There is no evidence of outbuildings or a cache in the immediate vicinity of the site. Four shovel tests were dug in the vicinity of the cabin (Figure 27) but none produced historic or prehistoric cultural material.

Winston Hobgood, a biologist and trapper involved in fur-bearer studies for the Susitna Hydroelectric Project, reported that this cabin was built by Oscar Vogel who trapped along the Susitna River in the 1930's and 1940's. This cabin, according to Hobgood (1980, oral communication), was one of a string of 10 line cabins approximately 10 miles apart with Vogel's main headquarters cabin located on the Talkeetna River. Vogel, primarily a wolf trapper, quit trapping in 1949 and died in Anchorage in 1979. The May 1972 issue of Alaska Magazine contains an article by Oscar H. Vogel entitled "My Years with the Wolves". A photograph of one of Vogel's line cabins illustrates the above article and is probably representative of what the cabin at site TLM 023 looked like prior to its collapse.

Inventory of Collected Artifacts

1 Glass bottle (NUXATED IRON)

Number key to TLM 023 (historic cabin) site map: Figure 27.

1. 6" stovepipe sections
2. frying pan
3. metal pan
4. 5 gallon can
5. round can
6. square can with round screw lid
7. oil can
8. coffee can
9. Hills Brothers coffee can
10. baking powder can
11. Wild Rose lard can
12. glass jar bottom
13. bottle (iron)
14. metal bucket
15. wire loop
16. metal plate
17. rubber shoe sole
18. wood-metal frame part (dog sled)
19. canvas/wood

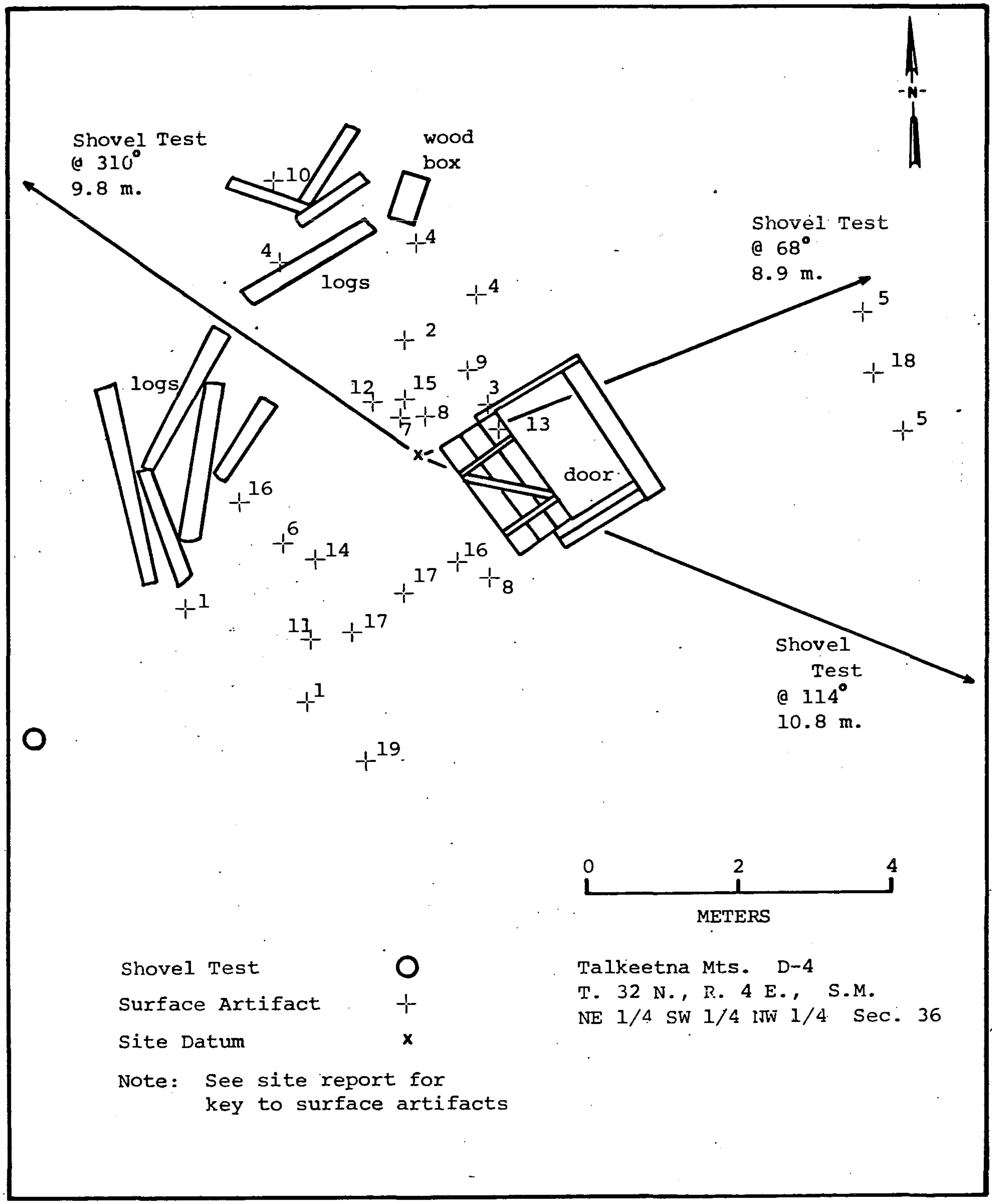


Figure 27. Site Map TLM 023.

3.4 - Proposed Borrow Areas, Associated Facilities, and Areas Disturbed by Geotechnical Testing

(a) Archeological Sites - Results and Discussion

(i) AHRS Number TLM 035, Accession Number UA80-142

Area: ca. 1 km North of Tsusena Creek Mouth, Proposed Borrow E
Area Map: Figure 157; Location Map: Figure 284
USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 418050 Northing 6967500

Latitude 62°49'52" N., Longitude 148°36'28" W.

T. 32 N., R. 5 E., Seward Meridian
Sec. 25, NW¼SE¼SE¼

Site Map: Figure 28

Setting: The site is located on the west side of Tsusena Creek approximately 1 km upstream from its mouth (Figures 157, 284). Situated on the rounded point of a high river terrace approximately 300 m west of Tsusena Creek, the site overlooks the Tsusena Creek drainage. The elevation of the terrace is 488 m asl (1600 feet) which is approximately 30 m above Tsusena Creek and 61 m above the Susitna River. The terrace is continuous for 100 m north and 50 m west of the site where it blends into surrounding slopes. Ridges to the north and west rise to over 610 m asl (2000 feet). Except for isolated openings in the tree cover, the view in all directions is severely restricted by the existing vegetation, however, with decreased vegetation denseness good visibility of up to 2 km eastward across Tsusena Creek, 1 km southward to the Susitna River, and along the Susitna westward for 4 km would be possible. The view to the north is blocked by an ascending ridge behind the site. Both the Susitna River and Tsusena Creek are in view and easily accessible, although the site appears to be oriented more toward Tsusena

Creek. A well used game trail runs along the edge of the terrace traversing the site location. Scattered spruce and birch are found on the rounded, gradually sloping terrace with an understory including low bush cranberry, blueberry, Labrador tea, bearberry, sphagnum moss and lichen. Below the site spruce become denser and there are stands of birch. Wet marshy areas exist below the site and dryer, more tundra-like areas characterize the ridge system above the site.

<u>Reconnaissance Testing</u>: Three test pits were excavated at the rounded point of the terrace (Figure 28). There is no surface indication of a site at this location, however, a shovel test which was expanded into test pit 1 produced a pale yellow rhyolite flake 3 cmbs at the contact between a dark brown silt and a gray silt. A second shovel test which was expanded into test pit 2 to the north of test pit 1 produced an additional basalt flake. Test pit 3 did not produce cultural material. A basalt rock fragment subsequently determined not to be culturally modified was also collected from test pit 1. Very little can be said concerning site function(s), spacial extent or temporal placement without further testing. Cultural material of two lithologies, from tests 10 m apart, although limited to only two flakes, may indicate that the site could be fairly extensive.

<u>Collected Artifact Inventory</u>

1 Pale yellow rhyolite flake
1 Gray basalt flake
1 Gray basalt rock

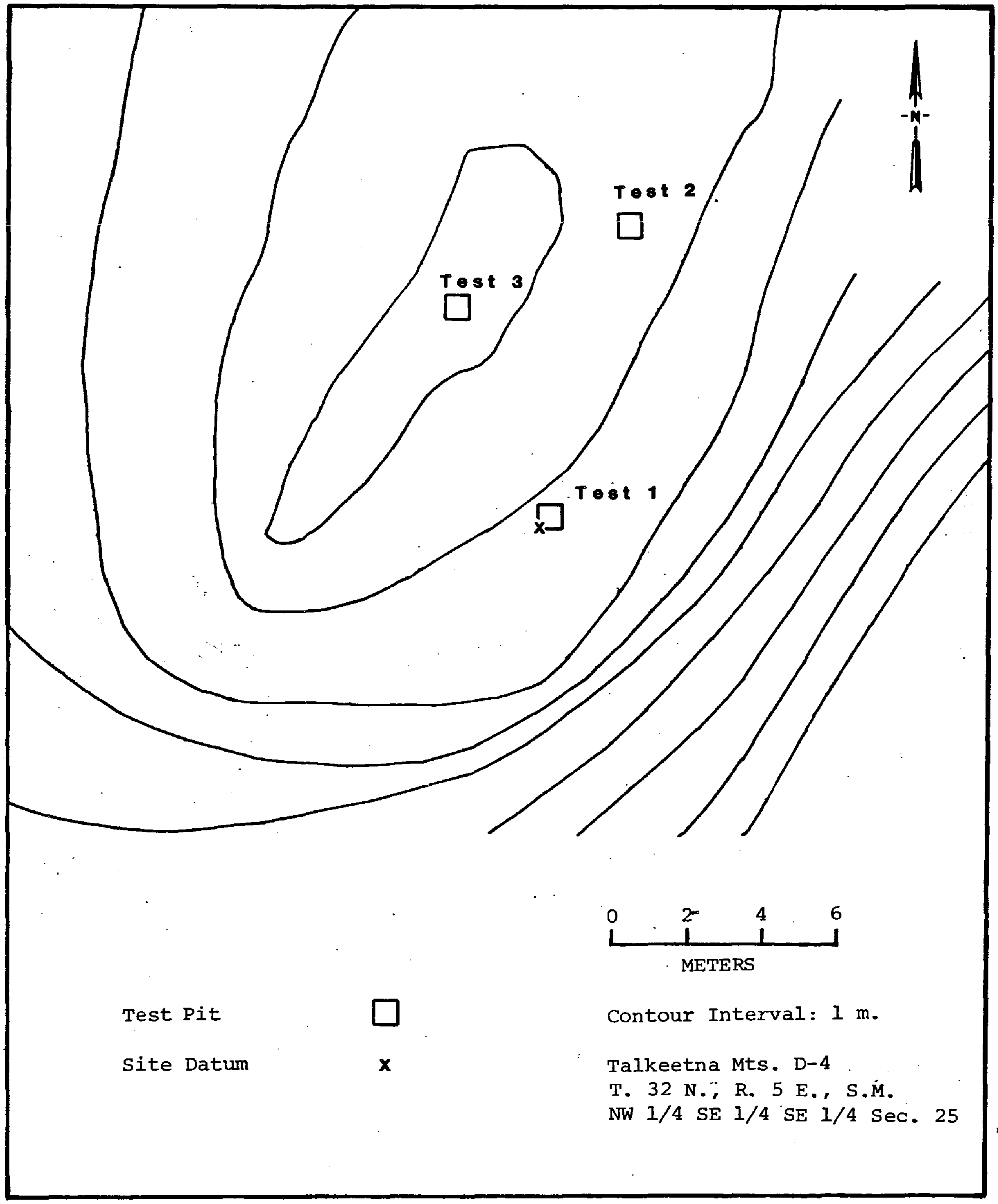


Figure 28. Site Map TLM 035.

(ii) AHRS Number TLM 051, Accession Number UA80-158

Area: ca. 6 km Northeast of Tsusena Creek Mouth, Proposed Borrow F
Area Map: Figure 157; Location Map: Figure 285
USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 422800 Northing 6970500

Latitude 62°51'36" N., Longitude 148°31'00" W.

T. 32 N., R. 5 E., Seward Meridian
Sec. 16, NE¼SE¼SE¼

Site Map: Figure 29

Setting: The site is located near the southeastern boundary of Borrow Area F (Figure 157), approximately 700 m east of Tsusena Creek and approximately 6.2 km northeast of the confluence of Tsusena Creek and the Susitna River (Figure 285). Located at an elevation of 701 m asl (2300 feet) on a 50 m long by 15 meter wide bench which forms the northern extension of the summit of a knoll, the site lies at the northwest corner of the bench 2m to 3 m lower than the point of highest relief on the knoll. This knoll, one of the highest in the vicinity, is located in kettle and kame topography where numerous knolls and ridges and approximately 17 lakes and ponds are located within a 1 km radius of the site (Figure 285). The site location provides a view of many of the kettle lakes to the south, east, and north, however, the principal view is to the south overlooking a 7 hectare lake with a long finger of the lake extending to the northwest. The lake margin, located approximately 100 m south of the site and approximately 30 m lower in elevation at the closest point, is entirely in view and easily accessible from the site. Tsusena Creek, approximately 90 m lower in elevation, is not visible from the site. Much of the Tsusena Creek canyon to the west is deeply incised vertical bedrock with numerous cascades and a major waterfall. Access to the creek, while possible, would require descending greater than 30° slopes. The site appears to be oriented more towards the surrounding lakes which are easily accessible. One other site (TLM 015), identified in 1978 by Mr. Glenn Bacon, is located in the same topographic context, approximately 600 m to the south on a similar but slightly lower knoll. The ground surface at site TLM 051 is smooth and sloping with vegetation consisting primarily of dense shrub birch with open clearings where ground cover consists of lichen, moss, and low heath species. Scattered spruce are present on the knoll and increase in density in lower elevations where alder thickets are present.

Reconnaissance Testing: No cultural material was observed on the surface at the site, however, a shovel test revealed four tuffacious rhyolite flakes approximately 20 cmbs, one of which (UA80-158-1) exhibits retouch along one margin. This shovel test was expanded into test pit 1 (Figure 29) which produced an additional tuffacious rhyolite flake 17 cmbs in a possible paleosol lens contained within a matrix of yellow brown sand and gravel which was interpreted as glacial drift. All of the flakes recovered from the initial shovel test and test pit 1 show a light to dark brown staining on one side. A possible volcanic ash layer is present in test pit 1 between 5 and 10 cmbs. Four additional tests (Figure 29, test pits 2, 3, 4, and 5) were excavated at the site but did not reveal additional cultural material.

Collected Artifact Inventory

1 Light brown tuffacious rhyolite retouched flake
4 Light brown tuffacious rhyolite flakes

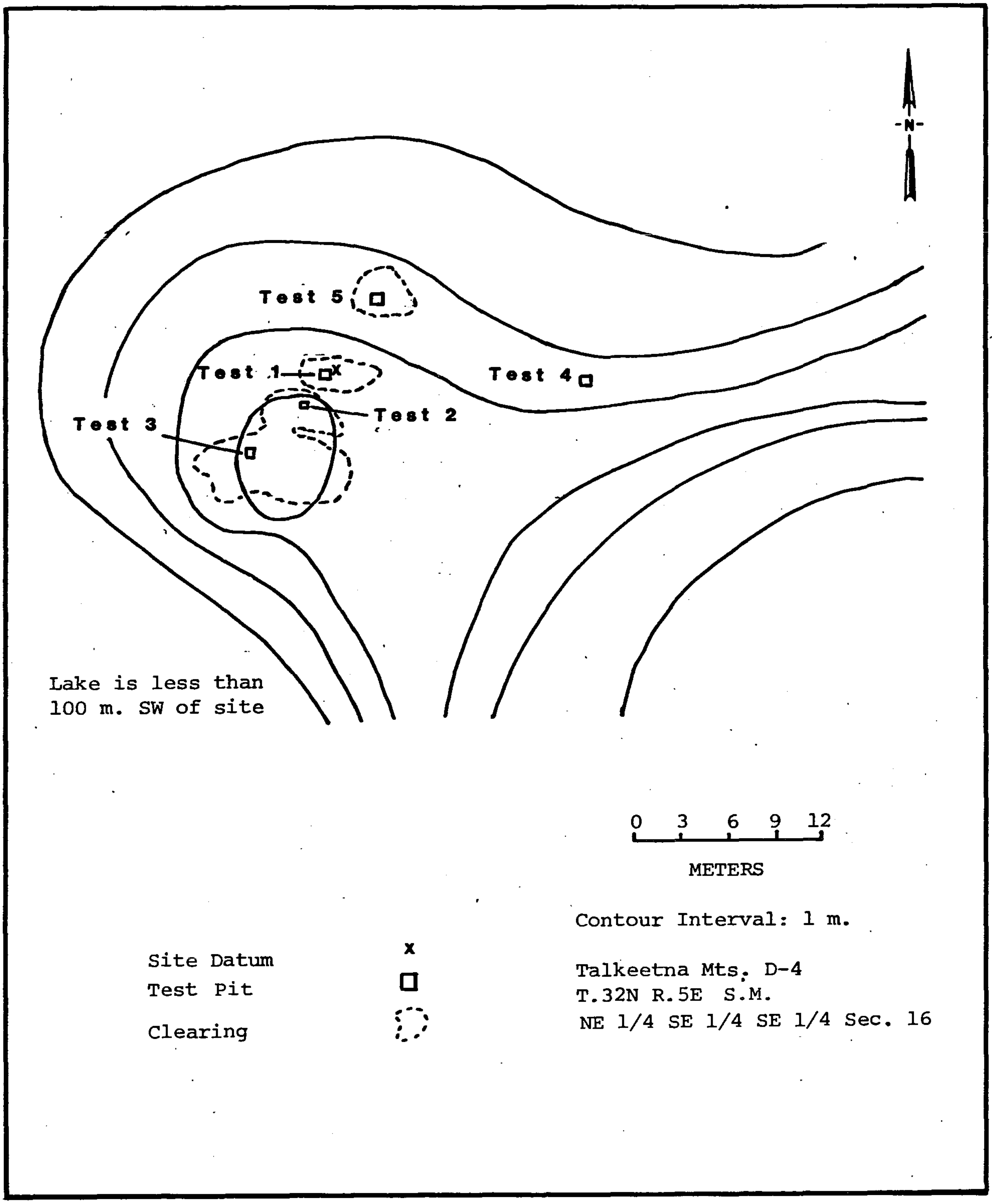


Figure 29. Site Map TLM 051.

(iii) AHRS Number TLM 068, Accession Number UA81-214

Area: ca. 16 km East of Stephan Lake

Area Map: Figure 160; Location Map: Figure 298

USGS Map: Talkeetna Mts. C-4, Scale: 1:63,360

Site Location: UTM Zone 6 Easting 421400 Northing 6955350

Latitude 62°43'20" N., Longitude 148°32'15" W.

T. 30 N., R. 5 E., Seward Meridian

Sec. 4. NE¼SW¼NW¼

Site Map: Figure 30

Setting: The site is located at the northern terminus of a north-south oriented 2 km wide glacial valley approximately 16 km east of Stephan Lake (Figures 160, 298). The site is situated at an elevation of approximately 838 m asl (2750 feet) on the southeastern slope of a low knoll located on the crest of a discontinuous end moraine on the eastern flank of this broad U-shaped valley. This elongated knoll trends northeast-southwest and forms a discrete feature on the crest of this moraine which is one of a series of moraine ridges occurring at the northern terminus of the valley. These ridges and knolls and the intervening lower poorly drained terrain and associated small kettle lakes characterize the ice stagnation terrain in the site vicinity.

The site is located ca. 2 m below the highest elevation on this knoll, in an area on the southwest slope which has been extensively deflated. The view from the top of the knoll is panoramic but is best to the northwest across undulating terrain with low relief knolls and ridges. Three small kettle lakes lie immediately west of the site within 100 m. These lakes are visible from the top of the knoll at the site location.

Vegetation at the site is limited to bearberry and other low herbacious plants which, in addition to lichen, occur in patches within the deflated area where the site is located. Dwarf birch, shrub birch and willow are present on the slopes of the moraine and in the depressions between knolls along the moraine crest. The margins of the kettle lakes west of the site are wet and marshy. General vegetation in the site area is alpine tundra with tree line located ca. 1 km to the north where spruce are visible from the site.

Reconnaissance Testing: The site consists of a surface lithic scatter exposed on the deflated southeast slope of the moraine and isolated surface lithics located along the moraine crest to the north of the main lithic concentration (Figure 30). A total of seven artifacts were surface collected from the site. The medial section of a black chert projectile point (UA81-214-1; Artifact Photo L-a), diamond-shaped in cross section and complete except for a missing tip at the distal end and a broken base, was surface collected from the main lithic scatter along with a gray chert burinated flake (UA81-214-2; Artifact Photo L-b) possibly used as a scraper, a black chert retouched flake (UA81-214-4), a retouched rhyolite flake (UA81-214-5; Artifact Photo L-d) (possibly a backed knife) and two waste flakes, one black chert and one gray chert. Isolated finds surface collected along the moraine crest north of the main lithic concentration include a dark-gray chert biface (UA81-214-7; Artifact Photo L-c) and a grayish white chert flake. Two waste flakes, one black chert and one blue green rhyolite, were left uncollected at the main scatter along with several medium to large mammal bones which were observed on the surface but do not appear to be cultural. Minimal subsurface testing was done because of the large deflated area (ca. 80% of the ground surface) and minimal soil deposition in the undeflated areas. Test pit 1 (Figure 30), the only subsurface test (40 x 40 cm), did not reveal any cultural material.

The fact that the main concentration of artifacts was located ca. 2 m lower than the highest elevation (which afforded the best view) may indicate wind shelter in high open exposed areas and was an important factor in the relationship between site location and land form.

Collected Artifact Inventory

1 Projectile point, black chert-medial section w/tapering base

1 Burinated flake gray chert--possible scraper w/graver spur

1 Biface, dark gray chert

1 Backed knife, blue-green chert or rhyolite

1 Utilized flake, black chert

1 Flake, black chert

1 Flake, whitish gray

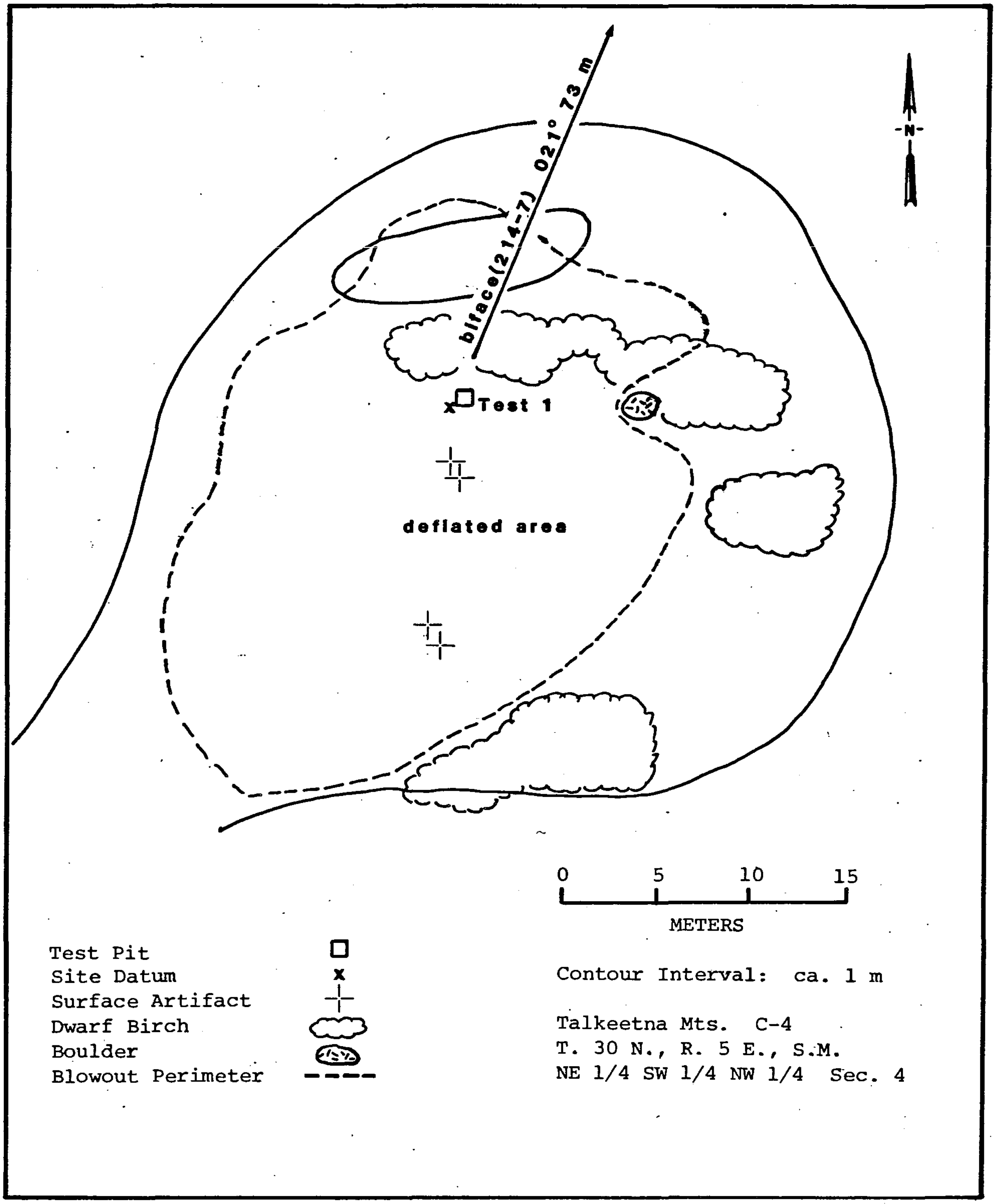


Figure 30. Site Map TLM 068.

(iv) AHRS Number TLM 070, Accession Number UA81-216

Area: ca. 16 km East of Stephan Lake

Area Map: Figure 160; Location Map: Figure 298

USGS Map: Talkeetna Mts. C-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 421100 Northing 6954300

Latitude 62°42'53" N., Longitude 148°32'35" W.

T. 30 N., R. 5 E., Seward Meridian

Sec. 4, SW¼SW¼SW¼

Site Map: Figure 31

Setting: The site is located at an elevation of 914 m asl (3000 feet), ca. 16 km east of Stephan Lake at the northern end of a 2 km wide glacial valley oriented north-south (Figure 160). It is situated on the deflated summit of a low knoll on the discontinuous crest of a north-south oriented lateral moraine located on the eastern side of this broad, U-shaped valley. This moraine is one of a series of parallel lateral moraines occuring between 853 m and 1036 m asl (2800-3400 feet). These ridges and the intervening lower poorly drained undulating terrain characterize the ice stagnation topography in the site vicinity. Several creeks originating in cirques located along the east side of the valley flow northwest downcutting the lateral moraines so that they form a series of discontinuous ridges. The site is located at the highest southwest end of a knoll where the moraine immediately south of the site has been notched by seasonal stream runoff forming a northwest-southeast trending 8 m deep gully (Figure 298). This gully separates the site knoll from a slightly higher knoll ca. 60 m to the southwest on the same moraine crest. From the site location the knoll slopes steeply to the northwest and north ca. 40 m to poorly drained undulating ground moraine topography. Northeast of the site the knoll slopes more gradually along the moraine crest, descending 10 m in elevation to a small northwest-southeast trending creek 70 m northeast of the site. This creek has downcut the moraine forming a 5 m deep grassy gully 70 to 80 m northeast of the site.

The site elevation is 10-50 m higher than the surrounding terrain with the greatest difference in elevation to the north where visibility is excellent for several kilometers and portions of three small (less than one hectare) kettle lakes located ca. 900 m to the north and northeast, are visible. The view from the site is panoramic, encompassing lower terrain in all directions except to the immediate southwest where higher ground on the same moraine obstructs the view, and to the west where another higher moraine ridge ca. 400 m distant limits the view.

The ground surface at the site location is approximately 80% deflated gravel with numerous cobbles and boulders present. Soil deposition at the site is 12 cm of silt over glacial drift and vegetation is limited to only a few patches of bearberry and other herbacious vegetation less than 5 cm in height. Vegetation includes willow and shrub birch present on the slopes of the moraine and concentrated in the creek drainages to the north and south of the site. Vegetation in the site vicinity is alpine tundra with the present tree line located ca. 3 km northeast of the site.

Reconnaissance Testing: The site consists of a 4 m by 4 m surface lithic scatter exposed at the summit of a deflated knoll (Figure 31). A complete gray chert endscraper (UA81-216-1; Artifact Photo L-g), two light gray rhyolite flakes (UA81-216-3 shows possible retouch) and a black chert flake were surface collected from a blowout at the summit of the knoll. Two gray rhyolite falkes were left uncollected on the surface. One 40 cm by 40 cm test (Figure 31, test pit 1) placed adjacent to the flake concentration did not reveal any subsurface cultural material. Intensive surface reconnaissance along the moraine crest for ca. 200 m north and south of the site location did not reveal any additional cultural material. The site appears to be limited to surface lithics within an area no larger than 8 m by 8 m at the top of a single knoll.

Collected Artifact Inventory

1 Gray chert endscraper
2 Gray rhyolite flakes
1 Black chert flake

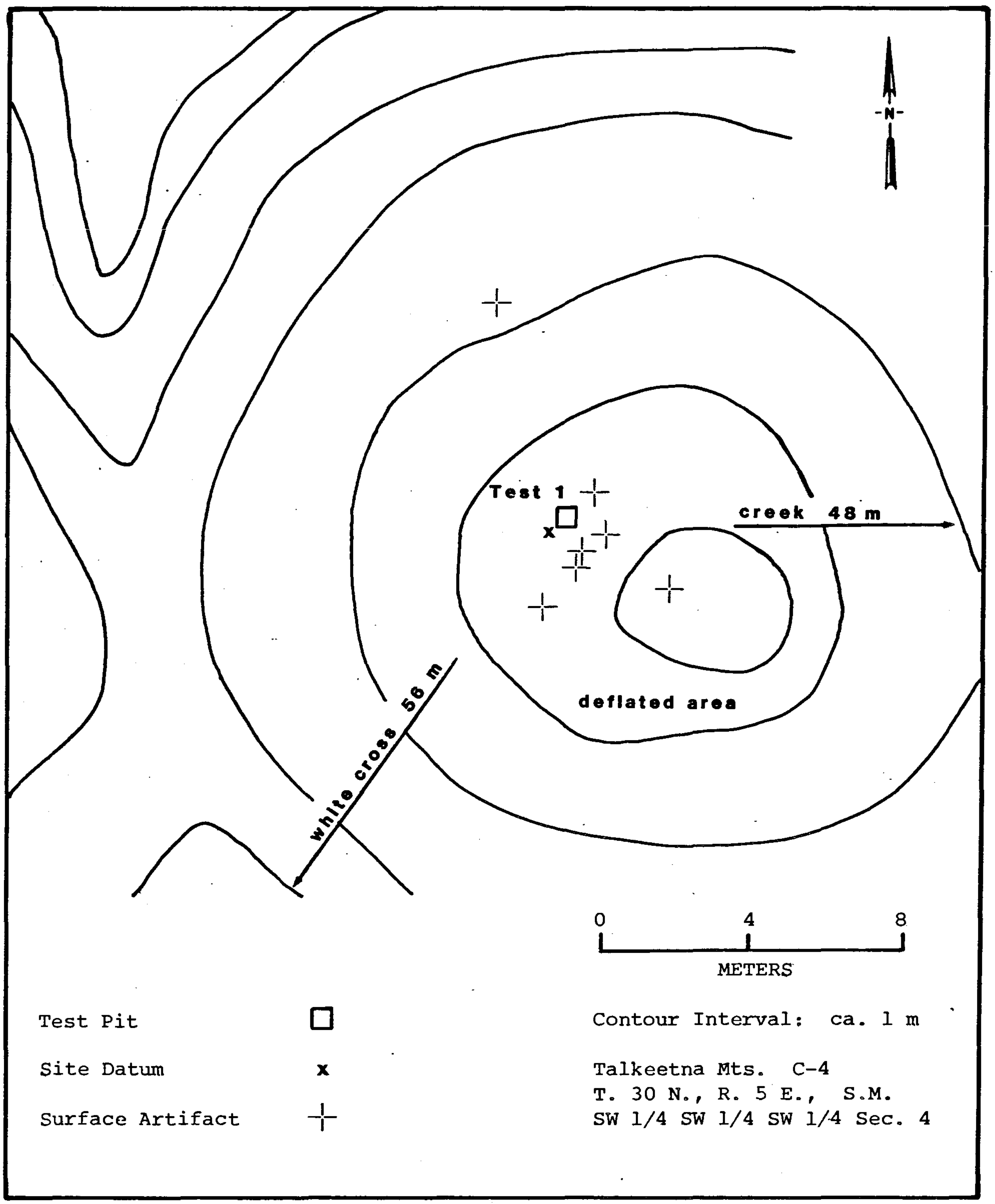


Figure 31. Site Map TLM 070.

(v) AHRS Number TLM 082, Accession Number UA81-239

Area: Black River Moraine
Area Map: Figure 163; Location Map: Figure 300
USGS Map: Talkeetna Mts. B-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 469950 Northing 6928300

Latitude 62°29'10" N., Longitude 147°35'10" W.

T. 28 N., R. 10 E., Seward Meridian
Sec. 27, SW¼NE¼SW¼

Locus A: Site Map: Figure 32
Locus B: Site Map: Figure 33

Setting: The Black River Moraine site consists of two loci located on top of a northeast-southwest oriented moraine 3 km north and parallel to the Black River, 5 km upstream from its confluence with Oshetna River (Figures 163, 300). The site rests on a 300-400 m long segment of the highest moraine (ca. 1100 m asl (3600 feet)) in the region. Distinct game trails occur on the top of every moraine. The top of the moraine reaches 50 m wide at its greatest extent. The moraine is fairly straight with the exception of a slight bend eastward on the southerly end. The highest point on this moraine segment is locate just north of the middle, dropping 10 m lower for the north quarter and 2 m lower for the southern half. The northwest termination of this segment drops approximately 10 m at a 20-25° slope opposite the base of another segment of the same moraine, forming a 15 m wide valley. A game trail is present at the base of this valley. A similar situation occurs at the southeast termination of the segment. From the highest point, the moraine slopes downward 15 m to the southwest on a 15° slope. On the southeast side, there is a 3-5° gradual slope for 8 m which then increases to 30° eventually dropping 30-35 m in elevation. The site is located on a locally prominent feature offering a near-panoramic view of the surrounding terrain. The view eastward encompasses a nearby series of lower moraines, a broad open valley with a single sinuous moraine adjacent to the Black River, and Big Bones Ridge 6-8 km distant. The view to the northwest and west is of higher undulating slopes with a minor stream draining to the east located approximately 50 m to the west. Higher, northeast facing slopes are visible to the southwest. The view to the south offers a continuation of the northeast flowing Black River and adjacent moraine sequence with the Twin Hills in the distance. Vegetation in the region is limited to low shrub tundra. On the west side of the moraine vegetation is sparce, low growth becoming more abundant at the base. The east side of the moraine is well vegetated with dwarf birch, labrador tea, mosses and lichen. A lone white spruce occurs in the middle of the south end of this moraine segment.

Reconnaissance Testing: Surface reconnaissance of this moraine segment resulted in the collection of four out of a total of the seven surface flakes discovered. This material was found in two concentrations located 171 m apart on top of the moraine.

Locus A: A concentration of five gray rhyolite flakes was found in a blowout approximately midway between the northwest and southeast ends of the moraine segment and 50 cm lower than the highest point (Figure 32). Two of the five flakes were collected. Test pit 1 (Figure 32) was placed approximately 50 cm north of the flake scatter and just below the ridge line. No subsurface cultural material was encountered.

Locus B: This locus is situated 171 m north (20°) of Locus A near the termination of this segment of the moraine. A 15 m wide gap in the moraine containing a game trail occurs immediately to the east and 10 m below the ridge top. A gray chert retouched flake (UA81-232-7; Artifact Photo M-b) and a light brown chert flake were found and collected in the vicinity of this minor overlook (Figure 33). Test pit 2 at this location was sterile (Figure 33).

Collected Artifact Inventory

Locus A:

2 Gray patinated rhyolite flakes

Locus B:

1 Gray chert retouched flake

1 Light brown chert flake

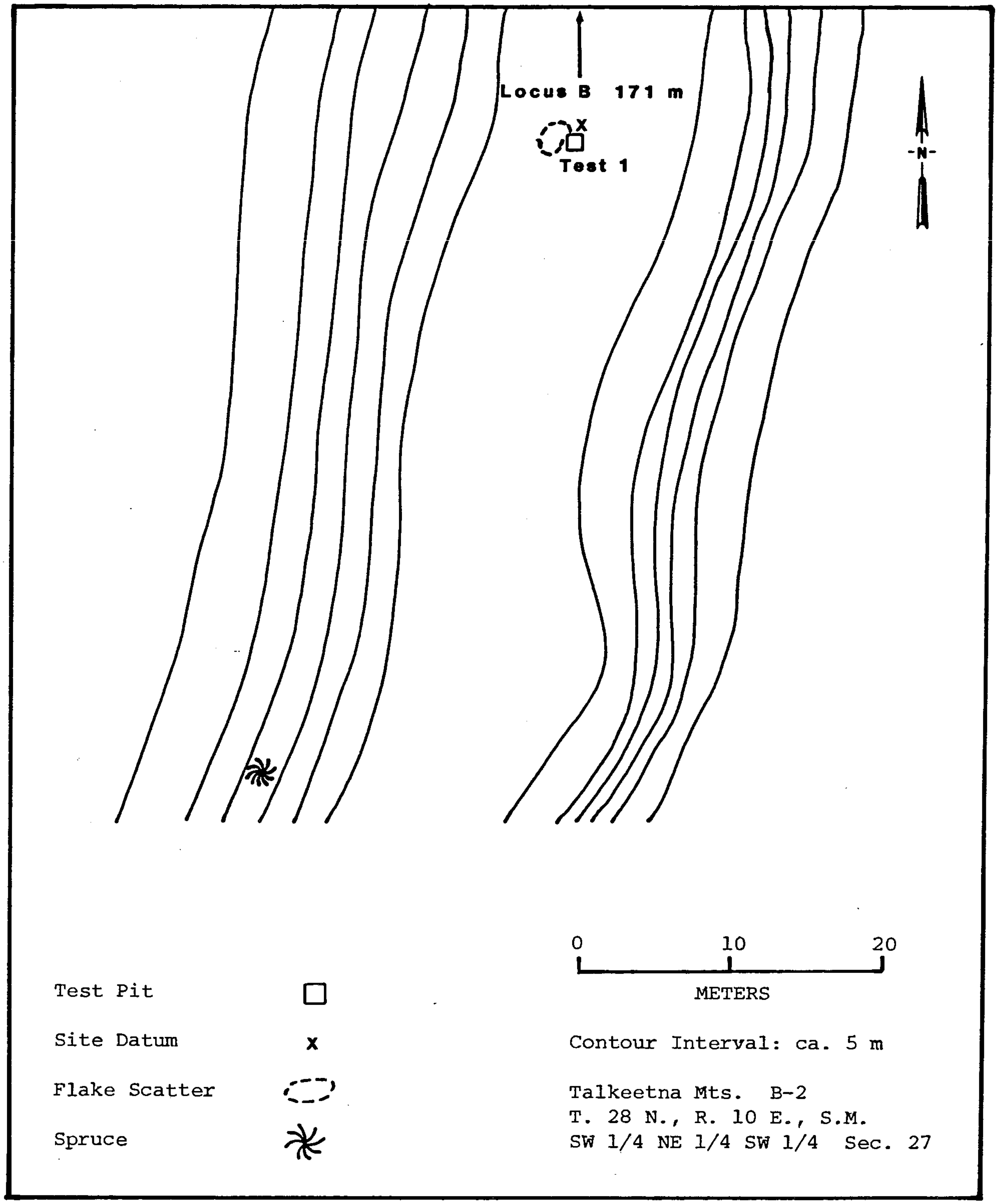


Figure 32. Site Map TLM 082 A.

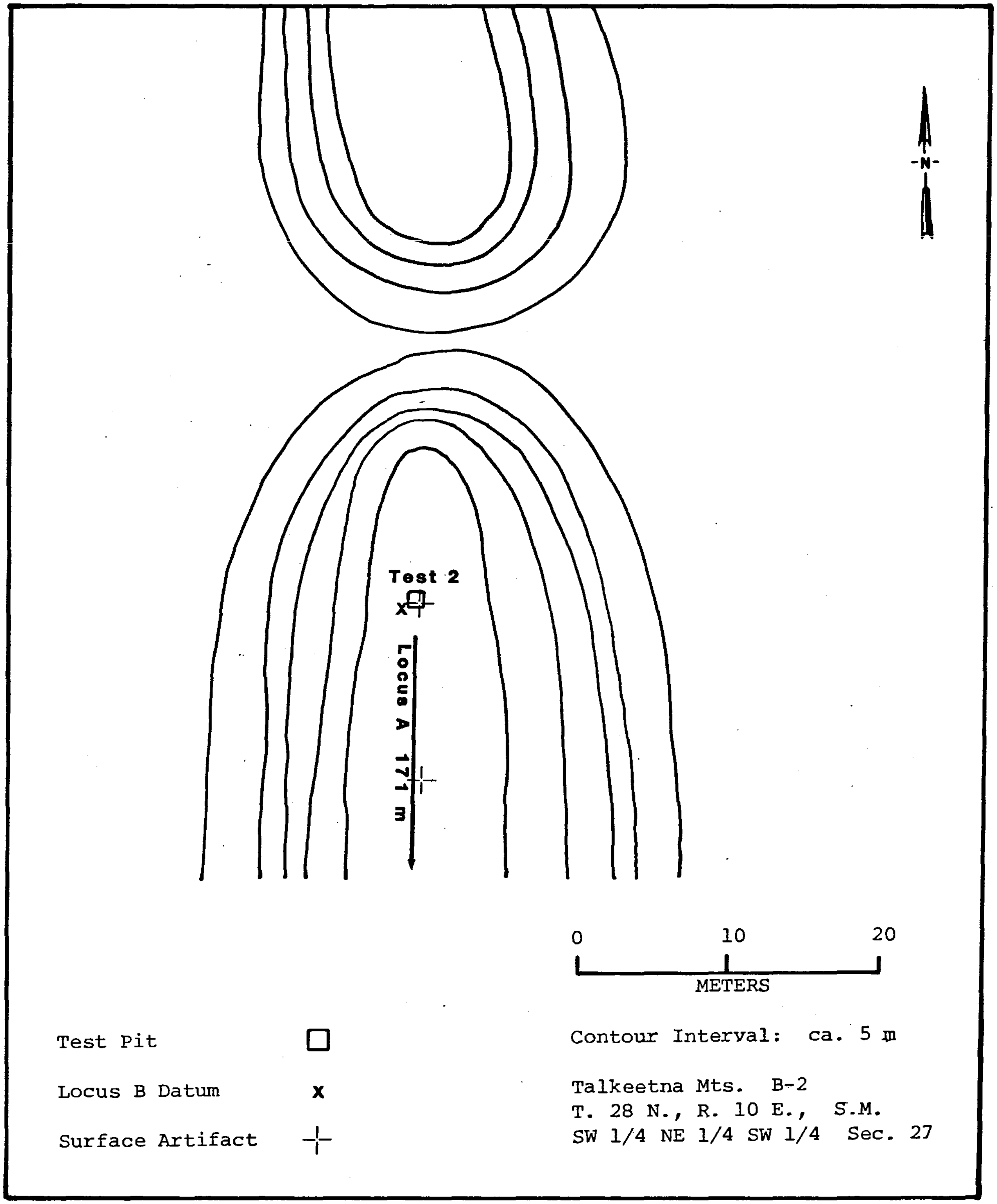


Figure 33. Site Map TLM 082 B.

(vi) <u>AHRS Number HEA 177, Accession Number UA81-210</u>

Area: ca. 3.6 km East of Butte Lake

Area Map: Figure 166; Location Map: Figure 310

USGS Map: Healy A-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 459400 Northing 7004850

Latitude 63°10'20" N., Longitude 147°48'15" W.

<u>T. 20 S., R. 1 W., Fairbanks Meridian</u>

Sec. 19, SW¼NE¼NE¼

Site Map: Locus A, Figure 34; Locus B, Figure 35

<u>Setting</u>: The site consists of three loci (A, B, and C) on the east side of a northeast-southwest trending lateral moraine 3.6 km east of the Butte Creek outlet from Butte Lake (Figures 166, 310). The 300-meter long moraine stands at approximately 1250 m asl (4100 feet), about 30 meters above the surrounding terrain containing abundant small kettle lakes, swales and moraines. A series of small linear lakes runs parallel to the moraine 100 meters to the east. The top of the moraine offers an unobstructed panormaic view of the large lake plain to the north, Butte Lake to the west, and upland hills to the south and southwest. The entire region is covered with low shrub and lichen tundra, and is above timberline. Gravel exposures are numerous on the moraine.

<u>Reconnaissance Testing</u>: The three loci are approximately 1-3 meters below the crest of the moraine; and span a length of about 150 meters, immediately southwest of the highest point on the moraine (Figures 34, 35). Locus A, the central locus, lies in a low area 2 meters below a secondary high point on the southwest segment of the moraine. It contained 2 chert flakes found on the surface (one was collected) in an area of approximately 4 meters radius from site datum (Figure 34). Test pit 1 contained one chert fragment 3 cmbs in the thin organic mat. Locus B, 110 meters northwest of locus A, is downslope from the morainal

crest in a shallow saddle. It consists of a chert flake concentration (scatter 1) 5 meters in diameter containing about 40 unmodified chert flakes. Five chert flakes outlie scatter 1 within a radius of 20 meters (Figure 35). A total of 24 chert flakes and 1 burin spall (UA81-210-30; Artifact Photo Q-b) were surface collected from Locus B. Test pit 2, located east of scatter 1, contained no artifacts. Locus C lies 30 meters southwest of Locus A, on a gradual slope 1 meter below the crest. It contained 2 tabular chert fragments, one of which was collected. No subsurface testing was conducted at Locus C.

Collected Artifact Inventory

Locus A:

1 Dark gray chert flake
1 gray chert fragment

Locus B:

24 Gray chert flakes
2 Gray chert rocks
1 Gray chert burin spall

Locus C:

1 Gray chert tabular core

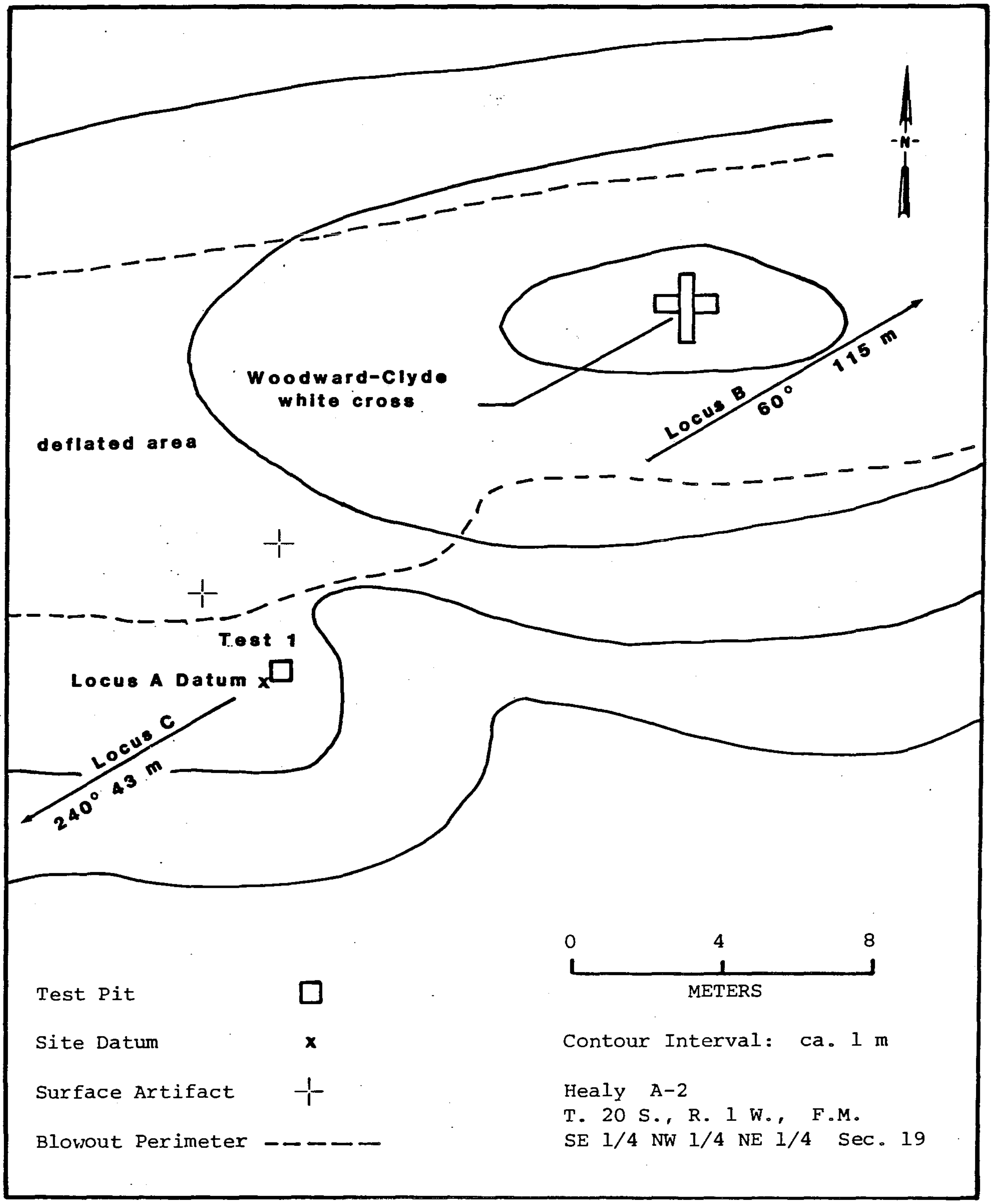


Figure 34. Site Map HEA 177 A.

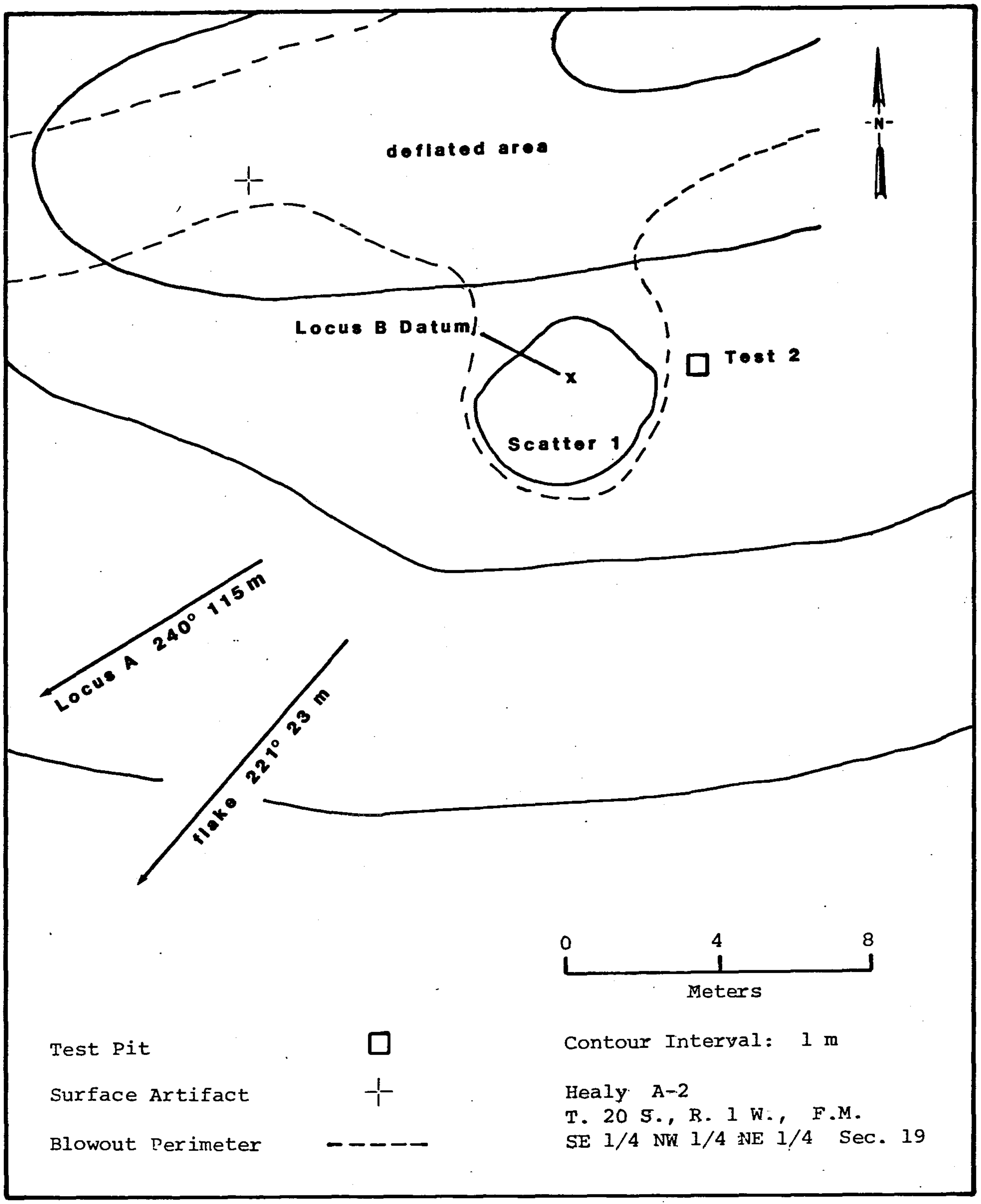


Figure 35. Site Map HEA 177 B.

(vii) AHRS Number HEA 178, Accession Number UA81-211

Area: ca. 4 km Northeast of Butte Lake
Area Map: Figure 166; Location Map: Figure 311
USGS Map: Healy A2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 461900 Northing 7009400

Latitude 63°12'52" N., Longitude 147°45'30" W.

T. 20 S., R. 1 W., Fairbanks Meridian
Sec. 4, NW¼SE¼NW¼

Site Map: Figure 36

Setting: The site is located 4 km northeast of the north end of Butte Lake (Figure 166). It is situated on a moraine at 1035 m asl (3400 feet), running east-west along the north edge of a kettle lake 2 hectares in size. This lake is the northernmost of a series of five such lakes draining north from one to another. An outlet creek flows northeast from the lake adjacent to the site. The moraine is approximately 300 m long and includes three pronounced knolls.

Locus A: is situated at the east end of the center knoll, on the top and southern slope (Figure 36). A gravel blowout approximately 10 m x 10 m on the highest flat area on the moraine contains scatter 1 at its southwest corner. Scatter 2 is located approximately 5 m southwest of scatter 1, comprising a deflated area approximately 6 m x 9 m near the top of the south slope of the moraine. The view is panoramic from scatter 1, and predominately south from scatter 2, which is also somewhat protected from strong northerly winds. The gravel blowouts are surrounded by dwarf birch, willow, low bush cranberry, bearberry, and cranberry. The site is above tree line. The crest of the moraine west of Locus A is unvegetated and deflated, with a gravel surface.

Locus B: is on the western-most knoll of the moraine, slightly higher and approximately 100 m west of Locus A. It consists of a flake scatter on the southern, eastern, and northeastern slopes of the knoll. The scatter is within a deflated blowout surrounded by patches of dwarf birch and willow. The top of the knoll is about 5 m in diameter. The view is panoramic.

Reconnaissance Testing:

Locus A: Nine light brown rhyolite flakes were found on the surface at scatter 1, four of which were collected. At scatter 2, several small chert boulders and hundreds of slivers, fragments, and flakes cover a deflated blowout and are found in its vegetated margins as well. Twenty-three flakes were collected. A 50 cm x 50 cm test pit was dug adjacent to scatter 1 (Figure 36), but yielded no artifacts. Deposits, consisting of silt and/or tephra with large cobbles throughout, was generally 15 cm thick over a morainal deposit of gray-brown unsorted sandy gravel. A black chert core was located 75 m from locus A site datum (UA81-211-2a; Artifact Photo R). The nature of the chert lithic scatter with proximity to boulders of parent material possible indicate that this is a quary site.

Locus B: A 9 cm long basalt retouched flake (UA81-211-28; Artifact Photo Q-c) was collected from the surface (scatter 3). In addition, the surface scatter consists of 4 basalt flakes, 2 flakes of similar chert as that in Locus A, scatter 2, and a rhyolite blade fragment. All material is located on the southern, eastern, and northeastern slope of the knoll between 4 m and 10 m from the top.

Collected Artifact Inventory

Locus A:

4 Rhyolite flakes
23 Chert flakes
1 Black chert core

Locus B:

1 Retouched basalt blade-like flake

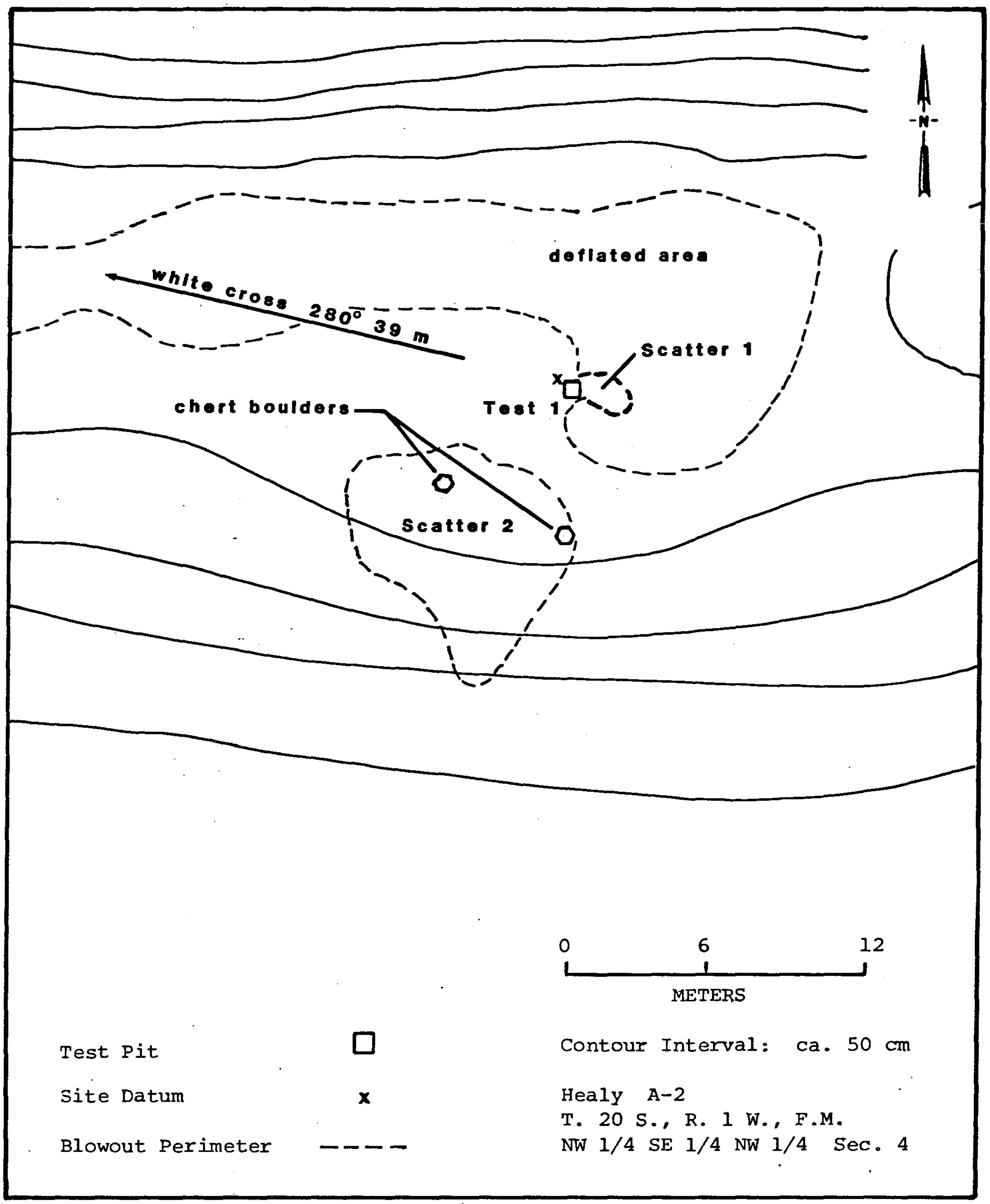


Figure 36. Site Map HEA 178.

(viii) AHRS Number HEA 179, Accession Number UA81-219

Area: ca. 3 km Northeast of Butte Lake
Area Map: Figure 166; Location Map: Figure 311
USGS Map: Healy A-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 460400 Northing 7012500

Latitude 63°14'32" N., Longitude 147°47'05" W.

T. 19 S., R. 1 W., Fairbanks Meridian
Sec. 29, SE¼SE¼NW¼

Site Map: Figure 37

Setting: The site lies 350 m north of the Denali Highway, approximately 900 m southeast of the intersection of Canyon Creek and the highway (Figures 166, 311). It is situated on the lower terrace of a northwest-southeast oriented moraine which is one of several moraines in the vicinity. This terrace is approximately 40 m long by 20 m wide and is about 30 m above the valley floor to the north. There is a small ice stagnation lake (3 hectares) 150 m southwest of the site and is presently the closest water source to the site. The immediate site environment has been recently altered by the construction of a pull-off or rest area, which borders the west side of the lake and the western edge of the terrace on which the site is located. There is modern refuse and camp site disturbance associated with this construction.

The view from the site is unobstructed to the northwest, north, and east, overlooking the extensive southern drainage of the Alaska Range, Mts. Deborah and Hess to the north-northeast of the site. Located at about 914 m asl (3000 feet), the site lies just above tree line, with the upper extent of the spruce forest present on the valley floor just below the site. Site specific vegetation is composed of high mixed shrub growth with thin humic soil development on the site terrace.

Reconnaissance Testing: The site consists of one black chert flake found on the surface in a blowout exposure in the approximate center of the site terrace. There is modern disturbance within 3 meters of the flake in the form of a campfire pit with rusted cans, wire and paper (Figure 37). Test pit 1, excavated 10 cm south of the flake, did not reveal any subsurface cultural material. Humus layer and soil deposition on the site terrace is thin, and glacial drift was encountered in Test pit 1 less than 10 cmbs.

Collected Artifact Inventory

1 Black chert flake

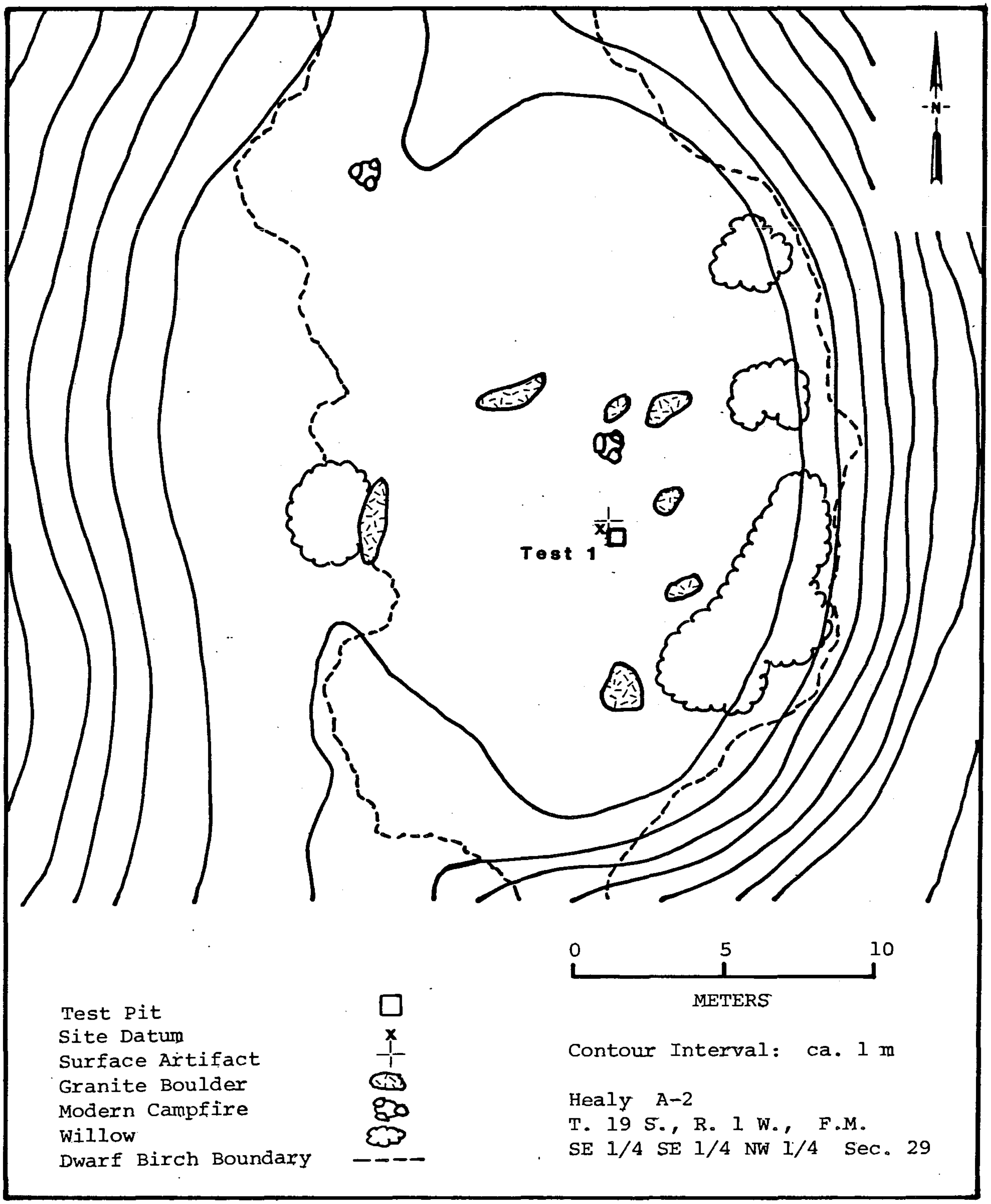


Figure 37. Site Map HEA 179.

(b) Historic Sites - Results and Discussion

No historic sites recorded for this area.

3.5 - Proposed Access Routes

(a) Archeological Sites - Results and Discussion

(i) AHRS Number TLM 101, Accession Number UA81-270

Area: ca. 6 km North of Devil Creek Mouth, Proposed Corridor
Area Map: Figure 156; Location Map: Figure 306
USGS Map: Talkeetna Mts. D-5, Scale 1:63,360

Site Location: UTM Zone 6 Easting 395650 Northing 6973750

Latitude 62°52'53" N., Longitude 149°03'09" W.

T. 32 N., R. 2 E., Seward Meridian
Sec. 10, NW¼SE¼NE¼

Site Map: Figure 38

Setting: The site is located on the southern edge of a large north-south trending terrace, 200 m east of Devil Creek about 6 km north of its mouth (Figures 157, 306). The terrace, a large trapezoid approximately 400 m (north-south) long and 200 m (east-west) wide, is 762 m asl (2500 feet), 91 m above Devil Creek. It is part of a ca. 1 km long ridge which follows the eastern edge of the serpentine Devil Creek. The terrace is relatively flat topped, with moderate to steep slopes on all sides. The terrace is separated by 10 m lower terrain on the east and south sides, and by approximately 90 m lower terrain to the north and west. The entire terrace top is visible from the site to the north, while lower terrain of the ridge is visible to the south and southwest. Uplands are visible to the east and west. Natural gravel exposures are common around the rim of the terrace. Low tundra vegetation covers most of the terrace; an occasional spruce or thicket of alders occurs on the terrace rim. Two other sites are located on the terrace rim. TLM 114 is 385 m to the northeast (30°). TLM 103 is 250 m to the northeast (40°). An aerial control point (white cross) is located at the site, 17.5 m north of datum.

Reconnaissance Testing: The site consists of a single banded chert flake located on the surface of a 26 m (north-south) by 20 m (east-west) gravel exposure on the southern end of the terrace (Figure 38). The flake is 5.5 m east (80°) of datum. Test pit 1 (site datum) revealed a 30 cm deep sequence of tephra and silt layers deposited on the same drift upon which the flake was found; no cultural materials were found in this test. Intensive surface reconnaissance of exposures in the area failed to reveal other artifacts in the vicinity.

Collected Artifact Inventory

1 Banded chert flake

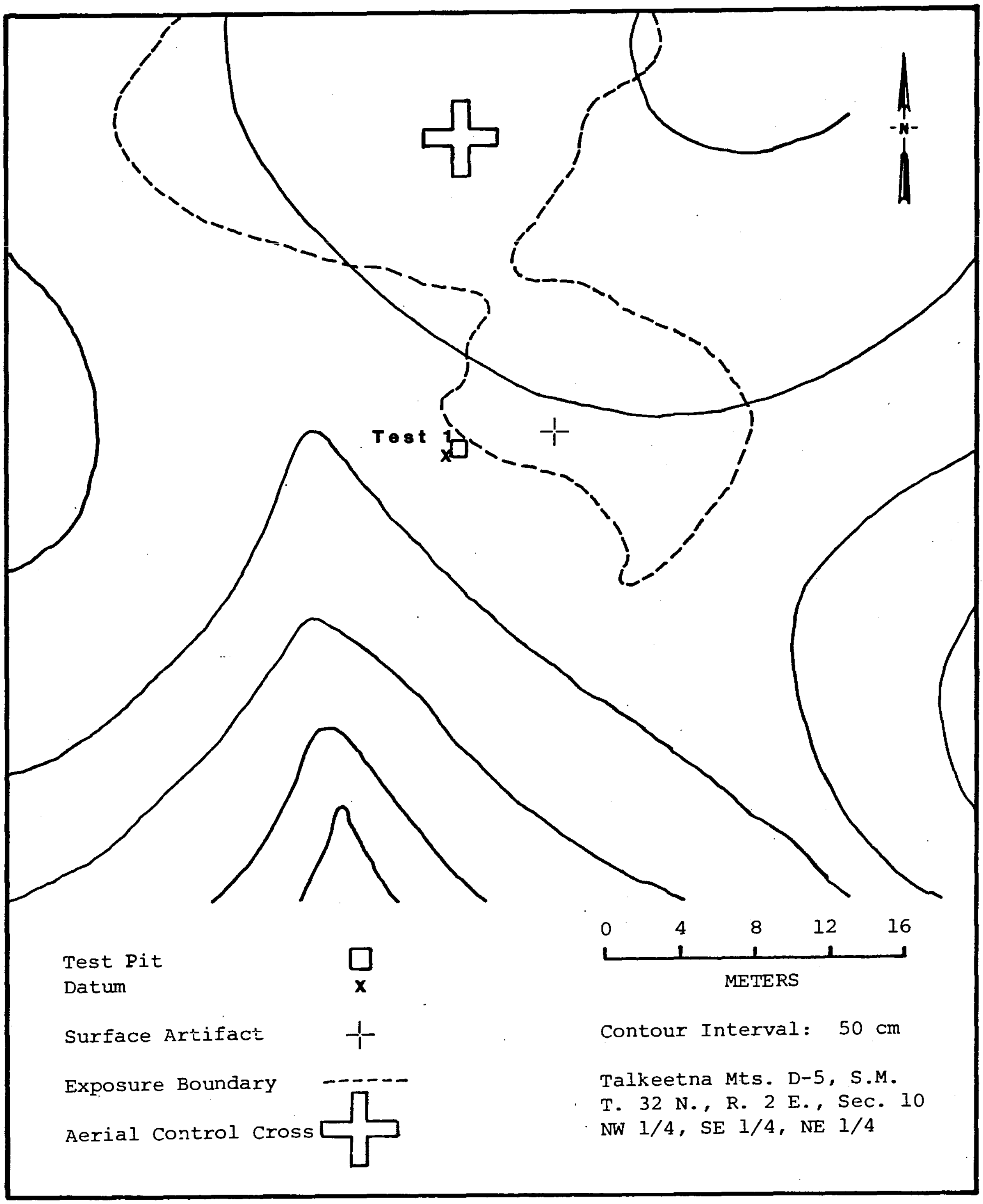


Figure 38. Site Map TLM 101.

(ii) AHRS Number TLM 103, Accession Number UA81-271

Area: ca. 6 km North of Devil Creek Mouth, Proposed Corridor
Area Map: Figure 156; Location Map: Figure 306
USGS Map: Talkeetna Mts. D-5, Scale 1:63,360

Site Location: UTM Zone 6 Easting 395900 Northing 6973950

Latitude 62°53'00" W., Longitude 149°02'51" W.

T. 32 N., R. 2 E., Seward Meridian
Sec. 10, SE¼NE¼NE¼

Site Map: Figure 39

Setting: The site is located on the eastern edge of a 400 m north-south by 200 m east-west terrace approximately 6 km north of the confluence of Devil Creek and the Susitna River (Figures 156, 306). This relatively flat terrace lies about 762 m asl (2500 feet), 200 m east of, and 91 m above Devil Creek, at the southern terminus of the small glacial valley through which Devil Creek flows. To the south the terrace continues approximately 600 m at a lower elevation, along the east side of the constricted Devil Creek Valley. The site overlooks a channel to the east, which drains south into Devil Creek, and which separates visible upland hills from the site. In other directions the view encompasses much of the terrace, including site TLM 101, 250 m to the southwest, and a slight rise in the terrace beyond which TLM 114 is located. Uplands are visible to the east, north, west, and southwest. To the south, the Devil Creek Valley is visible for a distance of about 1 m. Vegetation at the site consists of low heath, lichen, and dwarf birch, surrounding a gravel blowout approximately 15 m x 5 m in area at the edge of the terrace. Occasional scattered spruce constitute the arboreal vegetation of the site area.

Reconnaissance Testing: The site consists of a surface lithic scatter located within a 1 m diameter area of the gravel blowout (Figure 39).

Three basalt flakes and a basalt projectile point tip (UA81-271-1; Artifact Photo M-g) were collected. No further surface material was observed. Test pit 1 was dug ca. 2 m north of the scatter near the edge of the vegetation cover. Three tephra horizons were identified; no charcoal or cultural material was present in the test.

Collected Artifact Inventory

3 Basalt flakes
1 Basalt biface fragment

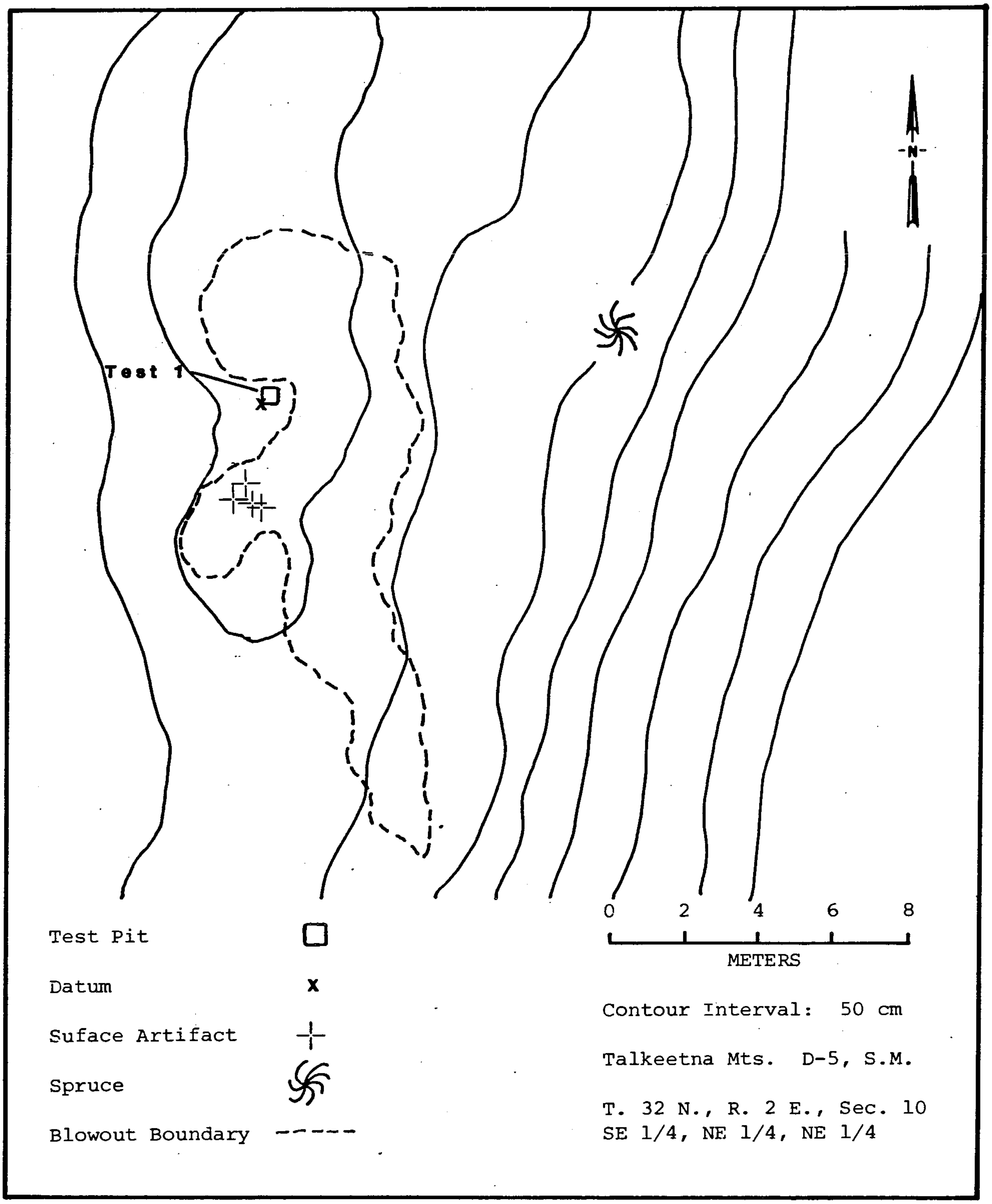


Figure 39. Site Map TLM 103.

(iii) AHRS Number TLM 106, Accession Number UA81-265

Area: ca. 8 km Northwest of Tsusena Creek Mouth, Proposed Corridor
Area Map: Figure 157; Location Map: Figure 304
USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 410800 Northing 6971600

Latitude 62°51'58" N., Longitude 148°45'10" W.

T. 32 N., R. 4 E., Seward Meridian
Sec. 17, SE¼SE¼NW¼

Site Map: Figure 40

Setting: TLM 106 is located at ca. 914 m asl (3000 feet) on a prominent knoll located centrally within an esker ridge, overlooking the valley of a creek which flows southeast into the Susitna River, approximately 8.3 km east-southeast of Swimming Bear Lake (Figures 157, 304). The creek lies 1.2 km south of the site. The esker ridge is oriented approximately east-west and is divided into sections by small creek drainages. The knoll, 80 m northwest-southeast by 60 m northeast-southwest is separated 30 m to the west by a steep narrow drainage 10 m deep containing a creek which drains a small one hectare pond located 70 m north of the site. It is separated 30 m to the northeast by an arm of the pond. The southern and eastern sides of the knoll, facing the valley, are steep slopes dropping 30 m before grading into the valley bottom. Thus, a panoramic view of the creek valley to the east, south, and southwest may be obtained from the site. To the north and northwest are hilly uplands in full view. The pond is visible to the north, but the creek drainage to the west is not. The view to the northeast is impaired by a slightly higher knoll 50 m away. The site is located above tree line. The southeast face of the knoll is free of vegetation, consisting of a large gravel exposure, while the top and northwest portion is more or less continuously covered by a mat of lichen, heath, and low dwarf birch, with small gravel exposures present.

Reconnaissance Testing: The site consists of a single gray chert biface midsection (UA81-265-1; Artifact Photo M-h) located on the surface near the top of the knoll, where the large southeastern exposure begins (Figure 40). Thorough visual survey of this surface and other exposures was conducted. No other artifacts were found. Test pit 1, located near the artifact in vegetation on top of the knoll, revealed an organic layer underlain by a gray silty possible tephra unit, and oxidized glacial drift. No subsurface artifacts were encountered.

Collected Artifact Inventory

1 Gray chert biface fragment

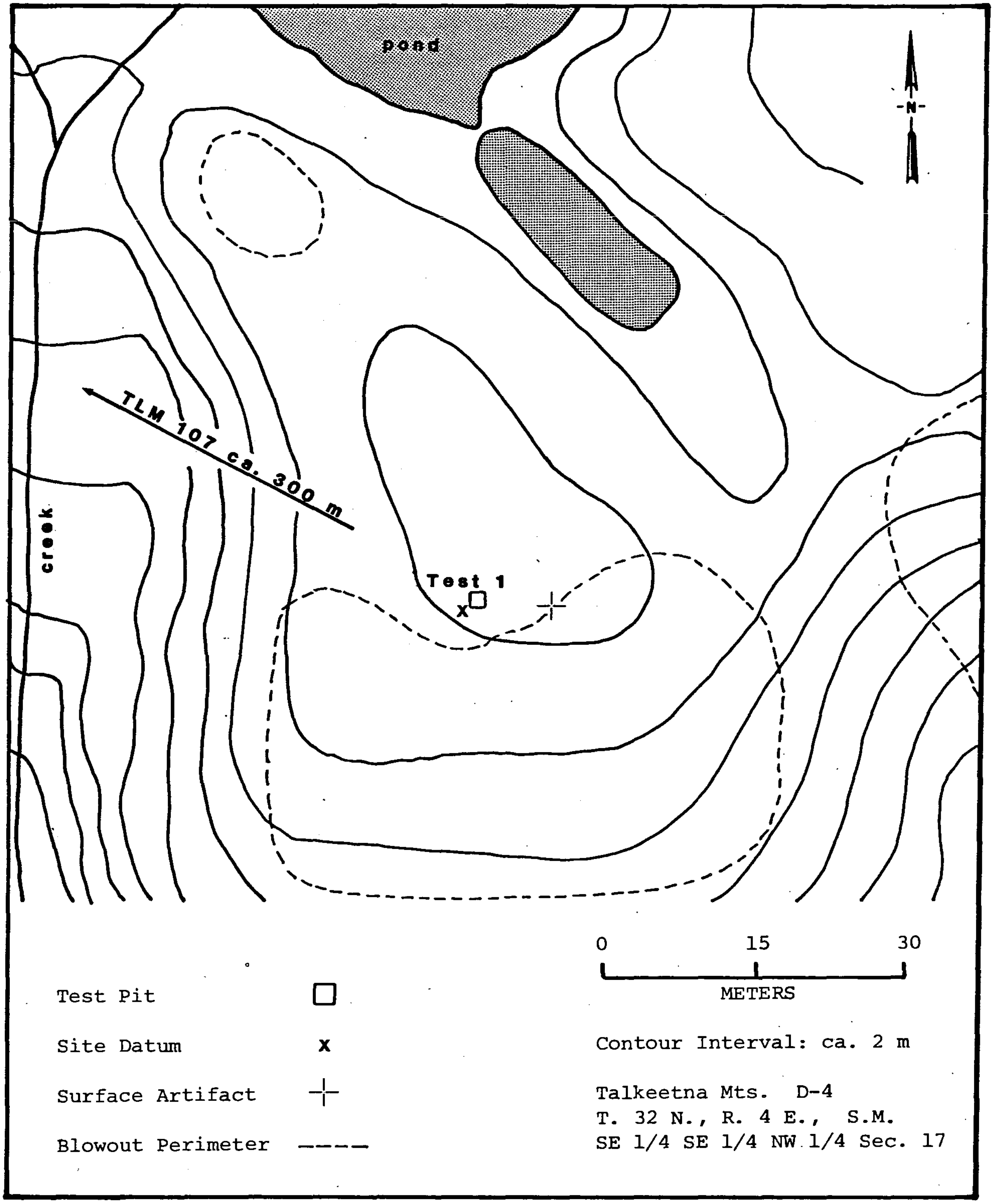


Figure 40. Site Map TLM 106.

(iv) AHRS Number TLM 107, Accession Number UA81-266

Area: ca. 8 km Northwest of Tsusena Creek Mouth, Proposed Corridor
Area Map: Figure 157; Location Map: Figure 304
USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 410500 Northing 6971800

Latitude 62°52'0" N., Longitude 148°45'35" W.

T. 32 N., R. 4 E., Seward Meridian
Sec. 17, NE¼SW¼NW¼

Site Map: Figure 41

Setting: The site is located approximately 8 km northwest of the confluence of Tsusena Creek and the Susitna River, at an elevation of 945 m asl (3100 feet), on a west-northwest--east-southeast trending esker on the southern slope of a minor glacial valley of the Susitna drainage (Figures 157, 304). The sandy gravel-covered esker is dissected in several places by drainage creeks running south to the Susitna River. The esker appears as a series of knolls, the western ones being rounded and higher in elevation, the eastern end flattening somewhat about 15 m lower than the highest knoll. The site is situated near the western end of the esker on the highest knoll of the system. The site extends 150 m down the esker to the east of the knoll and about 12 m downslope to the west. A creek cuts through the esker about 100 m west of the site; another creek runs parallel to the esker on the north side, flowing east. A small marshy pond is about 350 m east of the site, on the north side of the esker. Site TLM 106 is adjacent to this pond. The view from the site is extensive in all directions. From the lower, eastern part of the site visibility to the west is hindered somewhat by the knoll.

Vegetation on the site consists of low dwarf birch and heath plants, lichens and sedges, interrupted by extensive areas of sand and gravel.

In the lower, more moist areas south of the site, willow and alders occur. The site is above treeline, although spruce can be seen in the lower reaches of the valley.

Reconnaissance Testing: The site is defined by the extent of surface artifacts occurring along a 160 m length of the esker (Figure 41). Datum was placed on the highest point of the site, around which the artifacts were focused. All but three artifacts were observed within 17 m of datum. Two rhyolite flakes at 133 m and 149 m southeast of datum, and a cobble spall with possible retouch at 56 m southeast of datum constitute the farthest extent of the site. Four chert flakes, 13 rhyolite flakes, one basalt flake, one quartzite flake, a chert biface (UA81-266-1; Artifact Photo N-a) and a chert point midsection fragment (UA81-266-2; Artifact Photo N-b) were observed within 17 m of datum. A 40 x 40 cm test (test pit 1) was excavated on the knolltop where the vegetation mat provides soil deposition. No artifacts or charcoal were recovered. Due to the extensive deflated nature of the gravel surface, the site is regarded as primarily a surface lithic scatter.

Collected Artifact Inventory

3 Chert flakes
5 Rhyolite flakes
1 Basalt flake
1 Quartzite flake
1 Cobble spall with possible retouch
1 Chert biface fragment
1 Chert point midsection fragment

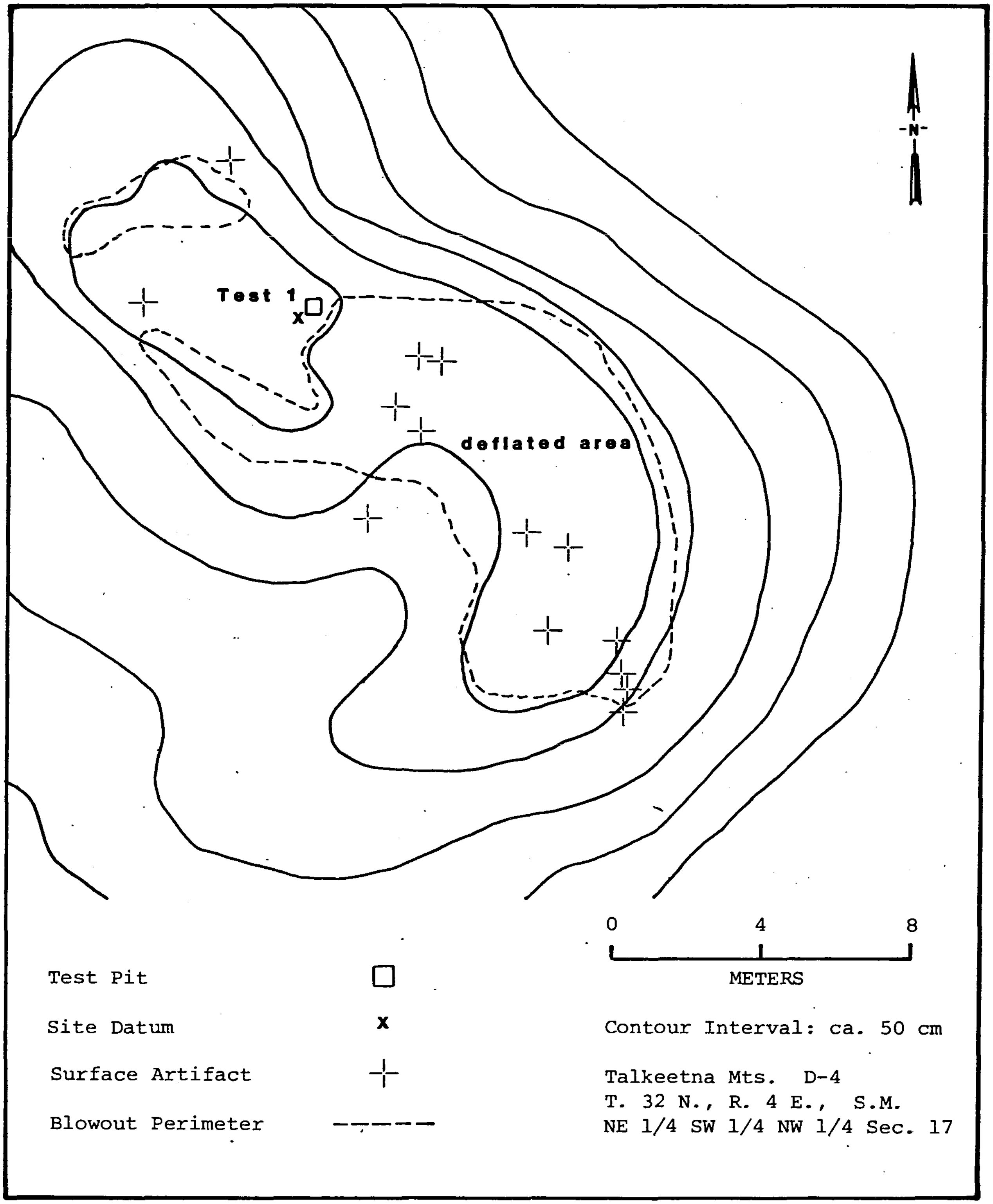


Figure 41. Site Map TLM 107.

(v) AHRS Number TLM 108, Accession Number UA81-267

Area: ca. 2.5 km Southeast of Swimming Bear Lake, Proposed Corridor
Area Map: Figure 157; Location Map: Figure 305
USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 405550 Northing 6973075

Latitude 62°52'38" N., Longitude 148°51'20" W.

T. 32 N., R. 3 E., Seward Meridian
Sec. 11, NW¼NW¼SW¼

Site Map: Figure 42

Setting: TLM 108 is located on a prominent esker feature at 960 m asl (3150 feet), 2.5 km southeast of Swimming Bear Lake along an unnamed stream drainage (Figures 157, 305). The esker lies 200 m northeast of the confluence of a large south-flowing creek and the unnamed stream, in a broad, sloping and irregular-surfaced valley. The esker is oriented approximately northeast-southwest, and stands 5-10 m higher than the surrounding terrain. The esker slopes downward gradually to the northeast, but has moderate to steep sides to the east, south, and west. The site is located on the flat, oval-shaped exposed top on the high southern end of the esker, overlooking the creek and associated small marshes to the south and west. The gradually rolling and stepped uplands to the north, east and west are also visible and easily accessible from the top.

The top is 40 m long northeast-southwest and 25 m wide northwest-southeast, and is predominantly exposed sand and gravel. A few occasional mats of vegetation, composed chiefly of cranberry, bearberry, and lichens, makes of the sparse vegetal cover. This occurs on the sides of the esker and in the southwest quarter of the top. Shrub cover, composed of dwarf birch, blueberry, and willow, dominates off-site. A white cross aerial control point (R&M, 1981) is located on the site.

Reconnaissance Testing: A lithic scatter consisting of over 100 observed flakes was found on the esker top (Figure 42). The scatter consists of large black basalt flakes, waste flakes, tiny resharpening flakes, and a few gray chert flakes. The flakes are concentrated in the northern quarter of the top, but the scatter extends over the entire exposed surface. No finished tools were observed; many show cortex, while a few show signs of unifacial retouch. A total of 16 black basalt and 2 gray chert flakes were collected from the surface. Test pit 1, located near the lithic concentration in a small vegetated hummock, consisted of coarse silty sand and drift below a thin layer of humus. No subsurface artifacts were encountered.

Collected Artifact Inventory

16 Black basalt flakes
2 Gray chert flakes

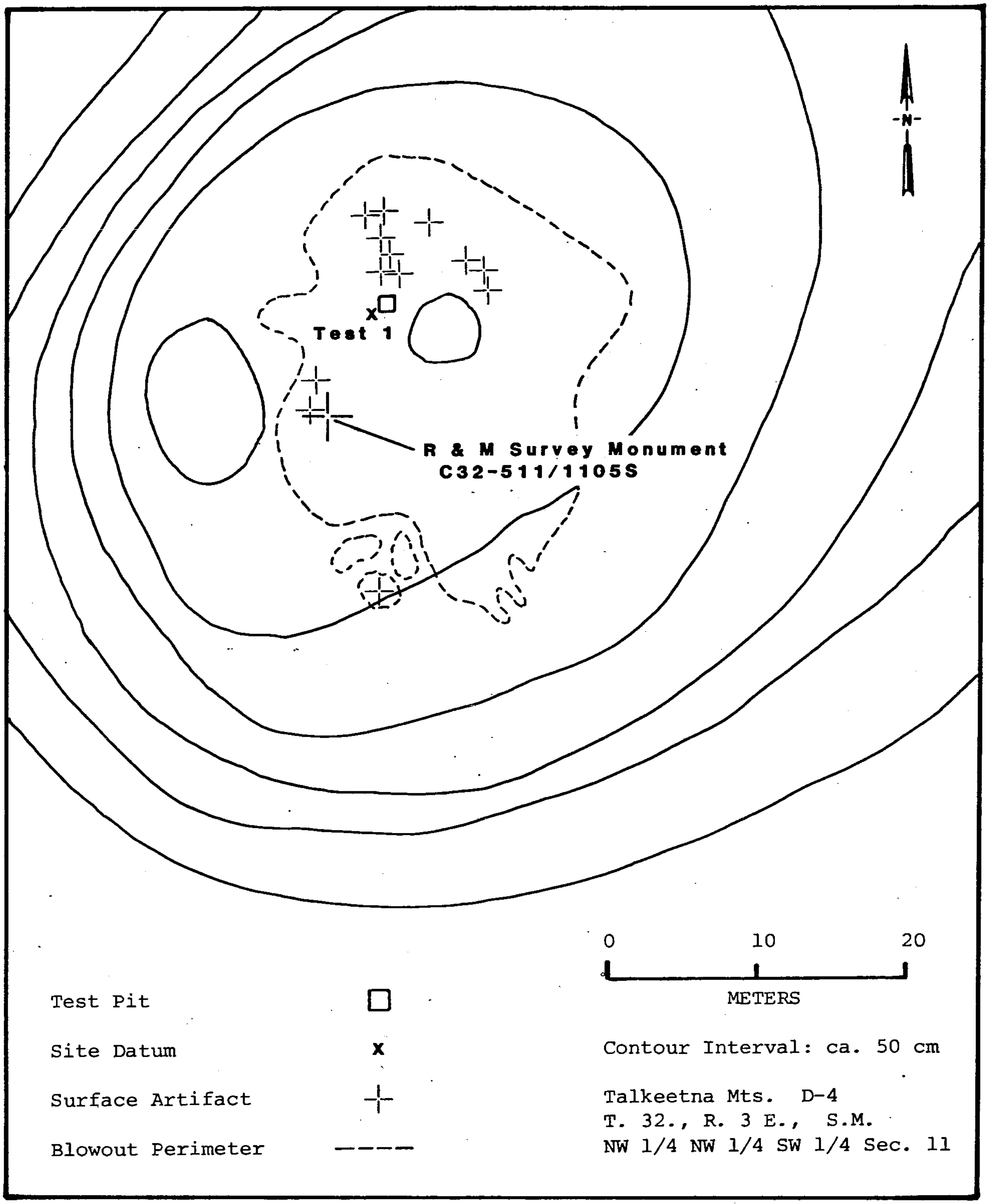


Figure 42. Site Map TLM 108.

(vi) AHRS Number TLM 109, Accession Number UA81-268

Area: Swimming Bear Lake East Shore, Proposed Corridor
Area Map: Figure 157; Location Map: Figure 305
USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 403400 Northing 6975400

Latitude 62°53'55" N., Longitude 148°54'00" W.

T. 32 N., R. 3 E., Seward Meridian
Sec. 4, SE¼NW¼NE¼

Site Map: Figure 43

Setting: TLM 109 is located on a peninsula at the east end of Swimming Bear Lake, about 100 m north of the most narrow point in the lake (Figures 157, 305). The site is situated atop a low, north-south trending esker ridge at 1018 m asl (3340 feet), 7 m above the lake level. The lake lies 52 m to the northwest. The esker, ca. 5-10 m wide east-west and 50 m long north-south is separated by surrounding terrain by 3-4 m elevation. Numerous other glacial moraine features occur throughout this area. Between the esker and the lake to the west is a relatively flat terrace 3-4 m higher than the lake. A small 50 cm high circular rise 5 m in diameter (feature 1) occurs on the edge of this terrace, 72.5 m southwest of the site datum. The area is above timberline, and the ground surface is covered by lichens, heath, dwarf birch, and willow in a more or less continuous mat, with occasional small natural exposures and rock outcrops.

Reconnaissance Testing: The lithic material recovered from the site was found in two small natural exposures (Figure 43). The first is 2.3 m south (170°) of datum, near the center of the esker knob, and contains 2 gray chert flakes. The second is located 20.9 m south (165°) of datum, consisting of 2 brown chert flakes. These artifacts were collected. Test pit 1, at datum, yielded no cultural material in the deep glacial drift (Figure 43). Several shovel tests in the area also yielded no cultural material. Feature 1, located 72.5 m southwest of datum, was thought to be a house mound, but 7 shovel tests around it revealed no evidence of cultural activity.

Collected Artifact Inventory

2 Gray chert flakes
2 Brown chert flakes

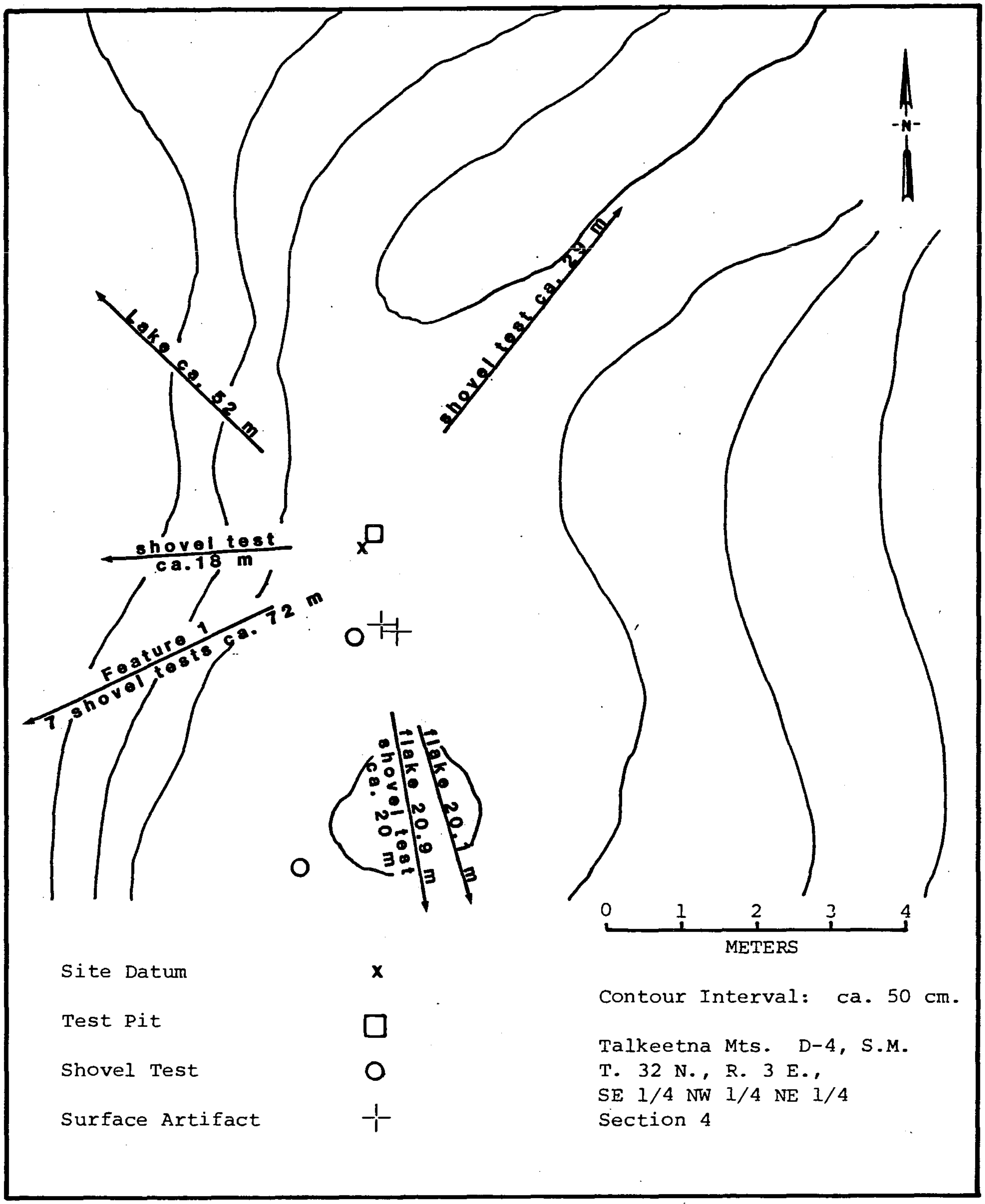


Figure 43. Site Map TLM 109.

(vii) AHRS Number TLM 110, Accession Number UA81-269

Area: Swimming Bear Lake Northwest Shore, Proposed Corridor
Area Map: Figure 157; Location Map: Figure 305
USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 402600 Northing 6976000

Latitude 62°54'10" N., Longitude 148°54'03" W.

T. 33 N., R. 3 E., Seward Meridian
Sec. 32, NE¼SE¼SE¼

Site Map: Figure 44

Setting: The site is located on the top of an east-west oriented ridge on the northwest side of a 65 hectare lake (Swimming Bear Lake), 11.5 km northeast of the confluence of Devil Creek and the Susitna River (Figures 157, 305). The site is located at about 1052 m asl (3450 feet) and is about 30 m above the lake. This lake is the largest lake within a 7 km radius and spans a drainage divide between Devil Creek to the northwest and upper drainages of the Susitna River to the southeast. The Susitna River is 11.1 km southwest at its closest point and about 671 m lower in elevation. An outlet stream drains the lake at its northwestern end, about 170 m west of the site. The confluence of this outlet stream and the southwest draining Devil Creek are approximately 2.6 km northwest of the site, about 229 m lower in elevation. The view from the site is panoramic with total visibility of the lake and surrounding terrain for at least 2 km. Surrounding terrain vegetation is composed of mosses, lichens, and grasses on thin humic soils over bedrock and talus uplands. Low brush and bush berries also occur frequently in the area. Site vegetation consists of a fairly well developed lichen mat with some scattered moss growth. Grass tufts occur irregularly on the site as well. Exposed soil, bedrock, and talus are found on and surrounding the crest of the ridge on which the site is located.

Reconnaissance Testing: The site comprises a surface lithic scatter on deflation exposures of the ridge crest, and subsurface lithics from one 40 x 40 cm test excavation (Figure 44). The surficial material is representative of three lithic types; black basalt, gray chert, gray and white rhyolite. One chert biface fragment (UA81-269-48) was collected and given to the archeology project supervisor by a non-archeologist project member. Its exact provenience is unknown. A subsurface test (test pit 1) excavated at the highest point on the ridge revealed a total of 27 artifacts of varying lithic type. Six black basalt flakes were found between 0-5 cmbs, 3 brown basalt, 5 black basalt, and 2 black chert flakes were found between 5-10 cmbs. Three black basalt and 2 black chert flakes were found between 10-15 cmbs and 1 black basalt flake, 1 black basalt biface fragment, and 2 gray chalcedony flakes were found between 15-20 cmbs. Two black basalt flakes were found between 20-25 cmbs. These lithics were present in four stratigraphic units from 0-25 cmbs, composed of a humic and organic mat near the surface, through a dark red-brown humic deposit, overlaying a red-brown silt. A reddish yellow-brown sandy silt with small gravels was the lowest sedimentary unit to contain cultural material.

Collected Artifact Inventory

31 Black basalt flakes
2 Gray chert flakes
1 Gray rhyolite flake
1 White rhyolite flake 1 Chert biface fragment
4 Black chert flakes
2 Gray chalcedony flakes
1 Black basalt biface fragment

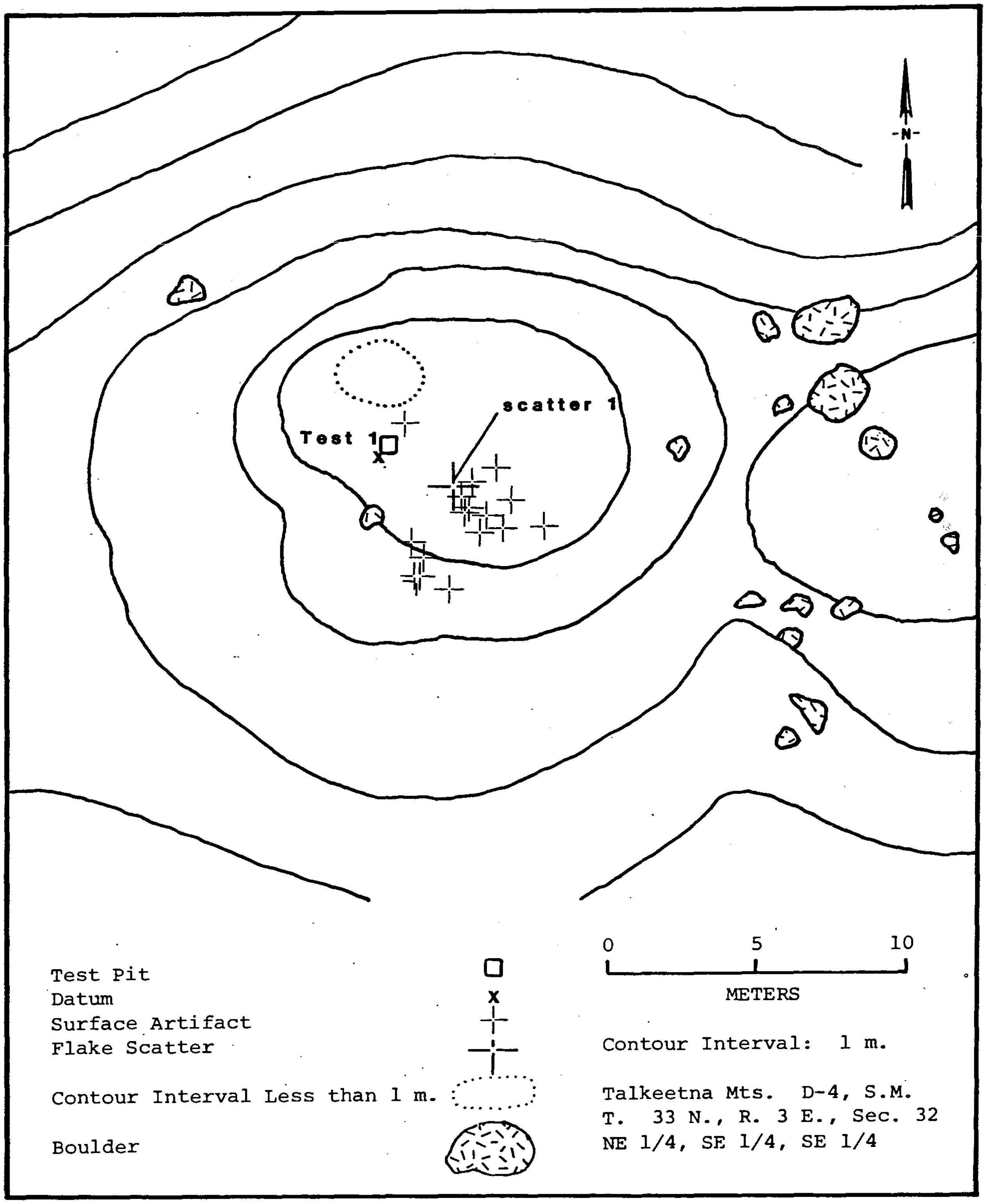


Figure 44. Site Map TLM 110.

(viii) AHRS Number TLM 111

Area: Swimming Bear Lake Northwest Shore, Proposed Corridor
Area Map: Figure 157; Location Map: Figure 305
USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 402600 Northing 6975600

Latitude 62°53'59" N., Longitude 148°55'10" W.

T. 32 N., R. 3 E., Seward Meridian
Sec. 4, NW¼NW¼NW¼

Site Map: Figure 45

Setting: The site is located at the northwest end of Swimming Bear Lake approximately 10.5 km northeast of the Susitna River at its closest point (Figures 157, 305). At 1021 m asl (3350 feet), the site is about 10 m above the lake on a 20 m wide spit protruding southeast into the lake. It is approximately 400 m southeast of the lake's outlet. The site occupies the top of the southwest slope of the spit about 30 m from the end (Figure 305). From the site the slope descends steeply to the muskeg margin of the lake which is relieved by small knolls beyond which rise upland hills. The site constitutes the highest point of relief within 100 m. The area in view is above timberline; therefore extensive visibility, particularly across the lake and to the west, is afforded. Vegetation at the site consists of mat and cushion tundra. The ground surface is fairly smooth, interrupted by many small tussocks and ground squirrel holes.

Reconnaissance Testing: The site consists of a roughly rectangular depression ca. 1.3 m (southwest-northeast) and 1.5 m (northwest-southeast) and 45 cm in depth as measured from the highest (northeast) wall (feature 1) (Figure 45). It is moss covered; the walls slope inward, most steeply from the northwest, northeast, and southeast. The southwest wall appears to be slightly eroding downslope. No berm is visible circumscribing the depression. A test (test pit 1) was dug about 1 m from the northeast wall, which yielded no cultural material. Four shovel tests were dug within 1 m of Feature 1, and one shovel test was dug in the floor of the feature. All shovel tests and the test pit showed shallow soil and sand, silt, gravel deposition over drift. A shovel test on the southern edge of the feature revealed a gravel unit overlying the depositional and drift units, indicating the addition of fill from the excavated depression to the surrouding sediments. Four shovel tests were dug at approximately 10 m intervals along the top of the spit. All were sterile.

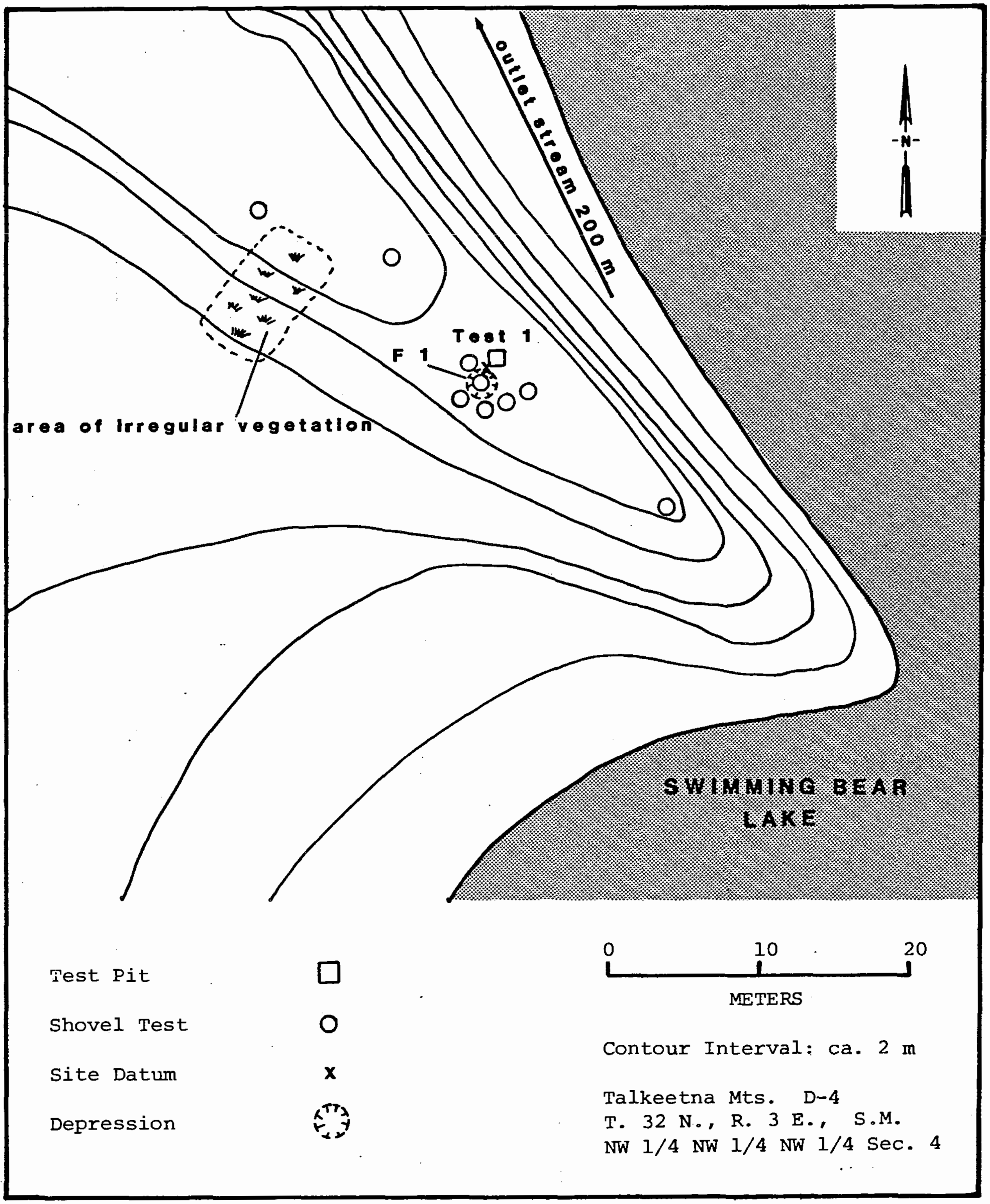


Figure 45. Site Map TLM 111.

(ix) AHRS Number TLM 112

Area: ca. 1 km North of Swimming Bear Lake, Proposed Corridor
Area Map: Figure 157; Location Map: Figure 305
USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 402700 Northing 6976800

Latitude 62°54'35" N., Longitude 148°55'00" W.

T. 33 N., R. 3 E., Seward Meridian
Sec. 32, NE¼SE¼NE¼

Site Map: Figure 46

Setting: This site is an irregular circular ring of stones located on a discontinuous ridge overlooking Devil Creek and a major unnamed creek, approximately 11.7 km northeast of the confluence of Devil Creek and the Susitna River, and 1 km north of Swimming Bear Lake (Figures 157, 305). This ridge is oriented basically east-west at an elevation of 1006 m asl (3300 feet). The site is within a low saddle about 200 m long, at the northwest extent of a series of ridges and knolls north and east of Swimming Bear Lake, and commands up and downstream views of glacial valleys occupied by the unnamed creek, approximately 700 m north, and Devil Creek, approximately 2 km north. The confluence of these south-westerly draining creeks is visible 2.4 km northwest of the site. A small marshy pond borders the site on the southwest side of the saddle. The slope decends gradually to the north, towards the unnamed creek to the east and west, making access to this creek and its confluence with Devil Creek, 600 m below the site, relatively easy. Views to the south and southeast are limited to about 400 m by higher ridges and uplands in those directions. Vegetation at the site is sparse, consisting of a thin moss-lichen mat, with scattered low brush and grasses in slightly less well drained areas. Large sections of the ridge at the site are deflated. Surrounding vegetation is much the same, with low brush occurring along drainage margins and in low lying areas.

Reconnaissance Testing: An irregular circular ring of stones was the only cultural feature observed at the site. A total of 30 stones were mapped, forming the "ring," ranging in size from small cobbles to small boulders. These stones were only partially embedded in the surrounding soil, as opposed to other stones of this size that were deeply embedded or buried in the surrounding soil. No surface artifacts were observed, nor was any cultural material found in a 40 x 40 cm test (test pit 1) excavated 1.5 m west of the stone feature (Figure 46).

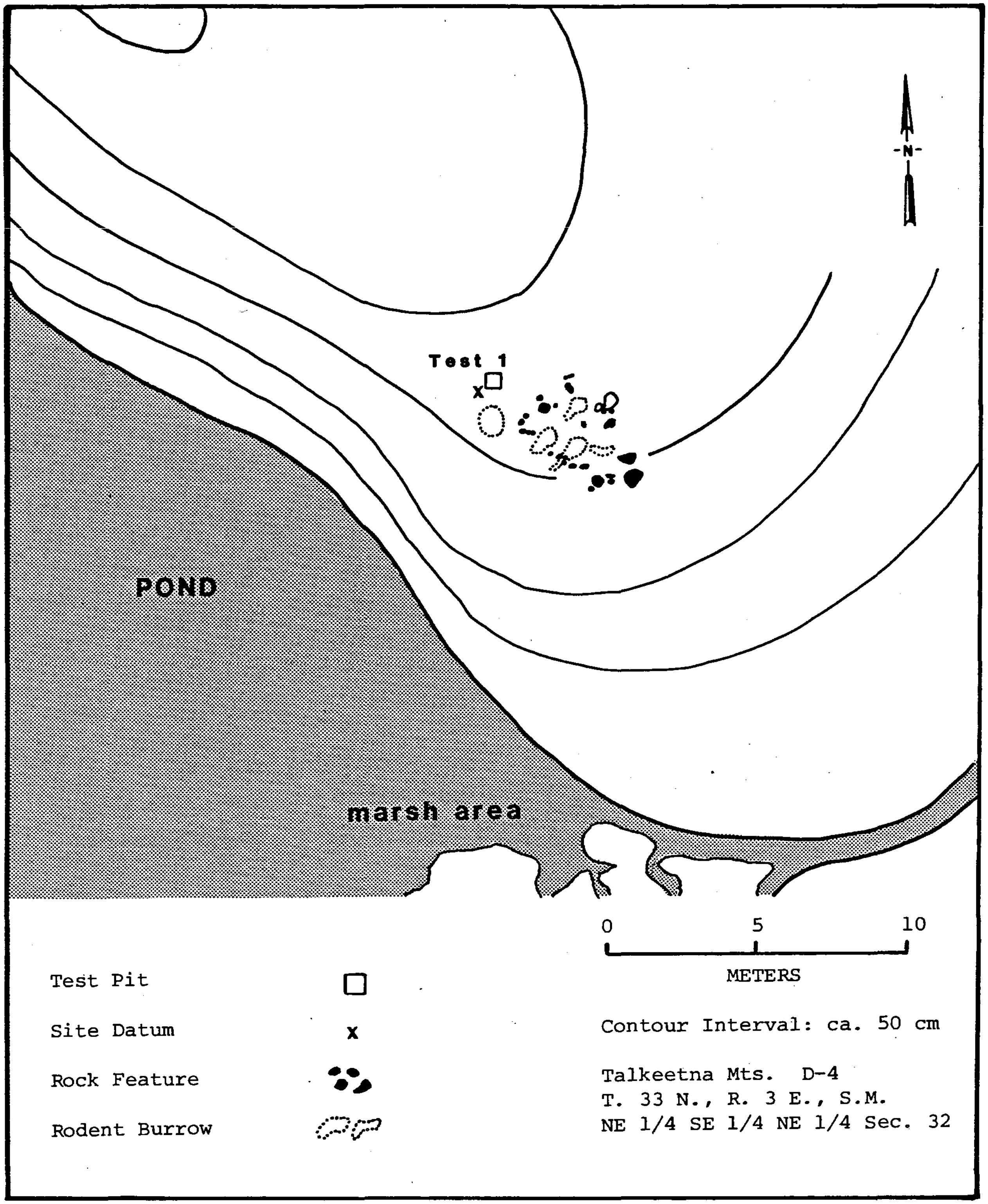


Figure 46. Site Map TLM 112.

(x) AHRS Number TLM 113, Accession Number UA81-272

Area: ca. 7 km North of Devil Creek Mouth, Proposed Corridor
Area Map: Figure 156; Location Map: Figure 306
USGS Map: Talkeetna Mts. D-5, Scale 1:63,360

Site Location: UTM Zone 6 Easting 396400 Northing 6975100

Latitude 62°53'35" N., Longitude 149°02'08" W.

T. 32 N., R. 2 E., Seward Meridian
Sec. 2, SE¼SW¼NW¼

Site Map: Figure 47

Setting: TLM 113 is located along a southeast facing bluff at 762 m asl (2500 feet), approximately 100 m northwest of Devil Creek, 6.4 km northeast of High Lake (Figures 156, 306). The bluff is the edge of a level glacial terrace about 250 m wide, about 30 m higher than Devil Creek. It is oriented with the creek on a northeast-southwest trend, and is sinuately dissected into shallow lobes. The bluff edge, on which the site is found, is a narrow natural gravel exposure 10 m wide east-west and 200 m long northeast-southwest. Adjacent to this exposure is the well vegetated level terrace. To the north 200 m is a low irregular kame feature 5-10 m higher than the site, the nearest higher ground. From the site, a panoramic view of the Devil Creek drainage and associated lower terraces to the east, southeast, and south, and the uplands gently rising behind is possible. Beyond the terrace to the west and north similar gently rolling uplands can be seen. The site is near the upper elevational unit for spruce, which allows for considerable visibility. Occasional spruce occur in the area, and the vegetation is predonimantly a low shrub tundra with dwarf birch, blueberry, heath and willow. This is generally continuous except for limited deflated areas.

Reconnaissance Testing: The site consists of four chipped stone artifacts found within the gravel exposure along its full 180 m length

(Figure 47). At the southwestern end of the exposure, two projectile points were found: one is a stemmed white rhyolite point (UA81-272-1; Artifact Photo N-d); the other is a gray rhyolite point (UA81-272-2; Artifact Photo N-e). Northeast of datum a white rhyolite and a black basalt backed flake with retouch (UA81-272-4; Artifact Photo N-f) were found and collected. No other surface artifacts were noted. Test pit 1, located at datum in soil adjacent to the gravel exposure, revealed a well developed sequence of tephra and soils to a depth of 30 cm, but no cultural materials were uncovered (Figure 47). Eleven shovel tests were spaced along the bluff edge, within 10 m of the gravel exposure, with negative results.

Collected Artifact Inventory

1 Gray rhyolite projectile point
1 White rhyolite stemmed projectile point
1 White rhyolite flake
1 Black basalt flake with possible retouch

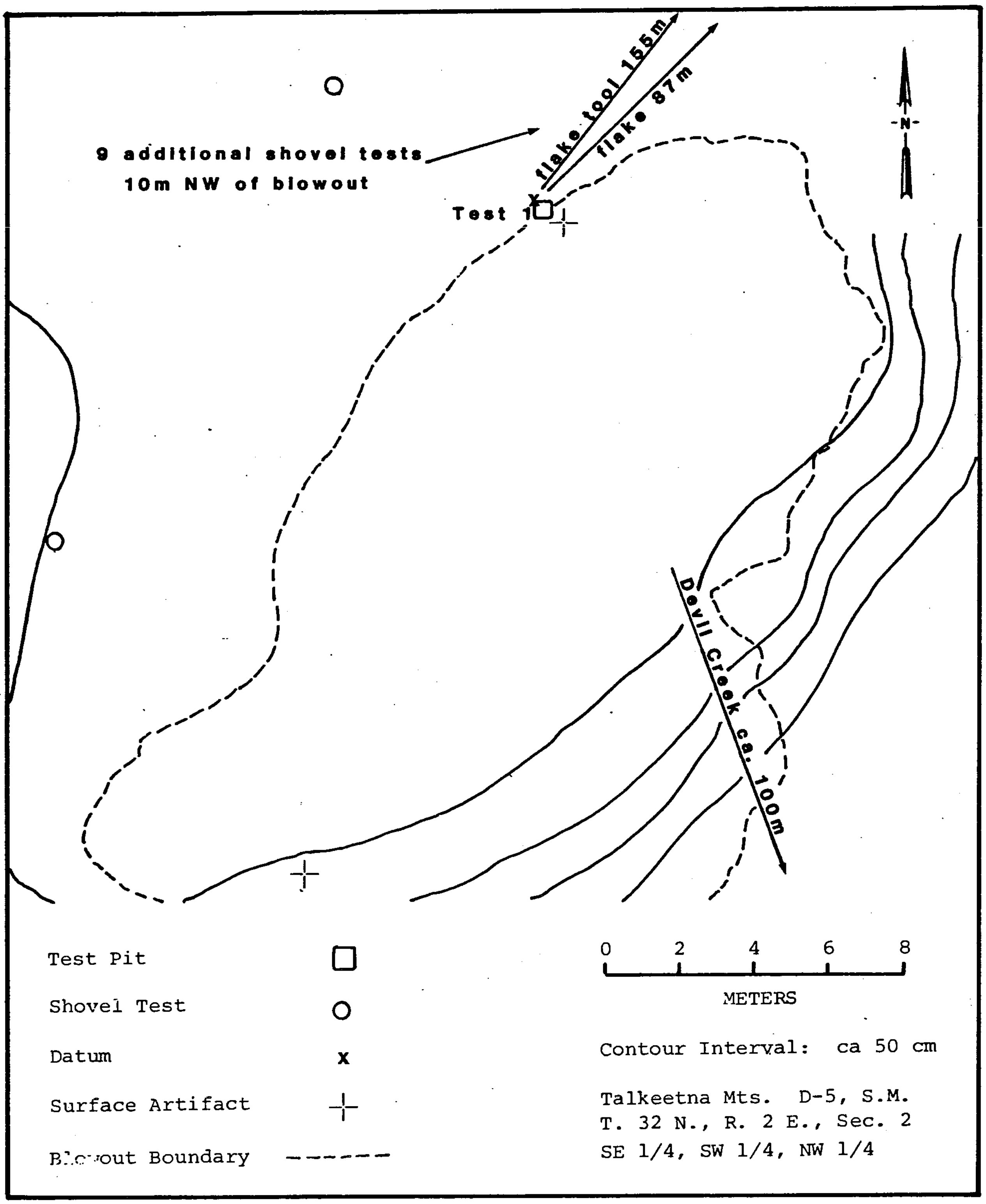


Figure 47. Site Map TLM 113.

(xi) AHRS Number TLM 114, Accession Number UA81-273

Area: ca. 6 km North of Devil Creek Mouth, Proposed Corridor
Area Map: Figure 156; Location Map: Figure 306
USGS Map: Talkeetna Mts. D-5, Scale 1:63,360

Site Location: UTM Zone 6 Easting 395820 Northing 6974150

Latitude 62°53'05" N., Longitude 149°03'00" W.

T. 32 N., R. 2 E., Seward Meridian
Sec. 10, NE¼NE¼NE¼

Site Map: Figure 48

Setting: This site is located on the northeastern end of a north-south oriented terrace overlooking Devil Creek, approximately 6 km due north of the confluence of Devil Creek and the Susitna River (Figures 156, 306). Elevation at the site is about 762 m asl (2500 feet) and is approximately 80 vertical meters above, and 150 meters from, Devil Creek at its closest point. Devil Creek is the major drainage visible from the site. The creek becomes constricted by downcutting into the valley floor just west and south of the site. Access to the creek is relatively easy by way of a minor drainage feeding the creek about 70 m east of the site. This drainage also defines the eastern and southern boundries of the plateau, as it feeds Devil Creek in both directions. The site commands a view of Devil Creek and its valley to the east, north, and northwest. Visibility is limited to the west and south by the terrace the site is on. Devil Creek bends to the south, around the plateau, about 400 m west of the site, obscuring views of the creek and the valley in that direction. Vegetation at the site consists of scattered dwarf birch, low bush berries, labrador tea, scattered grasses, and a fairly well developed moss-lichen mat. The area surrounding the site is at the upper limits of treeline in this region and spruce occurs sporadically at this elevation. Mosses dominate less well drained areas, basically the small pools and channels of standing water that occupy much of the surrounding terrain.

Reconnaissance Testing: The site consists of a surface lithic scatter found in two deflation exposures within 2 meters of each other (Figure 48). Each exposure is no greater than 2 meters in diameter. The only lithology noted is a white rhyolite. A 40 x 40 cm test (test pit 1) was excavated 1 meter south of the exposures and no subsurface cultural material was found. Three shovel tests were placed within a 15 meter radius of the scatter and were also sterile. Five of the eleven total flakes were collected at this site.

Collected Artifact Inventory

5 White rhyolite flakes

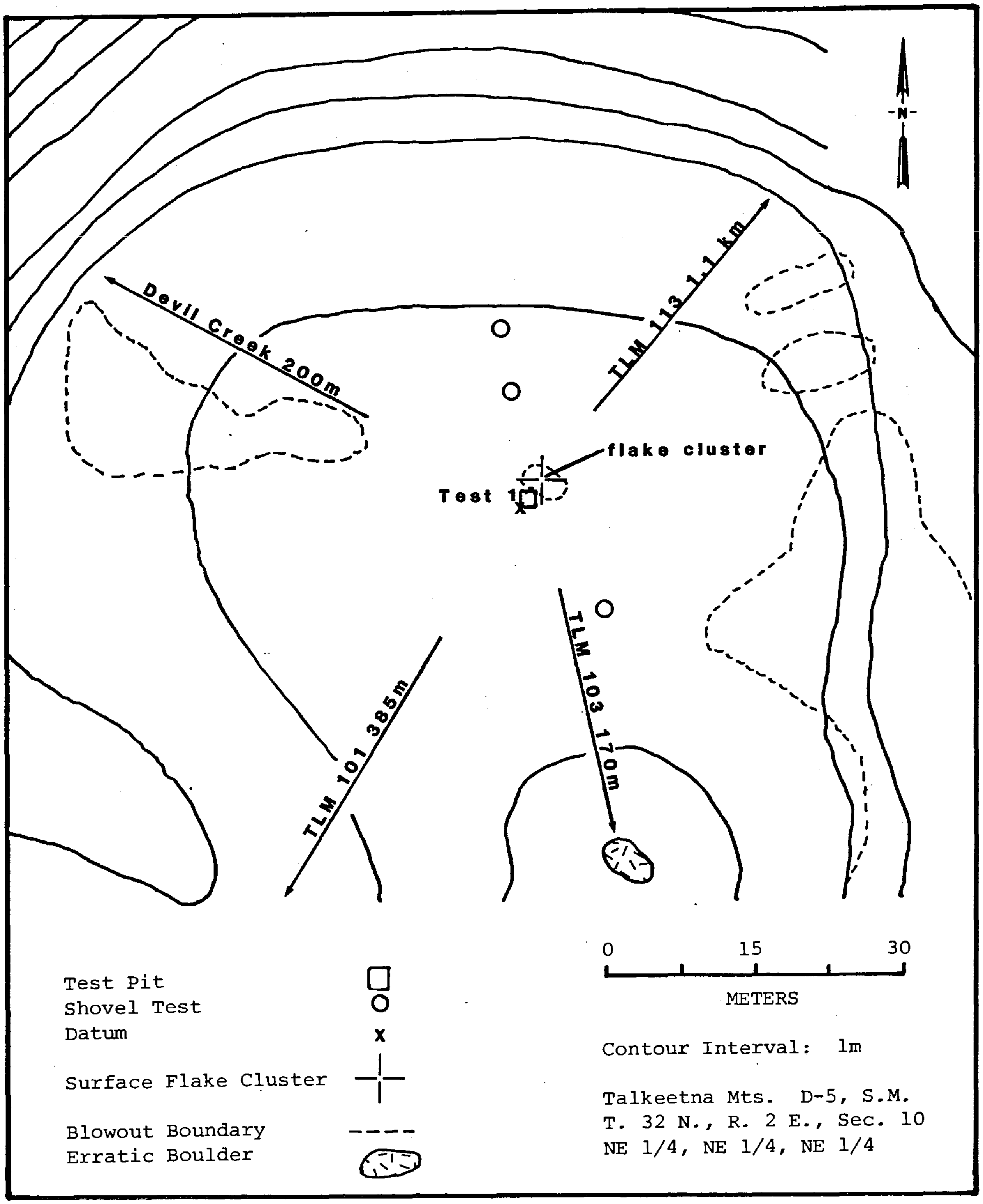


Figure 48. Site Map TLM 114.

(b) Historic Sites - Results and Discussion

No historic sites were located in this area during 1980 and 1981 field reconnaissance. However, the proposed access routes were examined only at the reconnaissance level. It is possible that sites associated with historic use of the area are present and may be located through further investigation. Further indepth testing should be conducted once a specific route is selected.

3.6 - Transmission Lines

Only a very cursory four-hour aerial reconnaissance was conducted, by the University of Alaska Museum, of the proposed transmission line routes. Examination of the transmission lines was not part of the scope of work for cultural resource investigations, sub-task 7.06. The cursory survey was conducted at the request of T.E.S. in a spirit of cooperation, but constitutes only a very preliminary evaluation. Intensive examination is required to locate and document cultural resources along the route. One possible site was found during the aerial reconnaissance but testing is necessary to firmly document the site.

3.7 - Other Areas

(a) Archeological Sites - Results and Discussion

(i) AHRS Number TLM 007

Area: Stephan Lake outlet
Area Map: Figure 160
USGS Map: Talkeetna Mts. C-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 400800 Northing 6951500

Latitude 62°40'55" N., Longitude 148°56'20" W.

T. 30 N., R. 3 E., Seward Meridian
Sec. 20, NE¼NE¼SW¼

Setting: The site is located at the west end of Stephan Lake near its outlet. The latitude and longitude coordinates reported by West in 1971 place the site on the south side of the outlet creek in the vicinity of a cabin.

Reconnaissance Testing: This prehistoric site, reported in 1971 by Fredric H. West, was not visited during the present study. West reported artifacts exposed on the surface but indicated no surface features were observed. Limited testing by West in 1971 revealed the site was multicomponent. Flaked chert artifacts and charcoal were collected and West reports a date of 6000 years B.P. for the site.

(ii) AHRS Number TLM 020

Area: Mouth of Portage Creek

Area Map: Figure 158

USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 378750 Northing 6968800

Latitude 62°49'52" N., Longitude 149°22'50" W.

T. 32 N., R. 1 W., Seward Meridian

Sec. 25, SW¼NE¼SW¼

Setting: The site, a historic inscription dated 1897, is located at the confluence of Portage Creek and the Susitna River. The inscription is located on the west bank of Portage Creek where three bedrock outcrops are exposed above a gravel beach at the point Portage Creek joins the Susitna River. The inscription is visible on the middle, southeast facing, outcrop behind which an alder and birch covered slope rises steeply above the beach. The inscription is approximately 4 m above the level of the beach and directly adjacent to it. It can be seen from the beach but to be approached requires a short, relatively easy climb over bedrock.

Reconnaissance Testing: The site consists of a 40 cm x 40 cm inscription engraved into a vertical slab of bedrock. The text of the inscription in letters 4 to 5 cm high is as follows:

MILO DECKER
L. F. JUDSON
W. A. DICKEY
H. J. KENNASTON
July. 2

Other than the inscription itself, no historic or prehistoric cultural material was observed in the vicinity and no subsurface testing was conducted at the site.

(iii) AHRS Number TLM 021, Accession Number UA80-68

Area: 1 km Northwest of confluence of Kosina Creek and Gilbert Creek
Area Map: Figure 161; Location Map: Figure 291
USGS Map: Talkeetna Mts. C-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 449700 Northing 6953850 (Locus A)
Easting 449300 Northing 6953750 (Locus B)
Easting 449050 Northing 6953800 (Locus C)

Latitude 62°42'52" N., Longitude 147°58'55" W. (Locus A)
Latitude 62°42'48" N., Longitude 147°59'25" W. (Locus B)
Latitude 62°42'50" N., Longitude 147°59'52" W. (Locus C)

T. 30 N., R. 8 E., Seward Meridian
Sec. 5, SE¼SE¼SE¼ (Locus A)
Sec. 5, SW¼SE¼SE¼ (Locus B)
Sec. 5, SW¼SW¼SE¼ (Locus C)

Locus A: Site Map: Figure 49
Locus B: Site Map: Figure 50

Setting: Three distinct loci (A, B, C), are located along the exposed rocky crest of an east-west trending ridge at an elevation of 884 m asl (2900 feet) (Figure 291). Locus A is situated at the extreme eastern end of the ridge overlooking Kosina Creek approximately 1 km downstream from the confluence of Kosina Creek and Gilbert Creek. Kosina Creek is approximately .5 km east and 122 m lower than the elevation of locus A. Loci B and C are located .5 km and 1 km, respectively, to the west of loci A on high points of the ridge which offer unobstructed views to the north and south of low kettle and kame topography (Figure 291).

The ridge upon which the site is located is one of the most prominent features in the area and is the highest elevation within 8 km. Kosina Creek is easily accessible from the site but is only visible from locus A. Vegetation at loci A and B is limited to dwarf birch, Labrador tea, various low bush berries, and lichens. Vegetation in the vicinity of locus C consists primarily of tundra and scattered black spruce. Locus C is situated at a point where the ridge is less well defined and is truncated by a north-south stream channel.

Reconnaissance Testing: Testing was concentrated at locus A (Figure 5). Helicopter scheduling limited the time available for recording loci B and C, and testing was restricted at each of those loci. All three loci have tentatively been recorded as representing a single site.

Locus A: Locus A consists of four flake scatters naturally exposed on the deflated, rocky crest of the ridge (Figure 49). Approximately half the surface material observed was collected. Two scrapers and a retouched flake were found spacially isolated from the flake scatters (Artifact Photo B-b, c, d). Four test pits were excavated but only test pit 4 (Figure 49) produced cultural material from the surface to 5 cmbs. Artifact lithologies include rhyolitic tuff, chert, and basalt.

Locus B: Locus B consists of six flake scatters exposed in a blowout on the crest of the ridge at a point slightly higher than the general ridge line (Figure 50). Scatter 1 included the medial section of a projectile point (Artifact Photo B-f). All observed surface artifacts were collected including a scraper and a biface (Artifact Photo B-e, g). Test pit 1 (Figure 50) produced one chert flake associated with burned bone fragments and charcoal at a depth of 9 cmbs. A radiocarbon determination of 1160 ± 100 years: A.D. 790 (DIC-1878) was obtained from this charcoal (UA80-68-1a). A single flake (not collected) was observed *in situ* in the edge of a blowout adjacent to test pit 1 at the same depth as the bone and charcoal horizon in test pit 1. It is possible that the radiocarbon date obtained on the charcoal from test pit 1 may date the surface artifacts exposed by deflation.

Locus C: Locus C consists of a single flake scatter exposed in a blowout. The scatter consisted of 21 brown chert flakes, 6 basalt flakes, and 2 rhyolite flakes clustered within a 1 m diameter. All 21 chert flakes and 4 basalt flakes were surface collected. Test pit 1, located at the locus datum, produced 1 gray chert flake directly below the vegetative mat, between the surface and 5 cmbs. The distinctive dark brown chert from locus C was not observed at the other site loci.

Inventory of Collected Artifacts

Locus A:

Surface:

116 Light brown rhyolite flakes
1 Gray-white rhyolite flake (possible burin spall)
1 Gray rhyolite flake
1 Gray chert flake
1 Mottled rhyolite flake

Subsurface:

191 Light gray rhyolite flakes
44 Dark gray rhyolite flakes
1 Gray chert flake
3 Dark gray chert flakes
ca. 200 Very small rhyolite flakes

Scatter 2

7 Light brown rhyolite flakes
1 Gray rhyolite flake
1 Gray chert flake

Scatter 3

4 Light brown rhyolite flakes
1 Gray-white rhyolite flake

1 Light brown chert flake
1 Gray chert flake
1 Green chert flake

Scatter 4

2 Light brown rhyolite flakes

Isolated Finds

1 Gray-white rhyolite flake
1 Gray basalt flake
1 White chert scraper
1 Light brown rhyolite scraper
1 Gray-white rhyolite retouched flake

Locus B

Scatter 1

19 Light brown rhyolite flakes
19 Gray rhyolite flakes
1 Black basalt flake
2 Gray chert flakes
1 Gray rhyolite flake (retouched)
1 Dark gray rhyolite projectile point, medial section
1 Bone fragment

Scatter 2

2 Gray chert flakes

Scatter 3

1 Gray-white rhyolite flake

Scatter 4

3 Gray-white rhyolite flakes
4 Gray-white rhyolite flakes (retouched)
1 Tuffacious rhyolite biface
1 Cherty rhyolite scraper

Scatter 5

7 Light brown rhyolite flakes
1 Gray rhyolite flake
1 Black basalt flake

Scatter 6

2 Light brown rhyolite flakes
1 flake

Locus C

Scatter 1

21 Dark brown chert flakes
2 Black basalt flakes
1 Black basalt flake

Inventory of Faunal Material

Locus B:

Scatter 6

Surface: 1 long bone fragment, calcined, medium-large mammal

Subsurface: Test pit 1, 9 cmbs:

Long bone fragments, calcined, medium-large mammal
1 phalanx fragment, 1st or 2nd, large mammal, possibly caribou (*Rangifer tarandus*)

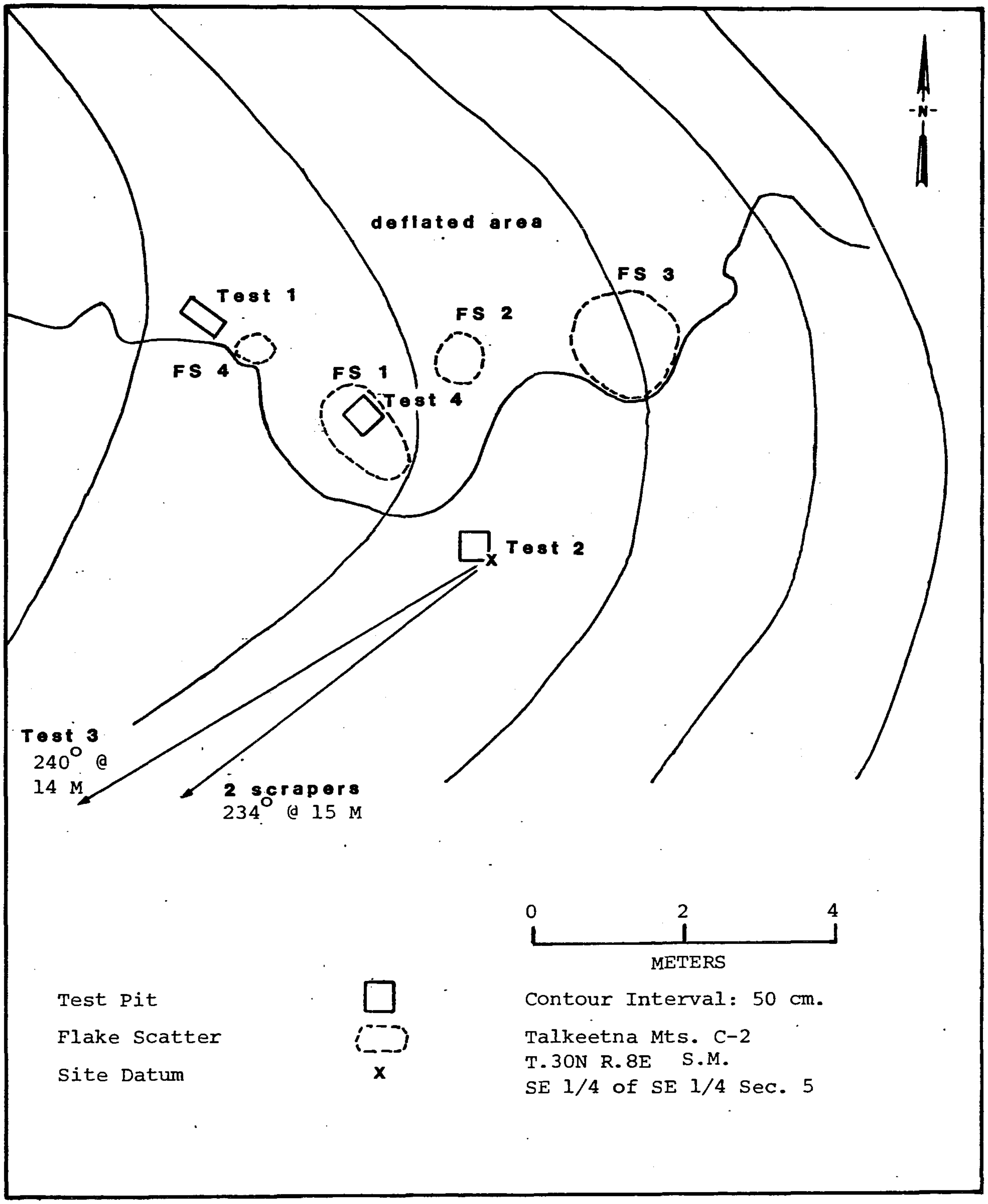


Figure 49. Site Map TLM 021 A.

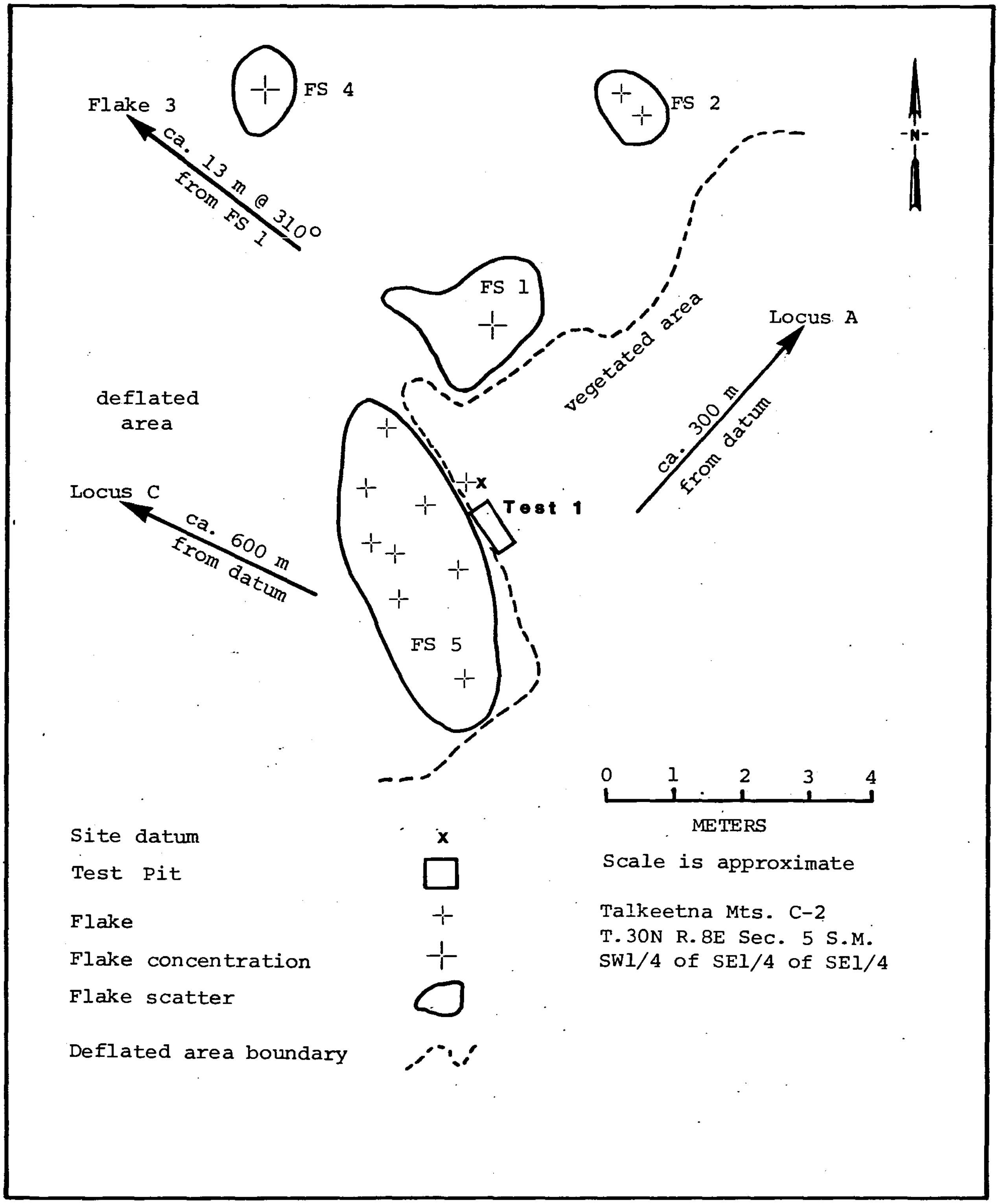


Figure 50. Site Map TLM 021 B.

(iv) AHRS Number TLM 025, Accession Number UA80-72, UA81-225

Area: ca. 3.5 km Southwest of Watana Creek Mouth, Summit of Drumlin
Area Map: Figure 158; Location Map: Figure 292
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 434300 Northing 6963900

Latitude 62°48'04" N., Longitude 148°17'10" W.

T. 31 N., R. 6 E., Seward Meridian
Sec. 2, NE¼SW¼SW¼

Site Map: Figure 51

Setting: The site, located 3.6 km south of the Susitna River and 3.5 km southwest of the mouth of Watana Creek, is located at the northeast end of a ridge at the highest elevation of a streamlined knob (Figures 158, 292). Site topography exhibits sharp relief from the surrounding terrain which is 91 to 122 m lower in elevation. The view from the top of the hill is excellent in all directions for a distance of over 10 km, however, the view from the site is oriented to the southwest, overlooking a small valley. To the north a long stretch of the Susitna valley is visible, although the river itself cannot be seen. The Fog Lakes are visible 4 km to the west, as is the mouth of Watana Creek to the northeast. Bedrock is exposed at the summit of the hill and on the slopes to the north and southeast. Mosses, Labrador tea, and low brush are the common vegetation on the site, with higher brush dominating the slopes below. Vegetation on the surrounding plain 100 m below is open moist tundra with black spruce adjacent to seasonal or former stream channels. More extensive stands of black spruce and birch are located on better drained slopes to the south and north with areas of treeless tundra to the east and west.

Reconnaissance Testing: The site contains both surface and subsurface cultural material. A surface flake scatter covering an area 4 m north-south by 35 m east-west is exposed in a blowout (Figure 51). Within this larger scatter, a concentration of flakes occupies an area of 6 m north-south by 4 m east-west. Artifacts collected on the surface consist of: a gray black banded chert core tablet (UA80-72-10; Artifact Photo B-h); a light brown rhyolite bipolar-flaked cylindrical core (UA81-225-1); a core tablet of light brown rhyolite (UA81-225-4); two microblade midsections of gray rhyolite (UA81-225-3, 5); a black basalt concave point base (UA81-225-5); a possible cobble hammerstone (UA81-225-9); and a unifacially flaked scraper midsection on a large blade of gray chert (UA81-225-2). Fourteen flakes were also collected on the surface. Other observed surface flakes were left *in situ*. Three test pits were excavated, two of which produced cultural material (Figure 51). A single rhyolite flake was found in test pit 1 at 11 cmbs. Test pit 2 produced two black basalt flakes between 7 and 10 cmbs. Artifact lithologies represented at the site are quite diverse and include rhyolitic tuff, basalt, quartzite, chert, obsidian, and jasper.

Collected Artifact Inventory

1 Gray black banded chert core tablet
1 Brown chert flake
1 Black obsidian flake
1 Clear obsidian flake
1 Gray chert flake
3 Gray rhyolite flakes
6 Gray basalt flakes
1 Yellow brown quartzite flake
1 Gray chert rock fragment

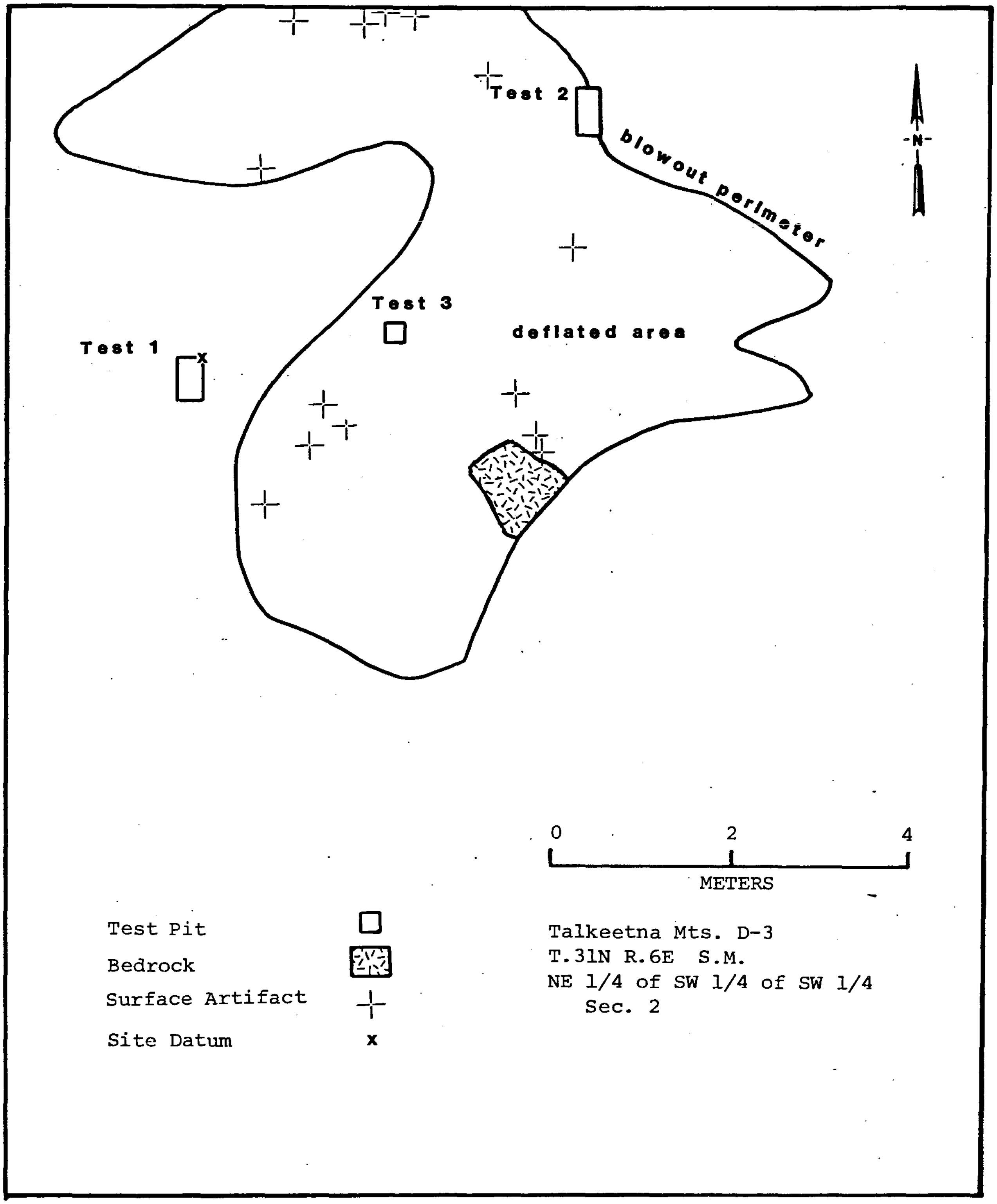


Figure 51. Site Map TLM 025.

(v) AHRS Number TLM 028, Accession Number UA80-75

Area: Esker Downriver ca. 3 km from Tyone River Mouth
Area Map: Figure 162; Location Map: Figure 293
USGS Map: Talkeetna Mts. C-1, Scale 1:63,360

Site Location: UTM Zone 6 Easting 487850 Northing 6950700 (Locus A)
Easting 487200 Northing 6950300 (Locus B)

Latitude 62°41'18" N., Longitude 147°14'15" W. (Locus A)
Latitude 62°41'09" N., Longitude 147°15'00" W. (Locus B)

T. 30 N., R. 12 E., Seward Meridian
Sec. 17, SW¼NE¼SE¼ (Locus A)
Sec. 17, NW¼SE¼SW¼ (Locus B)

Site Map: Figure 52

Setting: The site, consisting of two loci (A and B), is located on the north margin of the Susitna River approximately 2.5 km downriver from the mouth of the Tyone River (Figure 162). The two site loci are situated on a long esker which parallels a bend of the river for approximately a kilometer (Figure 293). The esker is a discrete topographic feature with a 2 m wide flat crest approximately 30 m above the level of the Susitna River. A well used game trail runs the entire length of the ridge.

Locus A is located a few m below the highest elevation at the northeast end of the esker (Figure 293). The outlet stream from a small lake 1.2 km northwest of locus A joins the Susitna River approximately 200 m north of locus A at the terminus of the ridge. The mouth of this stream is not visible from locus A due to dense vegetation.

Locus B is located approximately 750 m southwest of locus A on the level crest of the same ridge line. The view from both loci is good in all directions although limited by the relatively low elevation of the esker. The view includes the Susitna River and the lowlands to the south and southwest for a distance of several kilometers. Other eskers of various lengths and elevations are located in the area on both sides of the Susitna River. Vegetation at both site loci includes black and white spruce, dwarf willow, bearberries, mosses, and lichens. To the southeast the terrain is characterized by poorly drained areas predominantly vegetated with black spruce, birch, and sphagnum moss including areas of muskeg and standing water. The Susitna River borders the site to the southeast.

Reconnaissance Testing: Surface reconnaissance along the top of the esker resulted in the collection of two isolated flakes. At locus A one rhyolite flake was found in a blowout approximately 10 m south of the highest elevation on the ridge line (Figure 52). Intensive surface reconnaissance and one shovel test and two test pits in the vicinity of the blowout did not result in the location of any additional cultural material. Test pit 1 (Figure 52) was placed at the edge of the blowout where the flake was found and shovel test 2 and test pit 3 were placed at the highest elevation of the ridge. At locus B a basalt waste flake was surface collected from the middle of the game trail which follows the ridge crest. Again, intensive reconnaissance and a single test (test pit 1) in the area where the flake was found failed to produce any additional cultural material. Further survey and testing are needed to determine whether the two flakes found at this site are isolated finds or are associated with other material.

Collected Artifact Inventory

Locus A:

1 Grey rhyolite flake

Locus B:

1 Black basalt flake

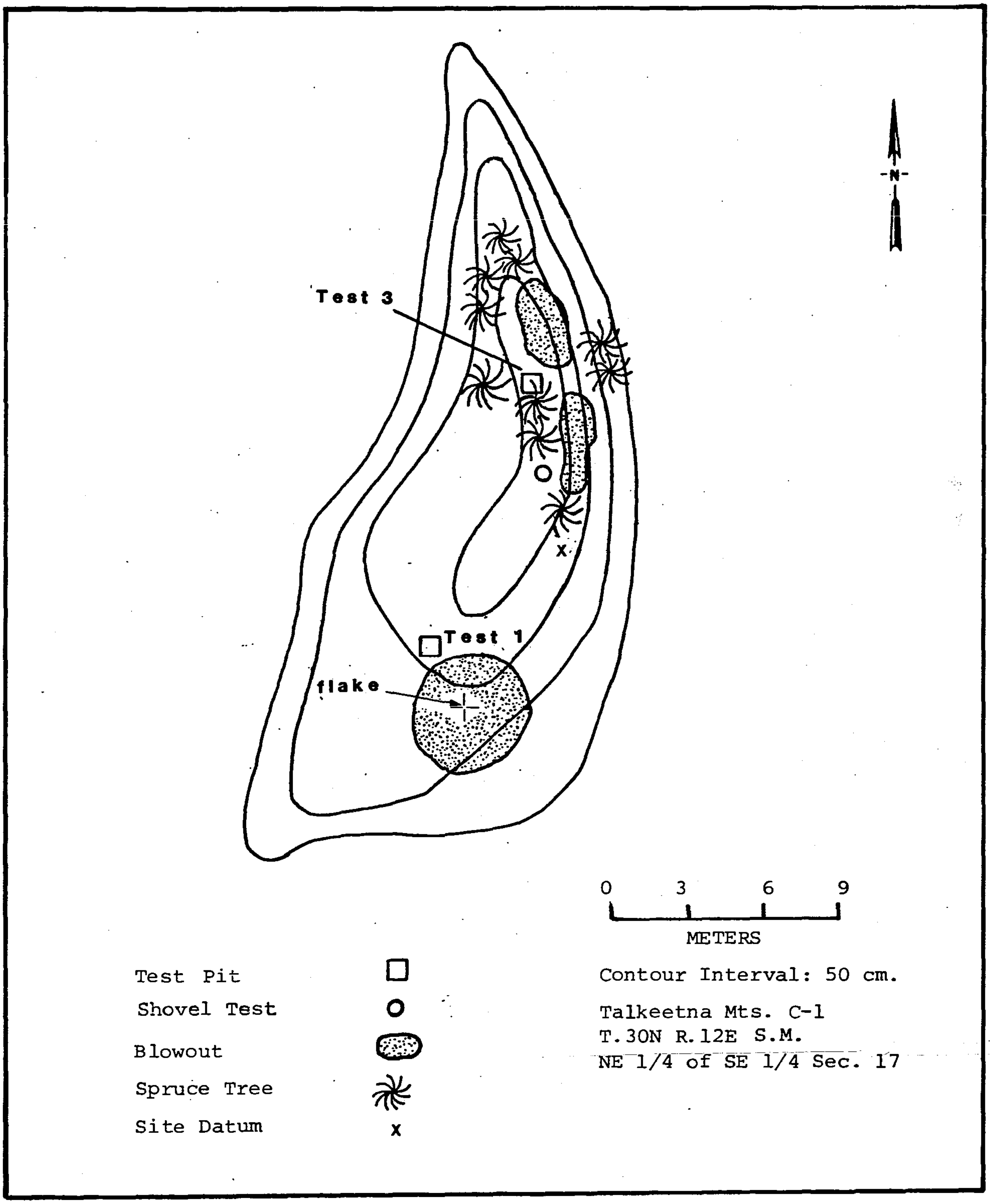


Figure 52. Site Map TLM 028.

(vi) AHRS Number TLM 031, Accession Number UA80-78

Area: ca. 4 km Downriver from Kosina Creek Mouth, Survey Locale 30
Area Map: Figure 158; Survey Locale Map: Figures 196, 197, 198
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 448700 Northing 6963700

Latitude 62°48'02" N., Longitude 148°00'20" W.

T. 31 N., R. 8 E., Seward Meridian
Sec. 5, NW¼SE¼SW¼

Site Map: Figure 53

Setting: The site is located on a high plateau on the north side of the Susitna River approximately 4 km downriver from the mouth of Kosina Creek (Figure 196). A 1.5 km wide valley separates this plateau from higher mountains to the north. The site is situated approximately 274 m above the level of the river at an elevation of 823 m (2700 feet), in a system of hills and ridges surrounding several small kettle lakes. The site is located on the eastern end of the southernmost ridge in this locale, approximately 300 m east of the largest of three kettle lakes which lie to the west of the site (Figure 196). The Susitna River is approximately 1.7 km southwest, and although visible from the site, is not easily accessible from it. The site appears to be oriented towards the local accessible terrain rather than the river. The principal view is to the east and south. The terrain in the vicinity of the site is glacially scoured kettle and kame topography. Vegetation at the site consists of low brush with scattered stands of black spruce. Bedrock is exposed on the ridge and, where not exposed, is generally within 20 cm of the surface. Most ridges in the vicinity are subject to deflation and there is little soil or vegetation along their crests. At lower elevations, off the ridges, vegetation consists of denser stands of black spruce, sphagnum moss, and muskeg. In the Susitna Valley to the south, the vegetation is an upland spruce-hardwood forest.

Reconnaissance Testing: A black chert endscraper (UA80-78-1; Artifact Photo D-a) was surface collected during reconnaissance along this ridge system. No other artifacts were observed on the surface although a black chert pebble fragment (UA80-78-2) of similiar lithology was surface collected in the vicinity. A total of three subsurface tests were excavated at the site, none of which produced subsurface cultural material (Figure 53). Test pit 1, (Figure 53) in the immediate vicinity of the endscraper, revealed the soil deposition on the ridge to be 20 cmbs. A total of seven archeological sites were found situated on ridges and knolls within the same topographic setting (Survey Locale 30) as site TLM 031. Other sites within a 1 km radius of this site are TLM 032, TLM 036, and TLM 037. Each of these sites is located in an area of high topographic relief offering a panoramic view of the surrounding terrain. Initial reconnaissance and testing at TLM 031 suggests that this surface site may be limited to an isolated find not associated with other cultural material. However, further reconnaissance and testing are required before this can be confirmed.

Collected Artifact Inventory

1 Black chert endscraper

1 Black chert pebble

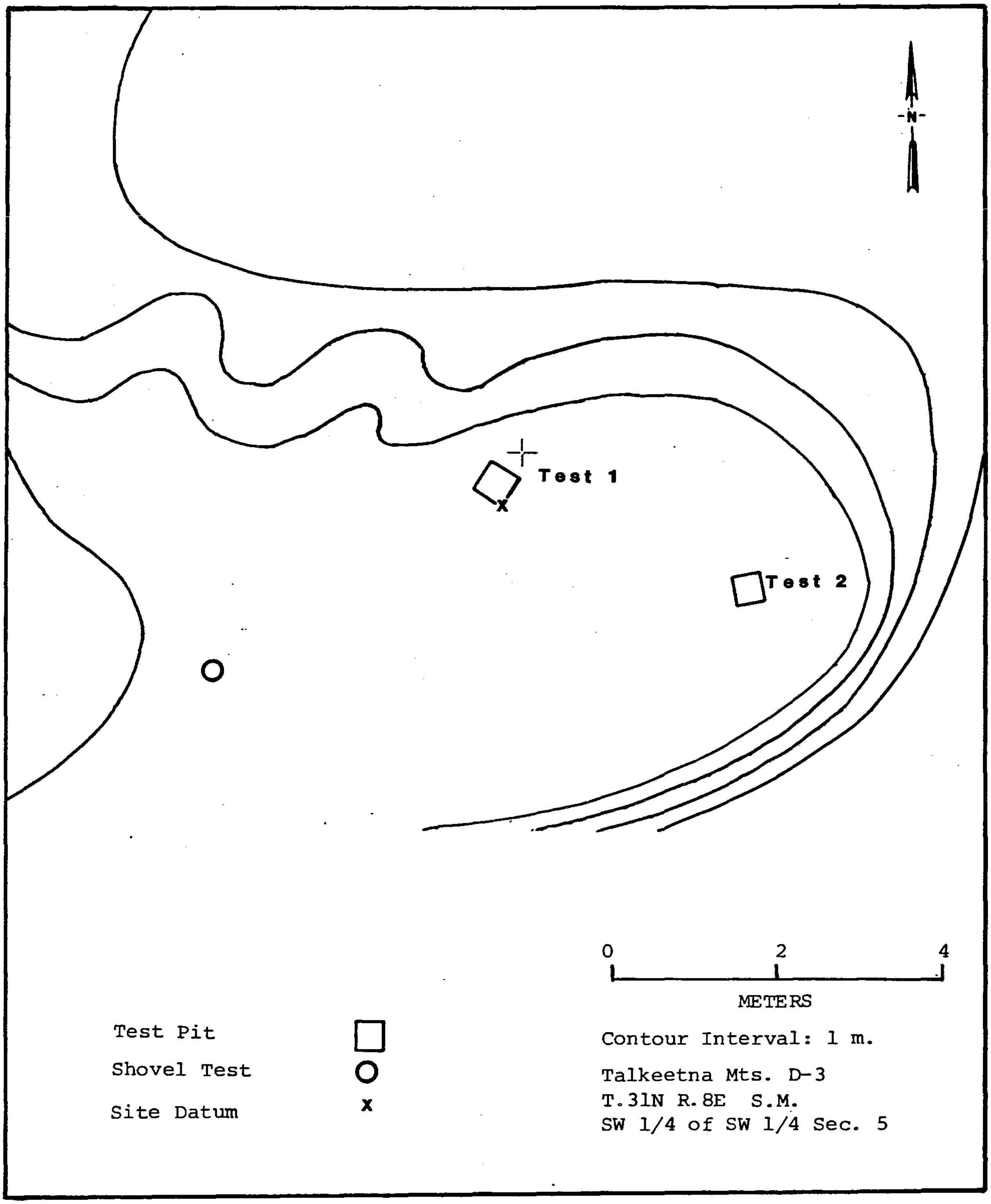


Figure 53. Site Map TLM 031.

(vii) AHRS Number TLM 032, Accession Number UA80-79

Area: ca. 4 km Downriver from Kosina Creek Mouth, Survey Locale 30
Area Map: Figure 158; Survey Locale Map: Figures 196, 197, 198
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 448050 Northing 6963500

Latitude 62°47'58" N., Longitude 148°01'05" W.

T. 31 N., R. 8 E., Seward Meridian
Sec. 6, SW¼SE¼SE¼

Site Map: Figure 54

Setting: The site is located on a high plateau on the north side of the Susitna River approximately 4 km downriver from the mouth of Kosina Creek (Figure 196). A 1.5 km wide valley separates this plateau from higher mountains to the north. Located approximately 274 m (900 feet) above the level of the river at an elevation of 823 m asl (2700 feet), the site is situated in a system of hills and ridges surrounding several small kettle lakes. Six other sites were identified in this topographic context. This site is located approximately 200 m south of the southern point of the largest of three kettle lakes at the eastern end of the plateau (Figure 196). The only other known site within 1 km is site TLM 031, which is located to the northeast in similar topography, although separated from the lakes by an intervening ridge. Site TLM 032 is situated on a point of high relief at the eastern end of an 80 m long discrete ridge which is part of a longer east-west trending ridge system which slopes steeply to a small lake 150 m to the east. However, the lake is not visible from the site. The ridge upon which the site is located is one of numerous glacially abraded ridges characteristic of this high plateau. The largest of the kettle lakes is 200 m northeast of the site (approximately six hectares in size) and is 30 m lower in elevation and easily accessible from the site. Evidence of terracing approximately 3 m above the present level of the lake suggests former higher lake levels. Most of the margin of this large lake and another lake 500 m north of the site is visible from the site although the westernmost point of the largest lake and portions of the smaller lake are obscured by intervening topography. The view from the site is panoramic, but the view to the south is restricted by the rounded crest of the ridge line. The site location is unique, in that it is the point of highest topographic relief in the immediate vicinity of the largest of the three kettle lakes from which most of the lake is visible. To the east the Susitna River valley and portions of the river are visible, however, the site appears to be oriented toward the local accessible terrain. Due to its location on the deflated ridge crest among exposed bedrock outcrops, vegetation is limited to dwarf birch, willow shrubs, and low bush berries including cranberry, blueberry, and crowberry among others. A few scattered black spruce occur on the ridges, but are more numerous in the areas of low relief between ridges where alders, willows, and shrubs become denser. The terrain around the lakes is gently sloping to the shorelines where marshy areas covered with grasses and sedges are present along the lake margins.

Reconnaissance Testing: The site is a six square m surface lithic scatter exposed among bedrock outcrops (Figure 54). The scatter is unique among surface sites discovered during the 1980 survey because it contains a high proportion of tools in comparison to flakes. All observed surface artifacts were collected. A single test in the immediate vicinity of the scatter (Figure 54, test pit 1) did not produce subsurface cultural material. A total of 10 artifacts were surface collected in the vicinity of this test (Figure 54). Several specimens were also collected that were subsequently determined to be non-cultural. Cultural material collected at the site includes six flakes, a white chalcedony core fragment, a quartzite endscraper (UA80-79-1; Artifact Photo D-b), a quartzite endscraper (UA80-79-8; Artifact Photo D-d), a retouched rhyolite flake (UA80-79-2; Artifact Photo D-c) and a "notched" cobble that exhibits battering on one end (UA80-79-16; Artifact Photo E). Lithologies represented at the site are diverse and include chalcedony, quartzite, basalt, red and black chert, and a distinctive blue-green chert.

Collected Artifact Inventory

1 Quartzite endscraper
1 Gray rhyolite retouched flake
1 Quartzite rock
1 Gray rhyolite rock
1 Gray quartzite rock
1 Black chert pebble fragment
1 Yellow brown rhyolite rock fragment
1 Quartzite endscraper
1 Blue-green chert flake
2 Quartzite flakes
1 White chalcedony core fragment
1 Red chert pebble
2 Black basalt flakes
1 Basalt notched cobble

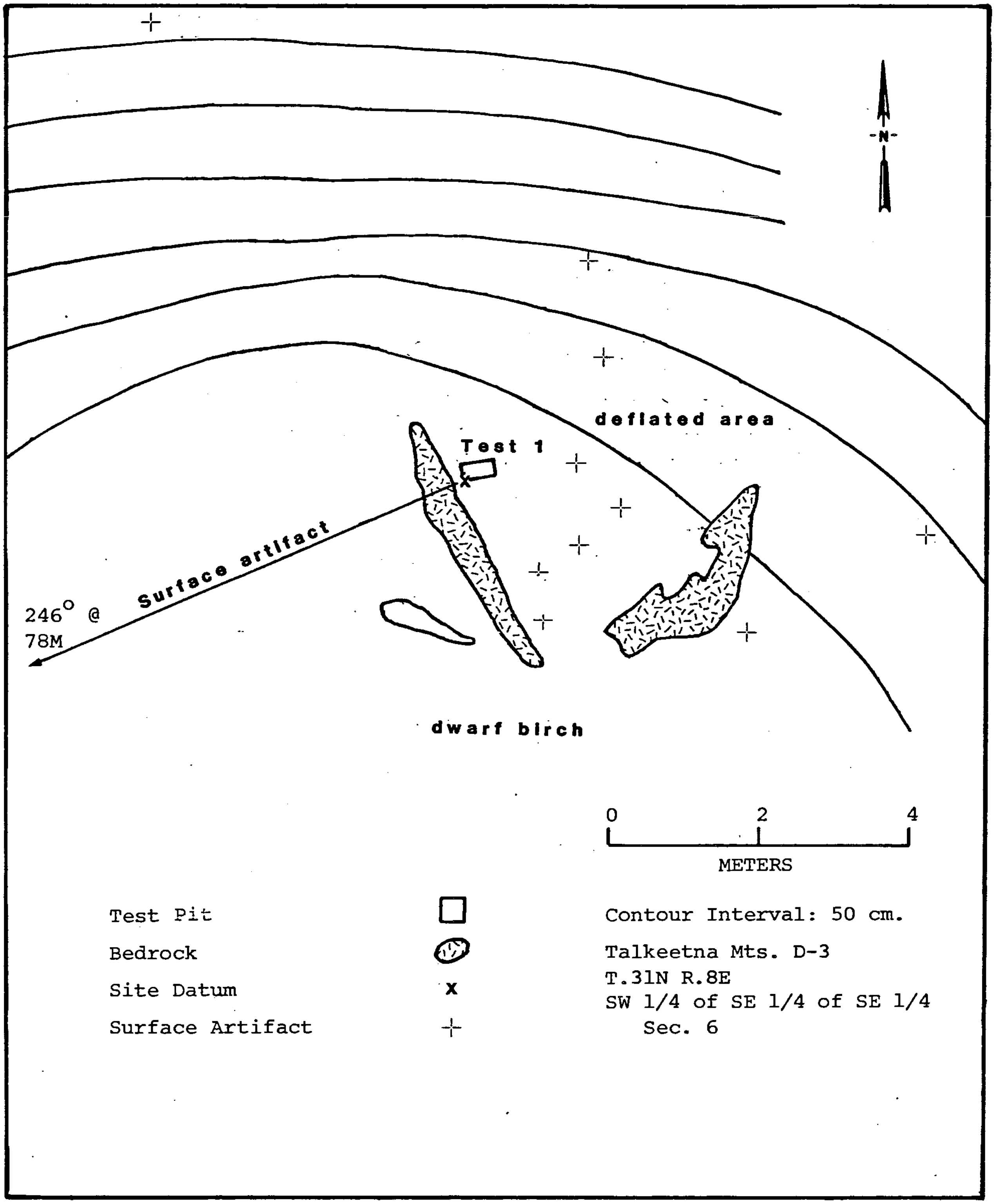


Figure 54. Site Map TLM 032.

(viii) AHRS Number TLM 036, Accession Number UA80-143

Area: 3 Km Downriver from Kosina Creek Mouth, Survey Locale 30
Area Map: Figure 159; Survey Locale Map: Figures 196, 197, 198
USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 449450 Northing 6964100

Latitude 62°48'22" N., Longitude 147°59'30" W.

T. 31 N., R. 8 E., Seward Meridian
Sec. 5, SE¼SW¼NE¼

Site Map: Figure 55

Setting: The site is located on a high plateau on the north side of the Susitna River approximately 3 km downriver from the mouth of Kosina Creek (Figure 159). A 1.5 km wide valley separates this plateau from higher mountains to the north. Located approximately 335 m above the level of the Susitna River at an elevation of 853 m asl (2800 feet), the site is situated on the southwest side of a small knoll overlooking a south-facing slope leading down to the Susitna River. This knoll is connected to a higher knoll by a small "saddle" to the northeast. Higher rounded hills to the northwest mark the eastern border of a lake six hectares in size, which is not visible from the site. A small pond is located 300 m north but cannot be seen from the site. The ridge upon which the site is located is part of a regional system of discontinuous ridges which occur on this plateau above the 762 m asl (2500 feet) elevation. Each of the knolls and ridges which comprise this system exhibits numerous bedrock and drift exposures. High rolling hills above 762 m (2500 feet) in elevation exist to the east, north, west, and southwest within 1 km of the site. The Susitna River lies approximately 2 km to the south and a small stream flows in the valley less than .5 km west of the site. The view from the site is panoramic but the principal view is of the lower open areas to the east, southeast, south, and southwest. Visibility varies from 1 km (southwest) to 5 km (southeast).

Six additional archeological sites have been identified to date in the same local topographic context as TLM 036. The only recorded site within 1 km of TLM 036 is site TLM 044 located to the northeast. Vegetation at TLM 036 is transitional alpine tundra, with spruce, dwarf birch, moss, and lichens. At elevations below 762 m asl (2500 feet) spruce become more common, and above this elevation low shrubs, moss, and lichen prevail.

Reconnaissance Testing: The site consists of a surface lithic scatter exposed in a blowout measuring approximately 8 m by 12 m (Figure 55). A dark red-brown chert unifacially worked scraper with flake scars over the entire dorsal surface (Artifact Photo D-f) was surface collected from this blowout along with a single light gray chert flake found 72 cm east-northeast (62°) from the scraper. No other cultural material was observed on the surface. A single test pit (Figure 55) at the site did not reveal any subsurface cultural material and encountered bedrock within 10 cmbs.

Collected Artifact Inventory

1 Dark red-brown chert unifacially worked scraper
1 Light gray chert flake

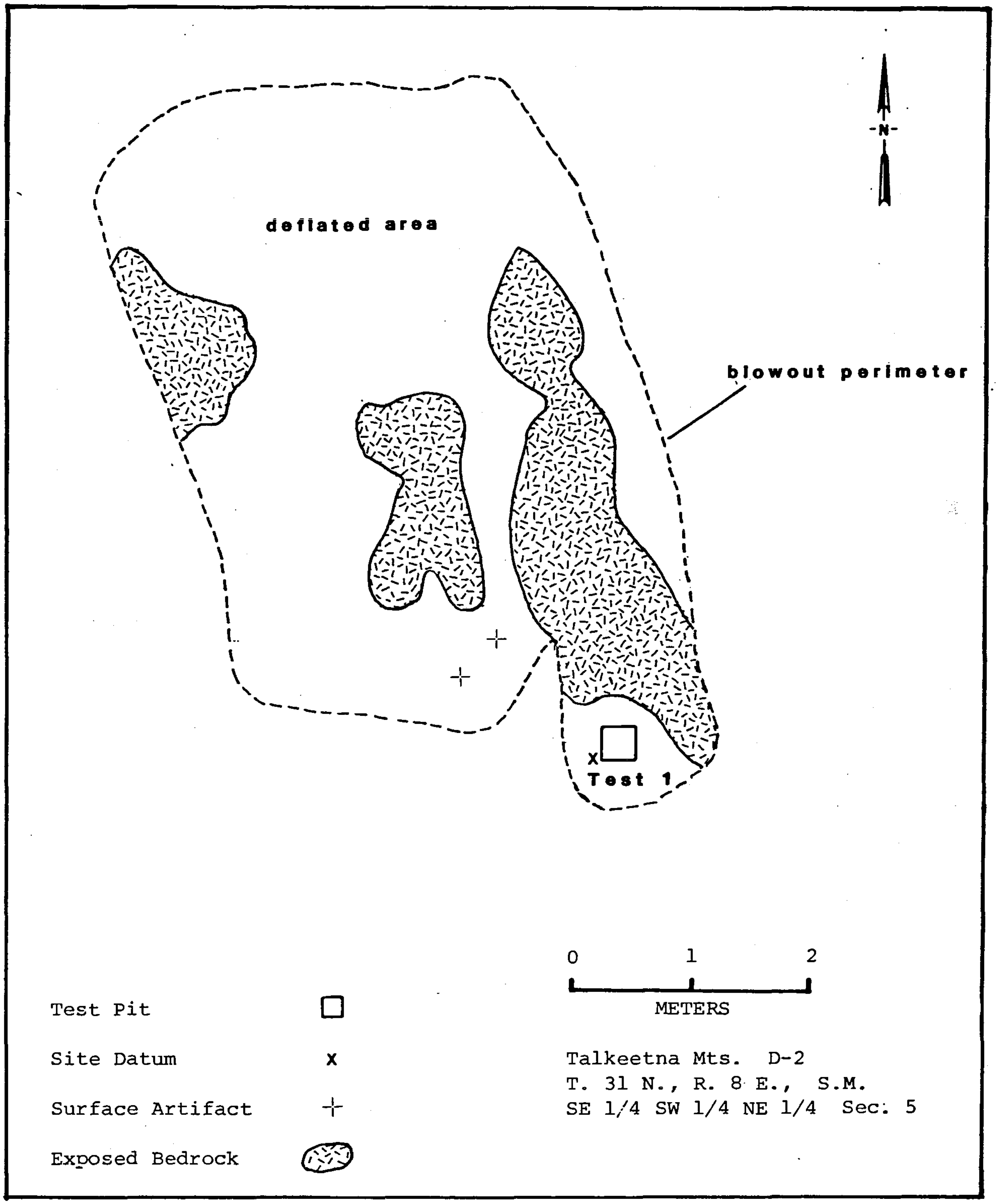


Figure 55. Site Map TLM 036.

(ix) AHRS Number TLM 037, Accession Number UA80-144

Area: ca. 4 km Downriver from Kosina Creek Mouth, Survey Locale 30
Area Map: Figure 158; Survey Locale Map: Figures 196, 197, 198
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 448650 Northing 6964600

Latitude 62°48'36" N., Longitude 148°00'30" W.

T. 31 N., R. 8 E., Seward Meridian
Sec. 5, SE¼NW¼NW¼

Site Map: Figure 56

Setting: The site is located on a high plateau on the north side of the Susitna River approximately 4 km downriver from the mouth of Kosina Creek (Figure 196). A 1.5 km wide valley separates this plateau from higher mountains to the north. Located approximately 396 m above the Susitna River at an elevation of 914 m asl (3000 feet), the site is situated on a southwest slope, 5 m below the top of the second highest knoll on a ridge approximately 900 m northeast of the largest of three kettle lakes (Figure 196). The site is one of numerous east-west trending glacially scoured ridges with exposed bedrock and drift characteristic of this high plateau. The site affords an excellent view of two kettle lakes to the southwest, the smallest lake is approximately 800 m distant and 61 m lower in elevation, while the larger lake is approximately 850 m distant and 91 m lower in elevation. Most of the accessible terrain in view from the site is 30 to 50 m lower in elevation and consists of undulating ridges and knolls without high relief. The view from the site is panoramic but the more accessible terrain to which the site appears to be oriented lies to the south and west and includes the kettle lakes, the north slopes and crests of a series of ridges running generally east-west and descending in elevation to the south, and a major northeast-southwest trending ridge which lies to the southwest of the site. Six additional archeological sites have been identified to date in the same local topographic context. Other sites within a 1 km radius of site TLM 037 are site TLM 031 approximately 1 km to the south, and site TLM 036 approximately 900 m to the southeast. Vegetation at the site is sparse and consists of low bush cranberry, bearberry, mosses, and lichens with occasional spruce present in more sheltered locations at lower elevations. Surrounding vegetation is alpine tundra with low shrubs. In the site vicinity spruce occur infrequently in saddles and on less exposed slopes but are generally absent on ridge crests and the tops of knolls.

Reconnaissance Testing: The site consists of a surface lithic scatter exposed in a blowout measuring approximately 40 m by 50 m in which bedrock exposures occur (Figure 56). A total of four flakes were observed on the deflated surface, two of which were collected (Figure 56). One of the collected flakes is gray chert and the other fine grained black basalt. The two uncollected flakes appeared to be of similar lithology as the grey chert flake. No other cultural material was observed on the surface. Test pit 1, excavated to the north of the blowout, did not reveal any subsurface cultural material (Figure 56). Soil deposition in the vicinity of the site is shallow and bedrock was encountered within less than 10 cmbs.

Collected Artifact Inventory

1 Gray chert flake
1 Fine grained black basalt flake

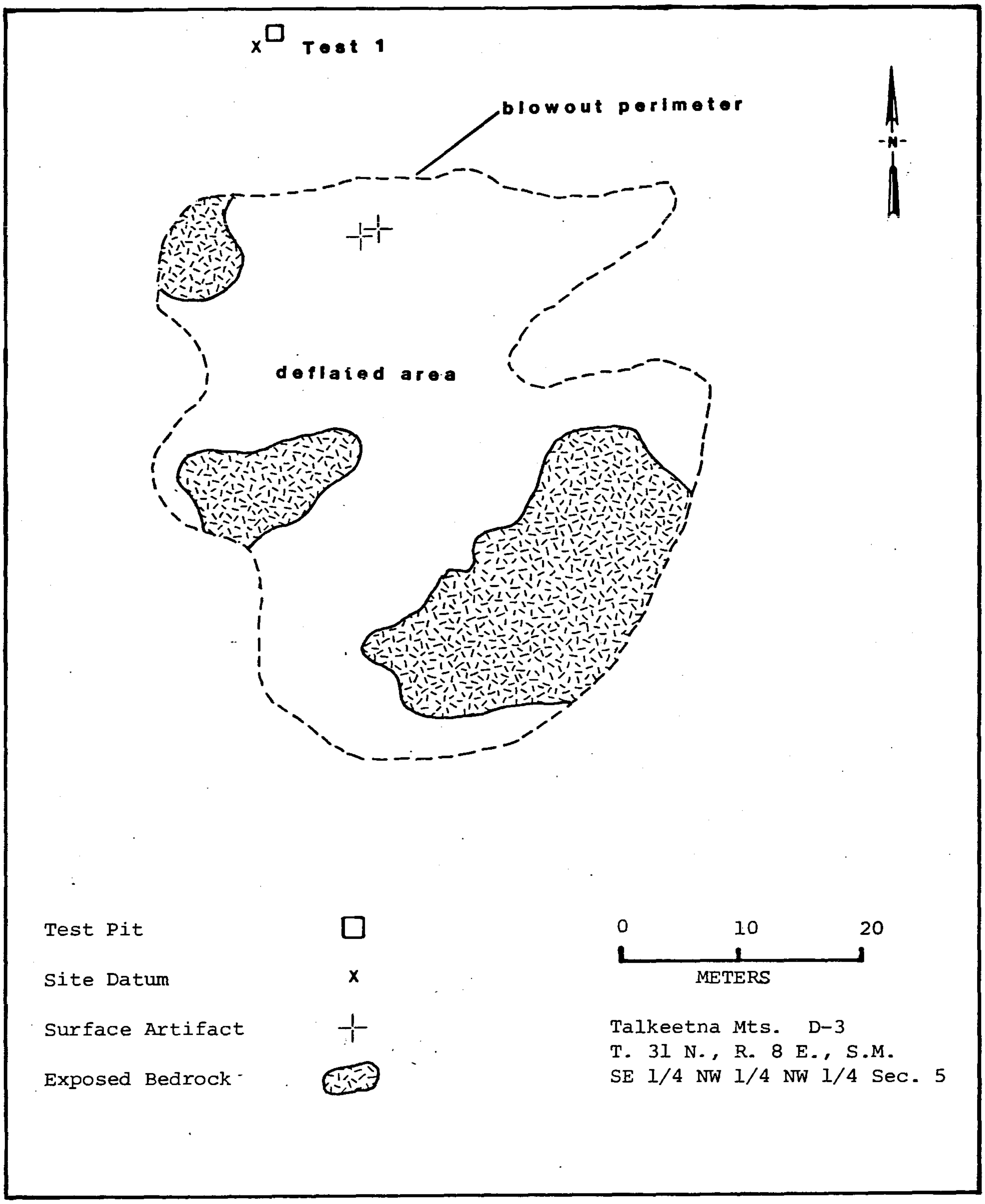


Figure 56. Site Map TLM 037.

(x) AHRS Number TLM 038, Accession Number UA80-145, UA81-224

Area: ca. 10 km Northeast of Watana Creek Mouth, Survey Locale 26
Area Map: Figure 158; Survey Locale Map: Figure 191
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 442600 Northing 6974800

Latitude 62°54'02" N., Longitude 148°07'45" W.

T. 33 N., R. 7 E., Seward Meridian
Sec. 33, SW¼SE¼SE¼

Site Map: See Section 4, Figure 117

Setting: The site is located approximately 10 km upstream from the mouth of Watana Creek on the eastern edge of a plain overlooking the creek from the west (Figure 191). Watana Creek is approximately 600 m east of the site and 152 m lower in elevation. A major unnamed tributary joins Watana Creek from the north approximately 700 m northeast of the site. Located at an elevation of 762 m asl (2500 feet), the site is situated on a small discrete lobe of the continuous edge of the plain which trends east-west for .5 km before trending northward. The site overlooks a large stream terrace to the north and northeast approximately 61 m lower in elevation, and the confluence of the unnamed major tributary and Watana Creek to the northeast. Approximately 100 m east of the site the plain terminates and a sharp ridge with a series of prominent knolls descends 61 m to the level of the large alluvial terrace below the site. Access to the lower terrace and Watana Creek is possible but quite steep and difficult or impossible in places where downcutting has resulted in cliffs and steep bedrock exposures. The view from the site encompasses the relatively level plain westward from the site and the lower alluvial terrace and portions of Watana Creek and its tributary to the north and northeast. Only a small portion of Watana Creek above the confluence is visible from the site. Visibility in other directions is restricted by spruce forest and by slightly higher terrain to the south. Although not much higher than the surrounding plain, the site location affords a better view in more directions than other slightly lower lobes along the edge of the plain. The difference in view-capability between this and other lobes (which were tested without finding cultural material) is subtle but apparently significant in terms of site location. On the north face of the lobe, a 2 m by 2 m blowout has exposed whitish-gray sand approximately 2 m below the site. Vegetation at the site consists of alpine tundra and high brush and a single isolated black spruce. Dwarf birch and willow, low bush cranberry, crowberry, bearberry, moss and lichens form the major ground vegetation. Scattered black spruce occur on the plain approximately 30 m southeast of the site and alder occupy the ravines between lobes along the edge of the plain. On the lower terrace to the northeast of the site spruce are denser and areas of muskeg are present.

Reconnaissance Testing: No surface cultural material was observed at the site location. However, backdirt from shovel test 1 revealed 4 calcined long bone fragments from a medium to large sized mammal. Three additional shovel tests and a test pit (test pit 1) were excavated in the immediate vicinity of shovel test 1 and one test pit (test pit 2) was placed 11.5 m southwest of test pit 1 (Figure 117). Shovel test 2 and test pit 2 did not reveal cultural material, however, shovel tests 3 and 4 and test pit 1 revealed extensive subsurface calcined faunal material in association with charcoal. No cultural lithic material was revealed by any of the subsurface tests. Test pit 1 revealed 86 long bone fragments, 2 flat bone fragments, 1 metacarpal and 1 carpal fragment, 1 rib fragment, and 1 tooth in addition to approximately 500 very small bone fragments. The metacarpal fragment was identified as caribou (*Rangifer tarandus*) and the tooth as either caribou (*Rangifer tarandus*) or moose (*Alces alces*). These bone fragments were recovered between 10 to 35 cmbs in a gray and dark brown silty sand. Shovel test 3 revealed 12 long bone fragments and 1 carpal fragment, identified as caribou (*Rangifer tarandus*), between 13 and 20 cmbs. Shovel test 4 revealed 44 long bone fragments, 1 flat bone fragment, 1 rib fragment, and approximately 300 very small bone fragments between 5 and 30 cmbs.

The majority of bone fragments are probably from a medium to large size mammal(s) although some small mammals appear to be represented. All of the bone fragments occur in pockets of charcoal or charred earth within silty sand units and most fragments show evidence of burning. Not enough charcoal was available to provide a radiometric date for the site, however the possibility of obtaining a sufficient sample is quite probable, with further testing. Although test pit 2 did not reveal cultural material it did contain a charcoal lens at approximately the same level as the charcoal noted in test pit 1. More testing is required to determine if the charcoal associated with the burned faunal material represents a hearth or is natural in origin.

Collected Faunal Material Inventory

Shovel test 1, Backdirt:

4 long bone fragments, calcined, medium-large mammal

Shovel test 1, 10-15 cmbs:

14 long bone fragments, calcined, medium-large mammal
1 flat bone fragment, calcined, medium-large mammal
4 long bone fragments, calcined, small-large mammal
ca. 200 very small bone fragments, calcined, small-large mammal
5 long bone fragments, heavily burned, medium-large mammal
6 long bone fragments, heavily burned, small-large mammal

Shovel test 1, 15-20 cmbs:

1 rib fragment, heavily burned, large mammal
1 metacarpal, proximal 1/5, heavily burned, caribou (Rangifer tarandus)
5 long bone fragments, heavily burned, large mammal
1 flat bone fragment, heavily burned, large mammal
9 long bone fragments, heavily burned, medium-large mammal
5 long bone fragments, heavily burned, small-large mammal

1 tooth (molar) fragment, large mammal, caribou (<u>Rangifer tarandus</u>) or moose (<u>Alces alces</u>)
7 long bone fragments, calcined, large mammal
15 long bone fragments, calcined, medium-large mammal
6 long bone fragments, calcined, small-large mammal
ca. 300 small fragments, calcined, small-large mammal

20-30 cmbs:

2 long bone fragments, heavily burned, large mammal
3 long bone fragments, heavily burned, medium-large mammal
5 long bone fragments, calcined, medium-large mammal

Shovel test 3, 13-20 cmbs:

1 carpal, heavily burned, large mammal, caribou (<u>Rangifer tarandus</u>)
2 long bone fragments, calcined, large mammal
1 long bone fragment, heavily burned, large mammal
1 long bone fragment, heavily burned, medium-large mammal
6 long bone fragments, calcined, medium-large mammal
2 long bone fragments, calcined, small-large mammal

Shovel test 4, 5-10 cmbs:

1 long bone fragment, large mammal

10-15 cmbs:

1 long bone fragment, calcined, large mammal
1 flat bone fragment, calcined, large mammal
7 long bone fragments, calcined, medium-large mammal
8 long bone fragments, heavily burned, medium-large mammal
ca. 60 small fragments, calcined, medium-large mammal
ca. 70 small fragments, calcined, heavily burned, small-large mammal
1 rib fragment, heavily burned, large mammal

Shovel test 4, 15-20 cmbs:

5 long bone fragments, calcined, medium-large mammal
ca. 90 small fragments, calcined, small-large mammal

20-25 cmbs:

1 long bone fragment, large mammal
1 long bone fragment, calcined, large mammal
12 long bone fragments, calcined, medium-large mammal
6 long bone fragments, heavily burned, medium-large mammal
ca. 80 fragments, calcined, small-large mammal

25-30 cmbs:

1 long bone fragment, heavily burned, medium-large mammal

(xi) AHRS Number TLM 041, Accession Number UA80-148

Area: Upper Fog Creek
Area Map: Figure 157; Location Map: Figure 294
USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 417800 Northing 6959750

Latitude 62°45'00" N., Longitude 148°37'25" W.

T. 31 N., R. 4 E., Seward Meridian
Sec. 25, NE¼SE¼NW¼

Site Map: Figure 57

Setting: The site is located on a high flat plain south of the Susitna River at an elevation of 747 m asl (2450 feet) and approximately 1.8 km southwest of the confluence of a large tributary which joins Fog Creek approximately 8 km upstream from its mouth (Figure 157). The site is situated on a 4 m to 6 m high knob on a broad northeast-southwest sloping grassy plain (Figure 294). The terrain slopes to the north, east, and south but rises gradually to the west to a maximum elevation of 775 m asl (2542 feet) approximately 600 m southwest of the site. Despite low topographic relief, the site location affords an unobstructed panoramic view of an open plain 300 m to 400 m wide (northwest-southeast) and approximately 1 km long (northeast-southwest). This knob is a discrete topographic feature, one of a series of four or more such features situated approximately 200 m apart on the plain. Exposed fractured bedrock occurs in the immediate vicinity of the site and frost-fractured rock is evident on the surface. The site is at the highest part of the knoll which diffuses into the general slope of the ground to the southeast. The total area on top of the knob is approximately 10 m (east-west) by 20 m (north-south). Fog Creek is 1.3 km northeast and 183 m lower in elevation at its closest point and the large unnamed tributary to Fog Creek is 800 m southeast and 91 m lower in elevation at its closest point. The Susitna River is 5 km distant to the northwest and 335 m lower in elevation. Vegetation at the site consists of dwarf birch and willow on the slopes of the knob and crowberry, moss, and lichens grow on the surface. The surrounding vegetation on the plain consists of dwarf willow and birch with berries and grasses. Black spruce occur on the surrounding slopes below the plain.

Reconnaissance Testing: The site was identified by geologist Jerry Williams of Woodward and Clyde, a subcontractor of Acres American Inc. Mr. Williams removed a large tuffacious rhyolite flake from the surface at the site and gave it to the project archeologists. Mr. Williams later overflew the site with the archeologists and identified the approximate location at which the flake was found. A subsequent intensive surface reconnaissance and two subsurface tests failed to reveal additional cultural material. Test pit 1 (Figure 57) revealed fractured bedrock to be within 10 cmbs directly under the vegetative mat. The exact location at which the flake was found was never identified and because no additional cultural material was found.

Collected Artifact Inventory

1 Pale green tuffacious rhyolite flake (lichen covered dorsal surface)

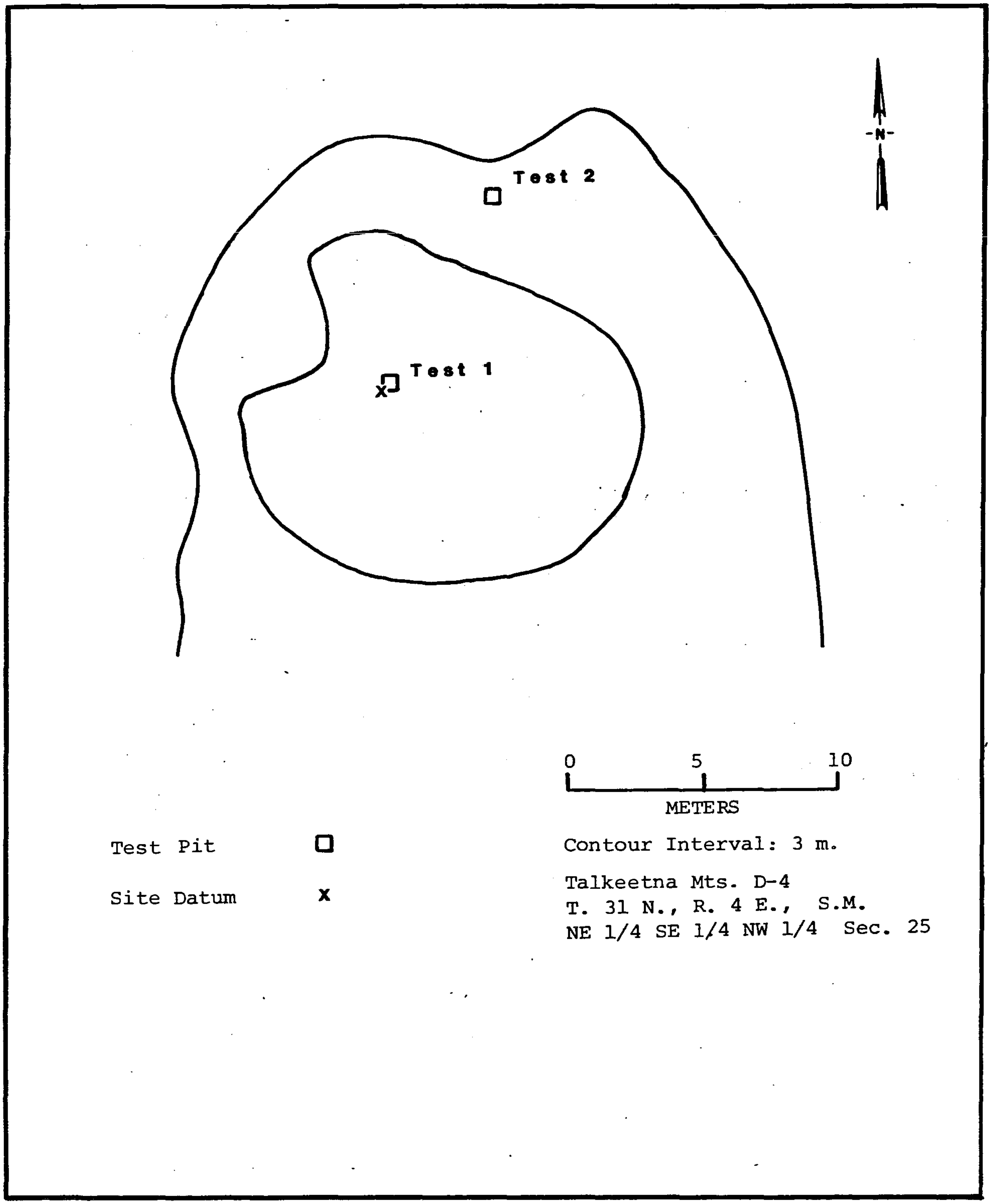


Figure 57. Site Map TLM 041.

(xii) AHRS Number TLM 044, Accession Number UA80-151

Area: ca. 6 km Northwest of Jay Creek Mouth, Survey Locale 30
Area Map: Figure 159; Survey Locale Map: Figures 196, 197, 198
USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 450300 Northing 6964800

Latitude 62°48'45" N., Longitude 147°58'30" W.

T. 31 N., R. 8 E., Seward Meridian
Sec. 4, NE¼NW¼NW¼

Site Map: Figure 58

Setting: The site, reported to project archeologists by Jo Fehyle, is located on a high plateau approximately 2.5 km north of the Susitna River about 6 km northwest of Jay Creek (Figure 198). A 1 km wide valley and lake system separates this plateau from higher mountains to the north. The site is situated at an elevation of 884 m asl (2900 feet) at the point of highest relief on the approximately 80 m long by 35 m wide deflated and exposed top of a discrete knoll. This knoll is one of a series of similar knolls, oriented generally northeast-southwest, which comprise a system of glacially scoured hills and ridges characteristic of this high plateau. The summit of the knoll is directly exposed to high winds and numerous blowouts are present. High relief affords a panoramic view of the surrounding terrain including the valley to the north, 122 m lower in elevation, which contains several small lakes approximately 800 m distant which are easily accessible from the site. Several kettle lakes are also visible at lower elevations to the southwest, the closest of which is 1 hectare in size and is located approximately 400 m southwest and 61 m lower in elevation. To the south, the Susitna River is not in view, and although access would not be difficult, the site appears to be primarily oriented towards the wide valley and lake system to the north. Vegetation is transitional between upland spruce-hardwood and alpine tundra. Vegetation on the site consists primarily of moss and lichens with scattered dwarf birch and willow. Black spruce occupy slopes of the knoll, increasing in density with lower elevation. Areas between knolls are marshy and poorly drained. Six additional sites have been identified to date in the same topographic context as site TLM 044. Other sites within 1 km are TLM 045 and TLM 046, and both are located on knolls immediately northeast of TLM 044.

Reconnaissance Testing: Both surface and subsurface cultural material was observed at the site. Five surface lithic scatters are exposed in blowouts near the highest elevation of the knoll (Figure 58). A total of 22 flakes, 1 complete lanceolate projectile point, 1 retouched flake, 1 biface fragment, 1 uniface fragment, and 19 bone fragments were surface collected. Test pit 1, the only subsurface test (Figure 58) at scatter 1, revealed flakes and bone associated charcoal between the surface and with 8 cmbs.

Scatter 1: A total of 8 flakes were surface collected and 25 observed flakes were lift *in situ*. Test pit 1, excavated near the center of the scatter (Figure 58) produced 14 basalt flakes between the surface and 5 cmbs associated with burned bone. Dark stained earth containing concentrated burned bone and a single flake was found between 5 to 8 cmbs in this test. The dark stain may suggest a hearth or similar feature, however, initial testing did not reveal charcoal. All of the flakes from test pit 1 were dark basalt. In addition to basalt, other lithologies represented in the surface artifacts are rhyolite, chert and chalcedony.

Scatter 2: Scatter 2 (Figure 58) consisted of three flakes only one of which, a quartzite flake, was collected.

Scatter 3: All of the observed artifacts at scatter 3 (Figure 58) were surface collected. These consisted of a complete lanceolate projectile point (UA80-151-1; Artifact Photo G-a) of highly siliceous rhyodacite and 5 flakes of rhyolite and chert. In addition, 19 bone fragments were surface collected.

Scatter 4: All of the observed artifacts at scatter 4 (Figure 58) were surface collected. These consisted of only two flakes, a basalt flake with possible retouch along one margin (UA80-151-40; Artifact Photo G-b) and a rhyolite flake.

Scatter 5: A total of 8 specimens were surface collected and 1 flake left in situ at scatter 5 (Figure 58). Collected artifacts consisted of a black chert biface fragment (UA80-151-42, Artifact Photo G-c), a black chert uniface fragment (UA80-151-43, Artifact Photo G-d) and 6 flakes. Brown and gray chert and black basalt are represented in the lithologies of the flakes.

Inventory of Collected Artifacts

Scatter 1

4 Black basalt flakes
2 Gray rhyolite flakes
1 Clear chalcedony flake
1 Black chert flake
15 Black basalt flakes

Scatter 2

1 White quartzite flake

Scatter 3

4 Gray rhyolite flakes
1 Gray chert flake
1 Gray siliceous rhyodacite complete lancoleolate projectile point

Scatter 4

1 Black basalt flake, possibly retouched
1 Light brown rhyolite flake

Scatter 5

1 Black chert biface fragment
1 Black chert uniface fragment
1 Black chert flake
1 Gray chert flake
4 Black basalt flakes

Collected Faunal Material Inventory

Scatter 1

Test 1, 0-5 cmbs:

24 small long bone fragments, calcined, small-large mammal

5-8 cmbs:

ca. 45 small long bone fragments, calcined, small-large mammal

Scatter 3

Surface: 2 long bone fragments, calcined, medium-large mammal
17 small long bone fragments, calcined, small-large mammal

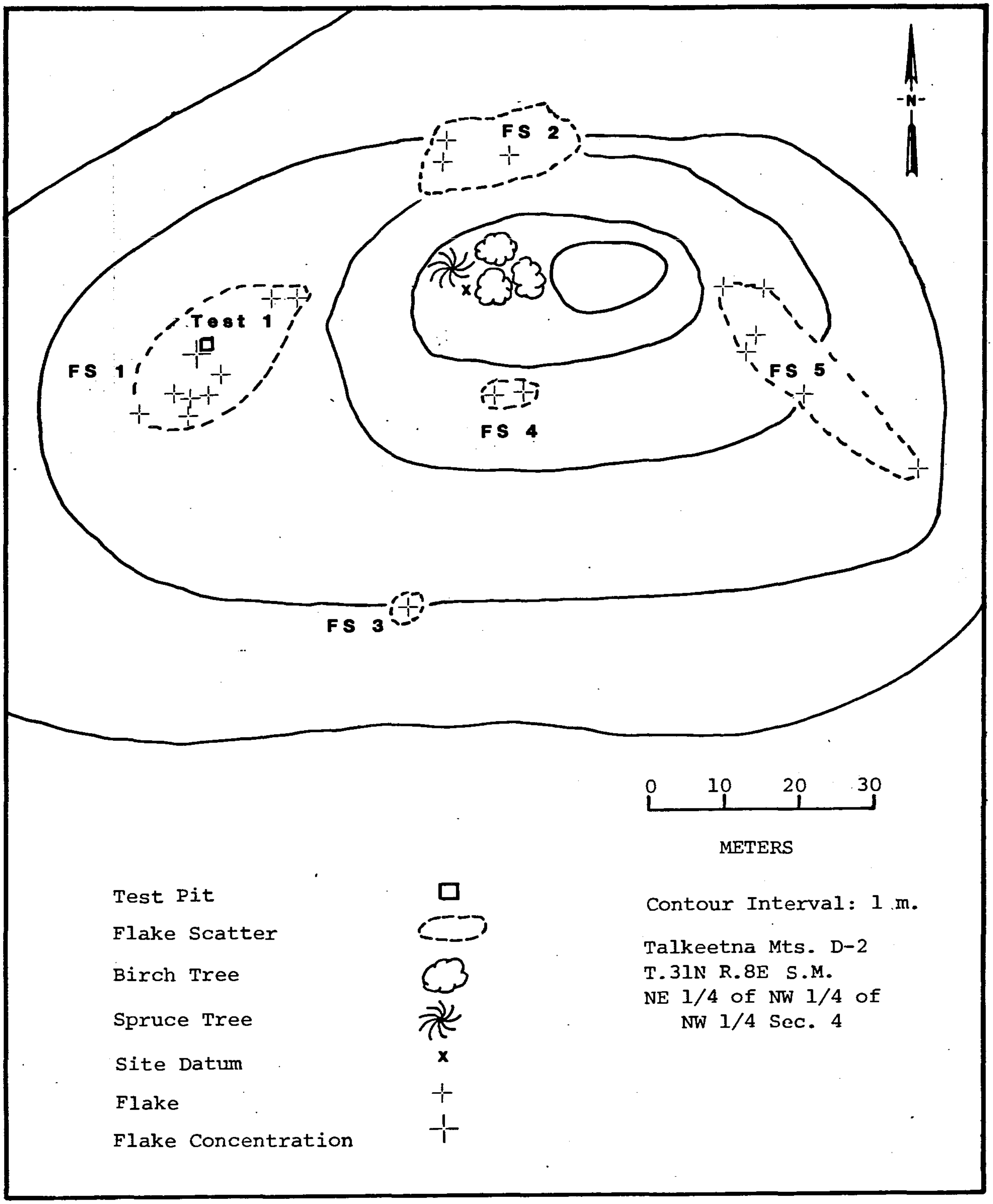


Figure 58. Site Map TLM 044.

(xiii) AHRS Number TLM 045, Accession Number UA80-152

Area: ca. 6 km Northwest of Jay Creek Mouth, Survey Locale 30
Area Map: Figure 159; Survey Locale Map: Figures 196, 197, 198
USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 450500 Northing 6965050 (Locus A)
Easting 450600 Northing 6965050 (Locus B)

Latitide 62°48'54" N., Longitude 147°58'20" W. (Locus A)
Latitude 62°48'54" N., Longitude 147°58'15" W. (Locus B)

T. 32 N., R. 8 E., Seward Meridian
Sec. 33, SW¼SE¼SW¼ (Locus A and B)

Site Map: Figure 59 (Locus A)
Site Map: Figure 60 (Locus B)

Setting: The general location, elevation and topographic setting of the site (Figure 198) is similar to that of TLM 044. The site, consisting of two loci (A and B), is located on the south and east facing slopes of a knoll approximately 300 m northeast of site TLM 044 and slightly lower in elevation. Both knolls are connected to the same ridge line by a low broad saddle of approximately the same elevation as the lower knoll.

Locus A is situated on the southern slope of the knoll, just below the 10 m by 20 m flat summit (Figure 198). The northern and northwestern slopes of the knoll drop off steeply approximately 107 m to the elevation of the valley and lake system to the north. The view from the immediate vicinity of locus A is to the south and is limited by intervening topography to less than 100 m. However, from the top of the knoll, only a few m away, a panoramic view is available which overlooks the broad valley, lakes, and connecting outlet streams to the north. One possible reason for locus A to be located slightly below the exposed summit of the knoll is that strong winds are apparently quite frequent in this vicinity and prehistoric hunters may have sought shelter from these.

Locus B is situated 15 m lower in elevation and 104.5 m east of the summit on an east facing slope overlooking a small valley (Figure 198). The view from this location includes both the valley to the north and low marshy areas and kettle lakes to the southeast. A 3 hectare lake is visible and easily accessible approximately 1.3 km to the southwest. Numerous bedrock and glacial drift exposures are present in the immediate vicinity of the site. Dwarf willow, crowberry, grasses, moss, and lichen form the predominant vegetation at the site and a few isolated spruce are present. Upland spruce forest occupies the low lying valley to the north with areas of marsh and muskeg occurring at the lowest elevations in the valley. To the east and west spruce increase in frequency as elevation decreases. Site TLM 046 is located approximately 200 m to the northeast.

Reconnaissance Testing: Both surface and subsurface cultural material was recovered from three flake scatters comprising two loci (A and B) situated approximately 104 m apart (Figures 59, 60). A complete projectile point, a complete microblade, a microblade fragment, a retouched flake, and 62 bone fragments were surface collected at the site. In addition, a total of 63 flakes were surface collected and approximately 126 observed surface flakes were left *in situ*. A subsurface test at scatter 1 (Figure 59, test pit 1) produced 3 flakes, bone, charcoal, and possible fire-cracked rock at a depth of 5 to 17 cmbs.

Locus A

Scatter 1: Scatter 1 is located in a blowout 4 m south of the site datum (Figure 59). One translucent chalcedony microblade fragment and one complete microblade of the same material (UA80-152-3, 5; Artifact Photo G-e, f) were surface collected from this blowout. Four basalt flakes were also surface collected and six basalt flakes were left *in situ*.

Scatter 2: Scatter 2 is located in a blowout 7 m southeast of the site datum (Figure 59). A dark brown chert flake retouched on one margin (UA80-152-15), 28 flakes, and 22 bone fragments were surface collected from this blowout and an additional 77 flakes were left in situ. Most of the collected and observed flakes are basalt but other lithologies represented include brown and gray chert and rhyolite. Test pit 1, excavated near the northern edge of the blowout (Figure 59), produced 1 rhyolite and 2 basalt flakes between 6 and 10 cmbs from a gray silt and burned bone and charcoal between 5 to 17 cmbs were probably associated with the flakes. In addition, rock exhibiting possible thermal cracking and discoloration (UA80-152-178) was recovered between 10 to 12 cmbs in this test. This probable hearth in test pit 1 extended throughout the 40 cm by 40 cm test and was more deeply buried in the southwest corner. Twenty-five small basalt and rhyolite flakes, about 280 very small bone fragments, and charcoal were recovered from four soil samples (UA80-152-74, 75, 76, and 77) collected from test pit 1 between 10 to 12 cmbs.

Locus B

Locus B, located in a blowout 104.5 m east of the site datum (Figure 60), is a surface lithic scatter. A complete gray chert projectile point (UA80-152-37; Artifact Photo G-g) with a constricted, thinned, straight base was surface collected from this blowout. In addition, 31 flakes, primarily of light and dark gray chert but including brown chert and clear obsidian, were surface collected. Approximately 44 light brown rhyolite flakes were left in situ. Faunal material surface collected consisted of 41 bone fragments. These included 1 unidentified phalanx, 1 phalanx identified as caribou (Rangifer tarandus), 1 possible caribou (Rangifer tarandus) tarsal fragment, and a right and left maxilla identified as arctic ground squirrel (Spermophilus parryi).

Collected Artifact Inventory

Locus A:

Scatter 1

4 Black basalt flakes
1 Distal end translucent chalcedony microblade
1 Complete translucent chalcedony microblade

Scatter 2

21 Black basalt flakes
5 Gray chert flakes
1 Yellowish brown chert flake
1 Pale brown rhyolite flake
1 Dark brown chert flake retouched on one margin
2 Black basalt flakes
1 Gray rhyolite flake
4 Soil samples (containing ca. 290 bone fragments and 25 flakes)
16 Rock fragments (possible thermal fracture and discoloration)

Locus B

1 Gray chert complete projectile point with a constricted, thinned, straight base
15 Gray chert flakes
7 Yellowish gray chert flakes
8 Light brown chert flakes
1 Clear obsidian flake

Collected Faunal Material Inventory

Locus A:

Scatter 2

Surface

2 Long bone fragments, calcined, medium-large mammal
20 Unidentified, calcined, small-large mammal

Subsurface

Test pit 1, 5-17 cmbs:

1 Unidentified, calcined, small-large mammal
1 Phalanx fragment, calcined, large mammal
1 Flat bone fragment, calcined, medium-large mammal
1 Tarsal fragment, calcined, large mammal, possibly caribou (Rangifer tarandus)
12 Long bone fragments, calcined, medium-large mammal
ca. 280 small fragments, calcined, small-large mammal

Locus B:

Surface

1 Phalanx, proximal 1/5, large mammal, caribou (Rangifer tarandus)
1 Maxilla right fragment with teeth, small mammal, Arctic ground squirrel (Spermophilus parryi)
1 Maxilla left fragment with teeth, Arctic ground squirrel (Spermophilus parryi)
22 Small fragments, calcined, small-large mammal

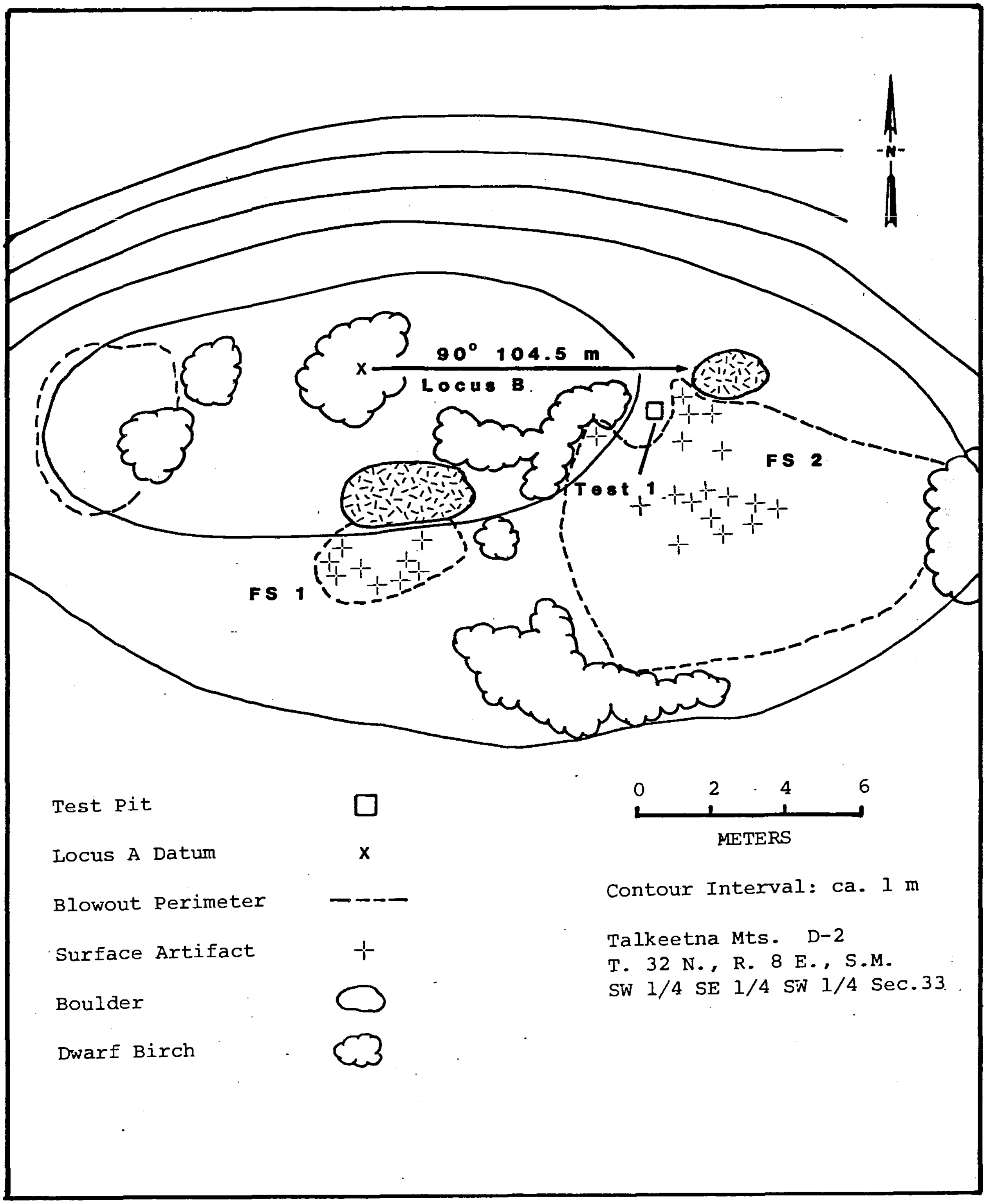


Figure 59. Site Map TLM 045 A.

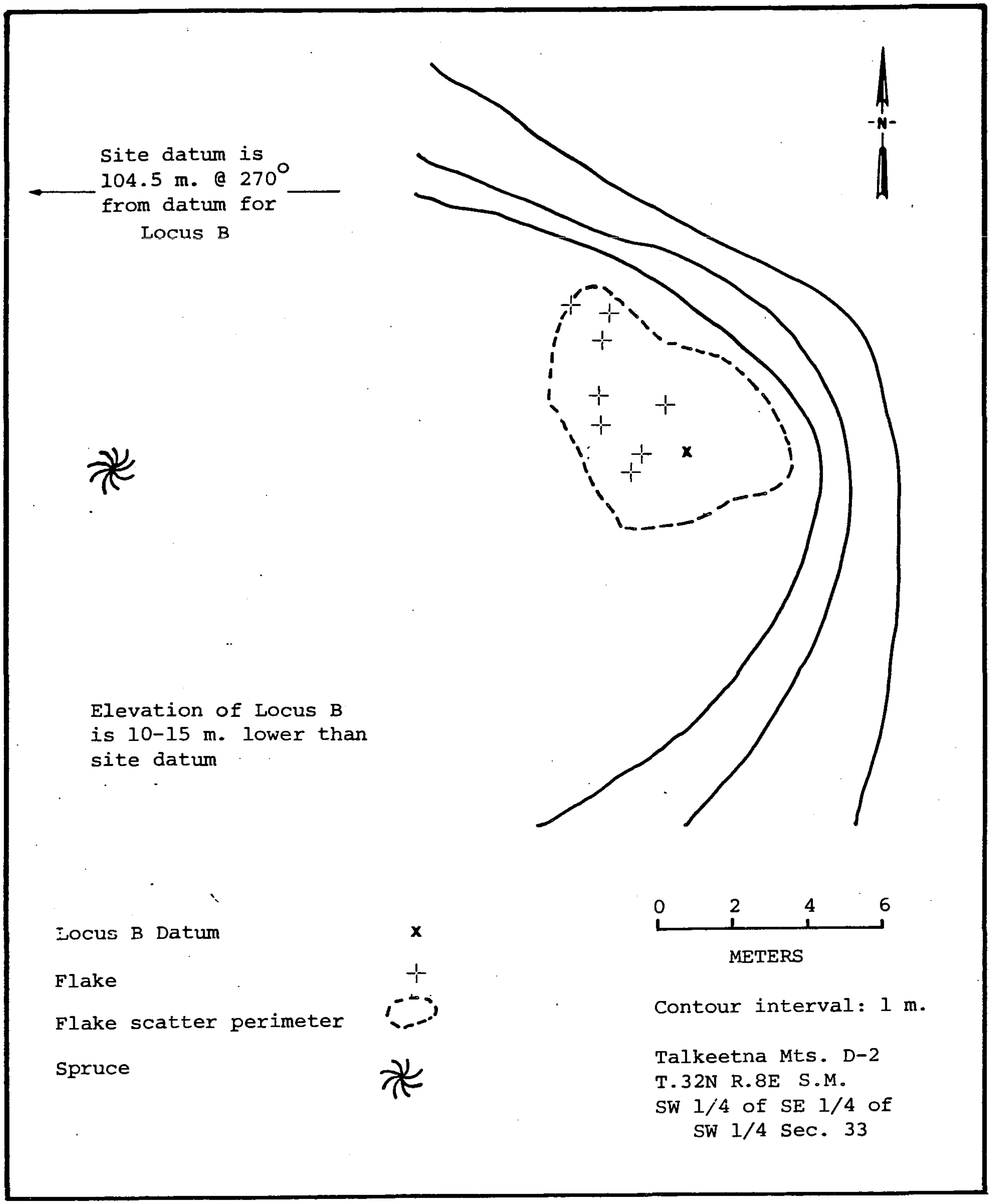


Figure 60. Site Map TLM 045 B.

(xiv) <u>AHRS Number TLM 046, Accession Number UA80-153, UA81-263</u>

Area: ca. 6 km Northwest Jay Creek Mouth, Survey Locale 30
Area Map: Figure 159; Survey Locale Map: Figures 196, 197, 198
USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 450750 Northing 6965100

Latitude 62°48'58" N., Longitude 147°58'00" W.

<u>T. 32 N., R. 8 E., Seward Meridian</u>
Sec. 33, NE¼SE¼SW¼

Site Map: See Section 4, Figure 129

<u>Setting</u>: The general location, elevation, and topographic setting of the site (Figure 198) is similar to that of TLM 044 and TLM 045. Site TLM 046 is situated on the top of the easternmost and highest of three knolls, all of which are slightly above the 884 m asl (2900 feet) elevation. Sites TLM 044 and TLM 045 are located on the lower knolls to the southwest and are both within 500 m of site TLM 046 (Figure 198). All three knolls are part of the same general landform and the western slope of the highest knoll joins the ridge upon which the two lower knolls are situated. Site TLM 046 is located at the northern end of a north-south oriented knoll which affords the most commanding panoramic view of any of the surrounding terrain features. The view encompasses both the valley to the north with its series of interconnected lakes, and the lower elevations to the east and southeast with kettle lakes approximately 1 km southeast and 700 m southwest. All of the lakes and streams visible from the site are easily accessible. Like the other knolls in the vicinity, exposed bedrock and deflated surfaces occur over much of the site. There are no trees on top of the knoll and what vegetation there is consists of moss, lichen, and very low brush. Vegetation becomes denser with decrease in elevation in all directions. Scattered spruce are present in low wet areas below the site with alder and willow

forming the primary vegetation on better drained areas on the slopes of ridges and knolls.

Reconnaissance Testing: Both surface and subsurface cultural material was recovered from four flake scatters covering an area approximately 40 m by 110 m at the summit of the knoll (Figure 129). Two projectile point bases, an endscraper fragment, 48 flakes, and about 200 bone fragments were surface collected at the site. Some surface bone and 43 observed flakes were left *in situ*. Three subsurface tests were excavated, only one of which (test pit 2) produced cultural material (Figure 129). Test pit 2, at scatter 1, revealed a possible hearth associated with flakes and burned bone. Artifact lithologies at the site include basalt, red and gray chert, rhyolite, quartzite, and obsidian.

Scatter 1: Scatter 1, exposed on the deflated edge at the extreme northern end of the knoll, is approximately 20 m northwest of the site datum (Figure 129). A total of 17 flakes were surface collected at scatter 1 and two basalt flakes were left *in situ*. Test pit 2 (Figure 129) produced 30 flakes between the surface and 16 cmbs and revealed charcoal and burned bone between 5 to 16 cmbs. A radiocarbon determination of 2340 ± 145 years: 390 B.C. (DIC-1903) was obtained on a charcoal sample (UA80-153-38a) from this hearth. Three black obsidian flakes were recovered from the same depth as the hearth and a fourth black obsidian flake was found between 5 and 10 cmbs. Other lithologies present at scatter 1 include basalt, gray and white chert, and rhyolite.

Scatter 2: Scatter 2, located 15 m southwest of scatter 1 and just north of the site datum (Figure 129), contains both lithic and bone material on the surface. No test was excavated at this scatter. Surface collected artifacts include the concave base of a basally-thinned basalt projectile point (UA80-153-50; Artifact Photo H-a), a fragment of a gray chert projectile point base (UA80-153-53; Artifact Photo H-b), one basalt flake, one quartzite flake, and about 100 small bone fragments. Two basalt flakes and a single rhyolite flake were left *in situ*.

Scatter 3: Scatter 3, located 15 m south of the site datum, consists of surface lithics and bone (Figure 129). Test pit 1, excavated at the northwestern edge of the scatter did not reveal subsurface cultural material (Figure 129). Artifacts collected from the surface of scatter 3 include a unifacial black basalt endscraper fragment (UA80-153-55; Artifact Photo H-c), 28 flakes, and about 100 small bone fragments. Artifacts left in situ include 29 basalt, 5 rhyolite, and 3 chert flakes in addition to faunal material.

Scatter 4: Scatter 4, located 107 m southeast of the site datum, was a surface lithic scatter from which all of the observed cultural material was collected. A black chert endscraper fragment (UA80-153-87) and 3 flakes were surface collected. Lithologies represented at scatter 4 include basalt, chert, and rhyolite. Test pit 3 excavated at scatter 4 produced no subsurface cultural material.

Collected Artifact Inventory

Scatter 1

8 Black basalt flakes
4 Whitish gray rhyolite flakes
2 Gray rhyolite flakes
1 White chert flake
1 Banded chert flake
1 Gray chert flake
21 Black basalt flakes
1 Whitish gray rhyolite flake
2 Gray rhyolite flakes
1 Gray chert flake
1 Light brown rhyolite flake
4 Black obsidian flakes

Scatter 2

1 Black basalt projectile point base (basally-thinned, concave base)
1 Gray chert projectile point base fragment (basally-thinned)
1 Black basalt flake
1 White quartzite flake

Scatter 3

1 Black basalt unifacial endscraper fragment
5 Black basalt flakes
16 Whitish gray rhyolite flakes
3 Gray rhyolite flakes
1 Translucent quartz flake
3 Red chert flakes

Scatter 4

1 Black chert endscraper fragment
1 Black basalt flake
1 Light brown rhyolite flake
1 Dark red chert flake

<u>Collected Faunal Material Inventory</u>

Scatter 1

Test pit 2, 5-10 cmbs:

4 long bone fragments, calcined, medium-large mammal

10-16 cmbs:

4 small long bone fragments, 2 calcined, 2 heavily burned, medium-large mammal

Scatter 2

Surface

7 Long bone fragments, calcined, medium-large mammal
1 Long bone fragment, calcined, small-large mammal
ca. 100 small fragments, calcined, small-large mammal

Scatter 3

Surface

1 Carpal and tarsal fragment, calcined, medium-large mammal
4 Long bone fragments, calcined, medium-large mammal
ca. 100 small fragments, calcined, small-large mammal

(xv) AHRS Number TLM 047, Accession Number UA80-154

Area: ca. 9 km Downriver from Vee Canyon, Survey Locale 34
Area Map: Figure 161; Survey Locale Map: Figure 204
USGS Map: Talkeetna Mts. C-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 465100 Northing 6954600

Latitude 62°43'20" N., Longitude 147°40'58" W.

T. 30 N., R. 9 E., Seward Meridian
Sec. 1, NW¼SW¼NE¼

Site Map: Figure 61

Setting: The site is located at an elevation of 853 m asl (2800 feet) on the west side of the Susitna River approximately 9 km downriver from Vee Canyon (Figure 161). Situated on the north end of a north-south oriented bedrock ridge approximately 274 m above the Susitna River, the site is approximately 800 m west of the river. To the west of the site a sheer bedrock cliff drops approximately 30 m to an old river channel which is occupied by a small pond surrounded by marsh. The pond is directly below and southwest of the site (Figure 204). Located on the western edge of the northern point of the ridge overlooking this pond, the site is situated on the only relatively level part of the ridge. The site location is also the only part of the ridge where there is appreciable soil accumulation. The rest of the ridge crest, which extends south for approximately 125 m, is primarily exposed bedrock. Beyond the deeply incised old stream channel immediately west of the site, the terrain continues to rise to an elevation of 1040 m asl (3422 feet). To the east a steep slope descends to the Susitna River. The Susitna River valley and the river itself is visible to the north, east, and south but the view to the west is restricted by bedrock cliffs and higher terrain. The site is located on a deflated gravel exposure with dwarf willow, low berry bushes, moss, and grasses scattered along the ridge where soil is sufficient to support vegetation. Vegetation is sparse on the sheer western slope of the ridge, but where the slope can support them, both birch and spruce are present. To the east spruce become denser with decrease in elevation and proximity to the river.

Reconnaissance Testing: The site consists of a 3 meter by 10 meter surface lithic scatter exposed on the deflated crest of a bedrock ridge (Figure 61). Artifacts surface collected from the site include a grey chert biface fragment (UA80-154-5; Artifact Photo H-d), the distal end of a light brown chert microblade (UA80-154-5; Artifact Photo H-e) and a light brown chert flake retouched along one margin (UA80-154-14; Artifact Photo H-f).

In addition 24 flakes were surface collected and about 70 light brown rhyolite flakes were left in situ. Two test pits excavated at the site (test pits 1 and 2) did not reveal subsurface cultural material (Figure 61). Test pit 2 (Figure 61) revealed glacial drift and fractured rock at a depth of 25 to 30 cmbs overlain by 20 to 25 cm of silt and sandy silt. Intensive surface reconnaissance and subsurface testing (where possible) along the entire ridgetop failed to reveal additional cultural material and the site appears to be limited to only the extreme northern end of the ridge.

Collected Artifact Inventory

1 Light gray chert biface fragment
1 Light brown chert microblade fragment, distal end
1 Light brown chert flake with retouch on one margin
21 Light brown rhyolite flakes
1 Gray rhyolite flake
2 Black basalt flakes

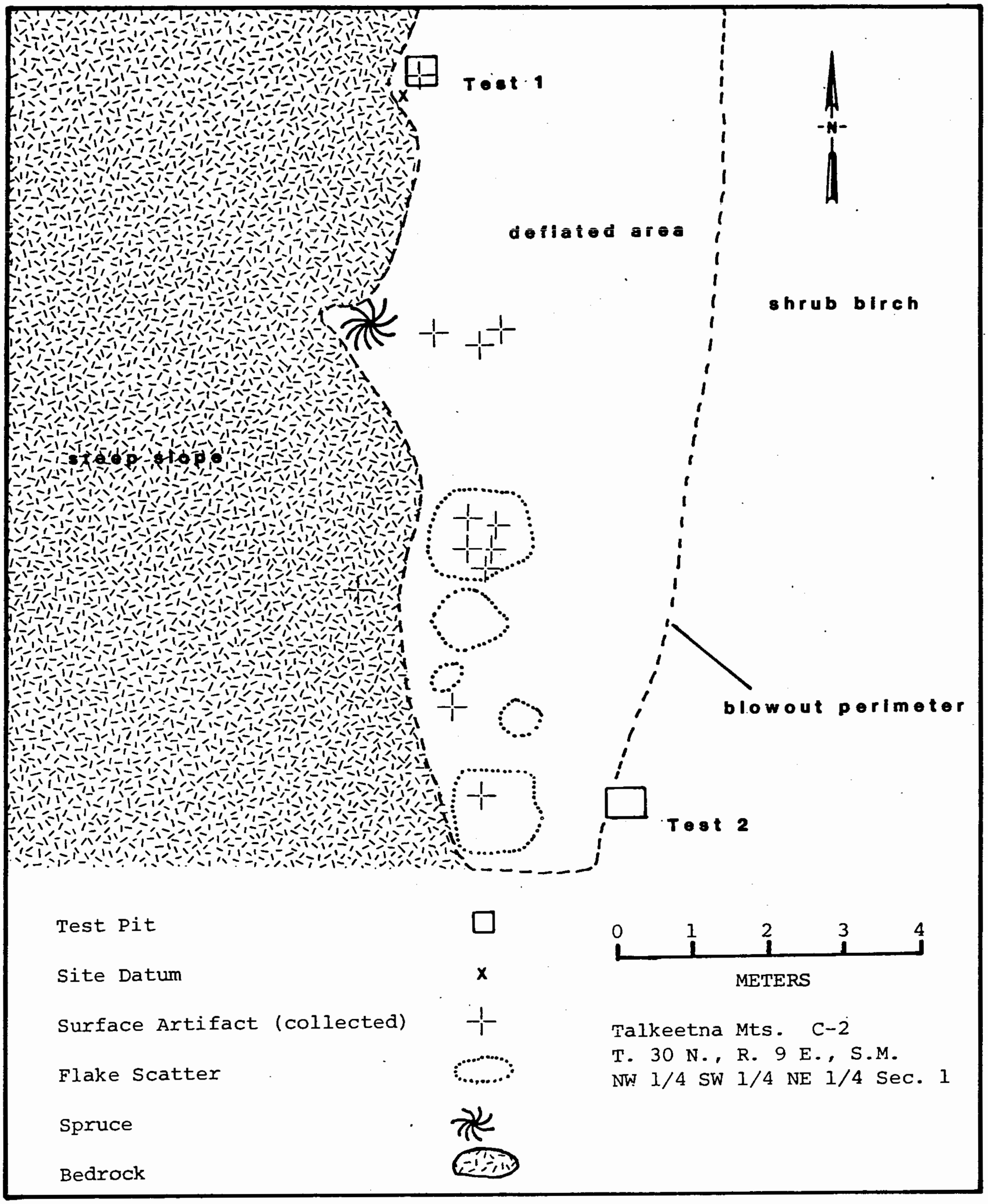


Figure 61. Site Map TLM 047.

(xvi) AHRS Number TLM 049, Accession Number UA80-156

Area: ca. 1.5 km East of Oshetna River Mouth, Survey Locale 48
Area Map: Figure 162; Survey Locale Map: Figure 219
USGS Map: Talkeetna Mts. C-1, Scale 63,360

Site Location: UTM Zone 6 Easting 482025 Northing 6945250

Latitude 62°38'23" N., Longitude 147°21'00" W.

T. 29 N., R. 11 E., Seward Meridian
Sec. 2, NE¼NW¼NW¼

Site Map: Figure 62

Setting: The site, situated approximately 732 m asl (2400 feet), is located south of the Susitna River and approximately 1.5 km east of the mouth of the Oshetna River (Figure 219). The site occupies the pointed summit of a discrete knoll located on a north-south trending continuous ridge. This knoll is a prominent feature on the crest of the ridge and is separated from the higher ridge crest to the south by a slightly lower saddle. In all other directions the knoll is higher than the surrounding terrain and affords a panoramic view. To the north of the site the knoll slopes gradually down to a small flat bench approximately 8 m below the summit and then drops off steeply to a northeast-southwest trending terrace approximately 30 m below the elevation of the site. The Susitna River, flowing in a serpentine course, is approximately 350 m northwest of the site at its closest point. The confluence of the Susitna River and the Oshetna River is not visible from the site, although sections of both rivers are in view. The site overlooks a broad alluvial terrace to the west, north, and east which is approximately 15 m above the Susitna and approximately 45 m to 60 m below the site. Much of this alluvial terrace is relatively flat and poorly drained. Two lakes are located on the terrace west of the site (Figure 219). The northernmost and smaller of the lakes, approximately 3 hectares in size, is approximately 600 m west of the site and in view. The southernmost lake, and equal distance southwest of the site, is not visible. These two lakes, the Susitna, and Oshetna are easily accessible from the site. Other large lakes lie 1 km to 2 km south of the site at a higher elevation and would also be accessible by ascending the ridge upon which the site is located. Much of the surface of the knoll in the vicinity of the site is deflated with numerous small blowouts occurring on the southwest slope. Vegetation at the summit consists of grass, fireweed, moss, and lichens with willow, alder, and dwarf birch occurring on the slopes below the site. Scattered white and black spruce are also present, increasing in density with a decrease in elevation.

Reconnaissance Testing: Cultural material was observed on the surface and in subsurface tests at this site. A total of four test pits were excavated on the knoll, two of which were placed at the highest elevation and two on the relatively level bench immediately to the north (Figure 62). Only one of these tests (test pit 1) produced cultural material. A single basalt flake was found in test pit 1 between the surface and 5 cmbs in the humus layer below which glacial drift was encountered. A small mammal mandible fragment discovered between the surface and 5 cmbs in the humus at test pit 2 (Figure 62). Two additional flakes were noted, but not collected, in a blowout on a narrow portion of the ridge top approximately .5 km south of the site datum.

Collected Artifact Inventory

1 Black basalt flake

Collected Faunal Material Inventory

Test pit 2, 0-5 cmbs:

1 Mandible, left fragment with teeth, small mammal

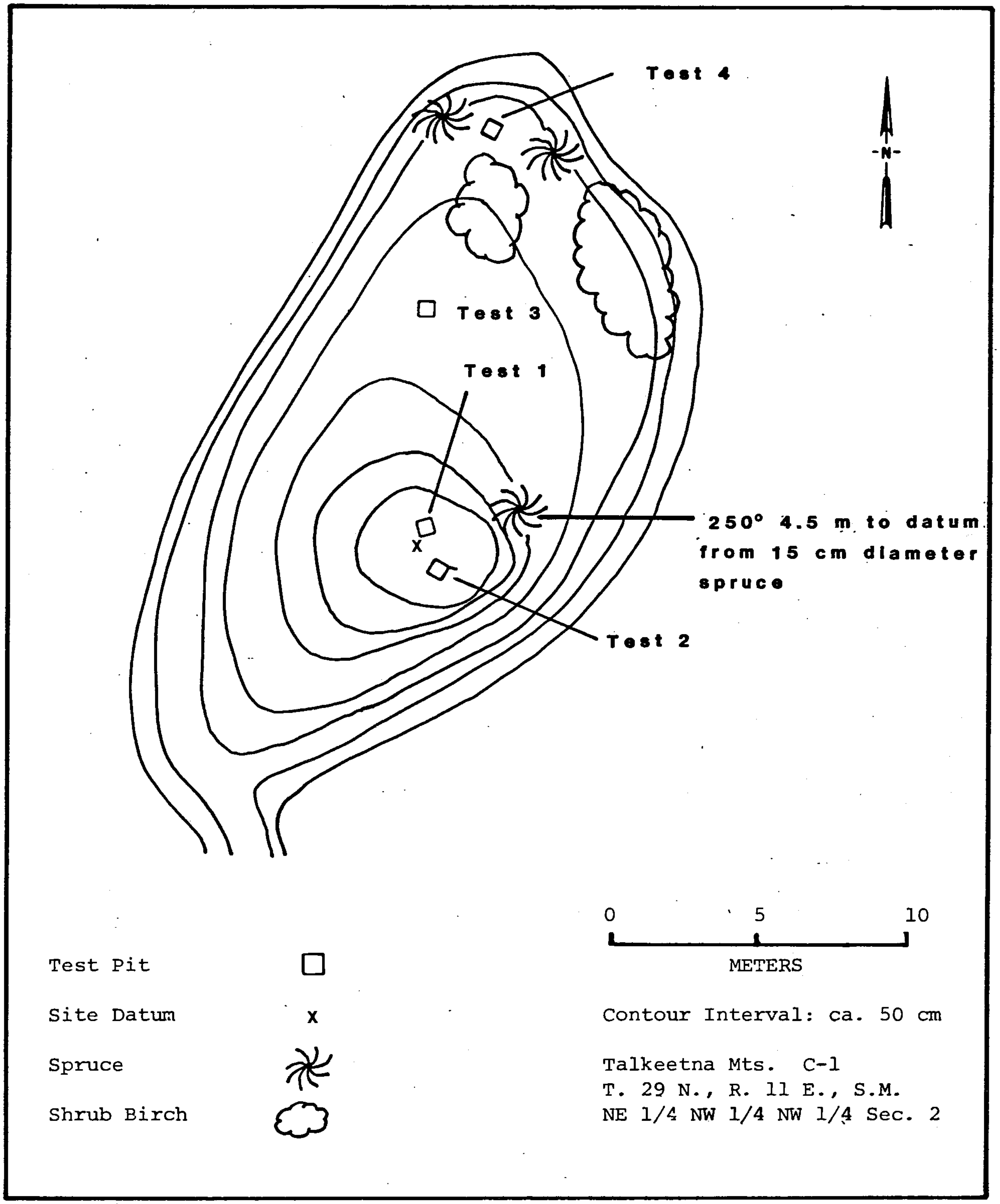


Figure 62. Site Map TLM 049.

(xvii) AHRS Number TLM 052, Accession Number UA80-159

Area: ca. 3.5 km Northwest of Jay Creek Mouth, Survey Local 51
Area Map: Figure 159; Survey Locale Map: Figures 222, 223
USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 453500 Northing 6964100 (Locus A)
Easting 453550 Northing 6964200 (Locus B)

Latitude 62°48'24" N., Longitude 147°54'50" W. (Locus A)
Latitude 62°48'28" N., Longitude 147°54'42" W. (Locus B)

T. 31 N., R. 8 E., Seward Meridian
Sec. 2, SE¼SW¼NW¼ (Locus A and B)

Site Map: Figure 63

Setting: The site, consisting of two loci (A and B), is located on a southeast-northwest trending ridge at an elevation of 884 m asl (2900 feet) approximately 2.5 km north of the Susitna River and 3.5 km northwest of mouth of Jay Creek (Figure 159). This ridge is the highest of numerous deflated ridges and knolls characteristic of the glacially scoured ice stagnation terrain in this vicinity and affords an excellent vantage point overlooking lower areas of tundra. The ridge slopes gradually in all directions from the site location, except to the southwest along the ridge crest, where it is relatively level. The view from the ridge crest is panoramic ranging in distance from approximately 5 km to the south to less than 2 km to the north and west. Both site loci are located at the northeastern end of this discrete ridge (Figure 222) and overlook the largest kettle lake in the area, an 8 hectare lake (Laha Lake) approximately 600 m southeast of the site and 91 m lower in elevation. Also visible from the site is the lake's inlet stream, located approximately 500 m east of the site, which drains higher terrain to the north. A 3 hectare lake, not visible from the site, is located 1.6 km to the west. Both of these lakes and the stream drainage are easily accessible from the site, as is all of the surrounding terrain within 5 km. Locus A is situated at the edge of the deflated crest of the ridge on the southern slope and locus B is located 138 m to the northeast on the rounded crest of the ridge. Most of the crest of the ridge is deflated and consequently vegetation is sparse. What vegetation there is includes dwarf willow, low bush cranberry, moss, and lichen. A few scattered spruce grow on the ridge and increase in density in all directions as elevation decreases. The surrounding lower terrain is poorly drained and consists primarily of tundra and low brush with areas of marsh and grass in the vicinity of the lake margins.

Reconnaissance Testing: Both surface and subsurface cultural material was found at the site including a surface lithic scatter (locus A) exposed on the south slope of the ridge crest at the edge of a large deflated area, and two isolated surface artifacts (locus B) observed approximately 130 to 150 m northeast of locus A on the rounded and largely deflated crest of the northeastern end of the ridge (Figure 63). Artifacts surface collected from the site include three projectile point bases, seven flakes, and a chalcedony pebble fragment possibly cultural in origin. Thirty-four flakes observed on the surface were left *in situ*.

Locus A: Surface artifacts were observed at the southern edge of the deflated ridge crest during surface reconnaissance. The exposed portion of the flake scatter measures approximately 5 by 15 m (Figure 63). Artifacts surface collected from this scatter include a straight, edge ground base portion of a black chert projectile point (UA80-159-1; Artifact Photo H-h), and a similiar but smaller fragment of a gray chert projectile point exhibiting the same characteristics (UA80-159-4; Artifact Photo H-i). In addition, four banded chert and three basalt flakes were surface collected. Approximately 30 black basalt and 3 banded chert flakes were left *in situ*. Test pit 1 (Figure 63), excavated immediately southwest of the largest concentration of flakes, produced a single black basalt flake 7 cmbs at the contact between the humus and a gray leached silt. No other cultural material was revealed by test 1.

Locus B: Two isolated artifacts located on the surface outside of the immediate vicinity of locus A comprise the cultural material observed at locus B. The rounded edge ground base of a gray basalt projectile point (UA80-159-12; Artifact Photo H-j) was surface collected 138.6 m northeast of the datum at locus A (Figure 63). A datum for locus B was established at this location. The only other cultural material observed on the surface at locus B was a single black basalt flake located 33.8 m southeast of the locus B datum (Figure 63). Time limitations did not permit subsurface testing at locus B.

Collected Artifact Inventory

Locus A:

1 Straight, edge ground black chert projectile point base
1 Straight, edge ground gray chert projectile point base
2 Whitish-gray banded chert flakes
2 Yellow-brown banded chert flakes
3 Black basalt flakes
1 White chalcedony pebble fragment
1 Black basalt flake

Locus B:

1 Rounded, edge ground gray basalt projectile base

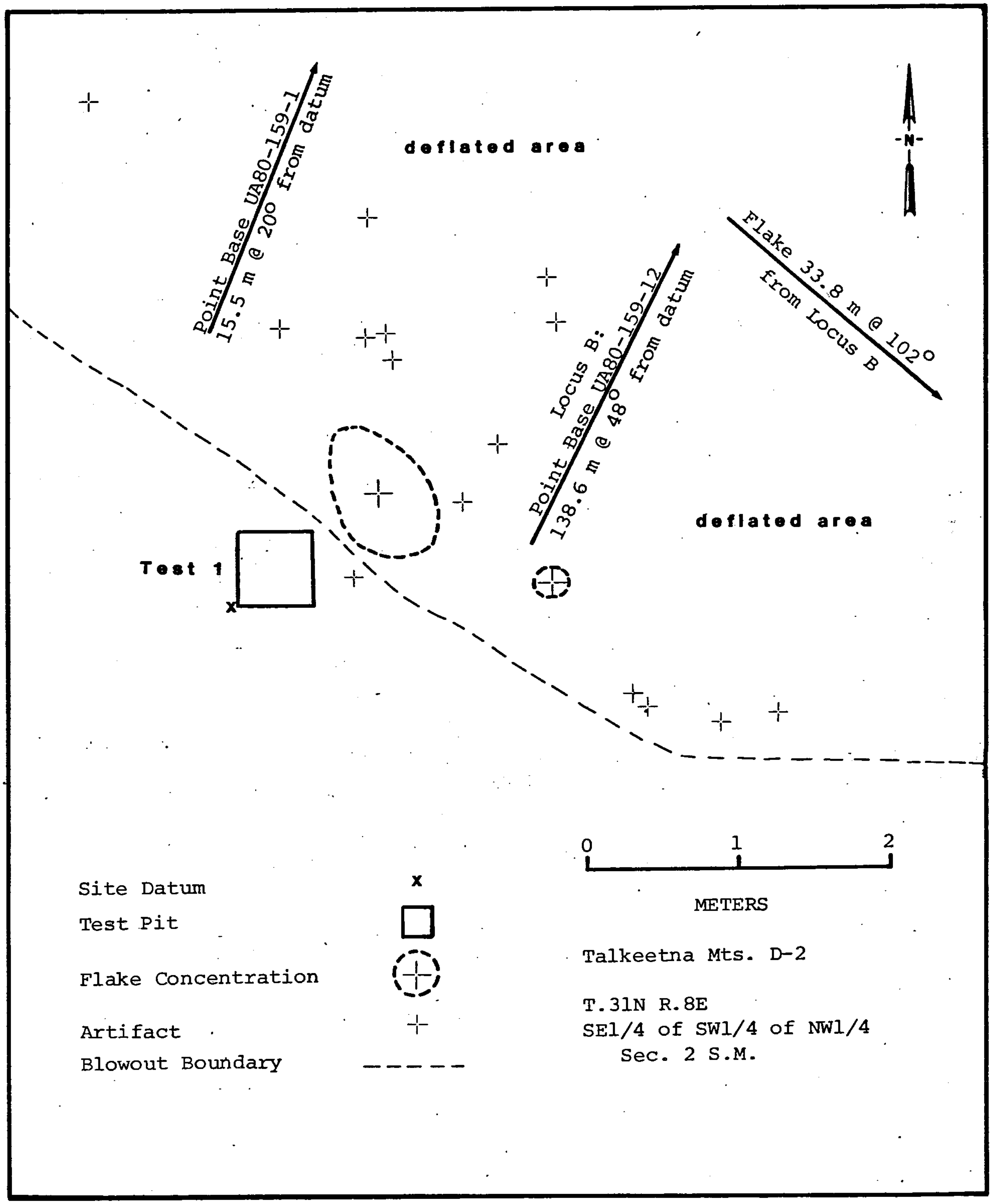


Figure 63. Site Map TLM 052.

(xviii) AHRS Number TLM 053, Accession Number UA80-160

Area: ca. 4 km Northeast of Jay Creek Mouth, Survey Locale 51
Area Map: Figure 159; Survey Locale Map: Figures 222, 223
USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 456000 Northing 6964700 (Locus A)
Easting 455850 Northing 6964650 (Locus B)

Latitude 62°48'45" N., Longitude 147°51'48" W. (Locus A)
Latitude 62°48'43" N., Longitude 147°51'59" W. (Locus B)

T. 31 N., R. 8 E., Seward Meridian
Sec. 1, NW¼NE¼NE¼ (Locus A)
Sec. 1, NE¼NW¼NE¼ (Locus B)

Site Map: Figure 64

Setting: The site, consisting of two loci (A and B), is located approximately 4 km northeast of the confluence of Jay Creek and the Susitna River and approximately 1.5 km west of Jay Creek (Figure 159). Situated on a 150 m to 200 m long discrete northeast-southwest trending ridge line at an elevation of 975 m asl (3200 feet), the site is located in glacially scoured terrain characterized by numerous deflated ridges and knolls which overlook poorly drained areas of tundra and high brush (Figure 223). The Susitna River valley is visible approximately 3 km to the south, although the river is out of view. The two site loci are situated approximately 240 m apart on the opposite ends of the ridge.

Locus A: Locus A, at the northeastern end of the ridge, is situated at the point of highest relief on the ridge which slopes gradually upward from the southwest to the northeast (Figure 223). The northeastern end of the ridge terminates abruptly and locus A is situated on a relatively flat 20 m by 25 m deflated area just before the ridge slopes steeply downward and continues to the northeast at a lower elevation. The principal view from the site is to the east encompassing the deeply incised canyon downcut by Jay Creek and portions of the creek itself to the south-southeast. Over half the ground surface is deflated in the vicinity of locus A and what vegetation there is consists primarily of dwarf and shrub birch, low bush cranberry, crowberry, ptarmigan berry, moss, and lichen. Scattered black spruce and alder are present on the slopes of the ridges and, along with dense shrub birch and tundra, form the principal vegetation at lower elevation.

Locus B: Locus B, situated at the southwestern end of the ridge, is on the slope slightly below the end of the relatively level crest of the ridge (Figure 223). Like locus A, this part of the ridge is deflated and consists almost entirely of exposed gravel and fractured rock. Locus B overlooks a broad expanse of tundra to the southwest and the view encompasses an eight hectare lake (Laha Lake) located approximately 2 km southwest of the site. The larger of two small lakes immediately east of Laha Lake is also visible from locus B. Vegetation in the vicinity of locus B is similar to that of locus A.

Reconnaissance Testing: Surface and subsurface cultural material occur primarily at locus A (Figure 64). All observed surface artifacts were collected at both loci.

Locus A: Locus A consists of a surface lithic scatter covering an area of approximately 6 m by 8 m (Figure 64). Artifacts surface collected from locus A include a chert flake bifacially retouched on the right lateral margin with a graver spur at the distal end (UA80-160-4), a whitish-gray chert flake with retouch on the left and right margins and the distal end (UA80-160-6), a large tuffacious rhyolite flake (UA80-160-1), and two additional flakes, one of basalt and the other of chalcedony. Test pit 1 (Figure 64), excavated at the west edge of the blowout in which the artifacts are exposed, produced a single light brown tuffacious rhyolite flake 10 cmbs in a dark gray leached silt. Glacial drift was encountered in test pit 1 between 10 and 19 cmbs.

Locus B: A single gray chert flake retouched on the dorsal surface (or possibly scraper) was surface collected approximately 240 m southwest of locus A (Figure 64). Intensive surface reconnaissance in the vicinity of locus B and along the ridge crest between the two loci did not reveal any additional cultural material. Almost the entire area in the vicinity of locus B is deflated and no subsurface testing was initiated.

Collected Artifact Inventory

Locus A:

1 Whitish-dark gray chert flake, bifacially retouched on the right lateral margin, a graver spur at the distal end
1 Whitish-dark gray chert flake with continuous retouch on all margins
1 Light gray tuffacious rhyolite flake
1 Black basalt flake
1 Gray chalcedony flake
1 Light brown tuffacious rhyolite flake

Locus B:

1 Gray chert flake retouched dorsally (possible scraper)

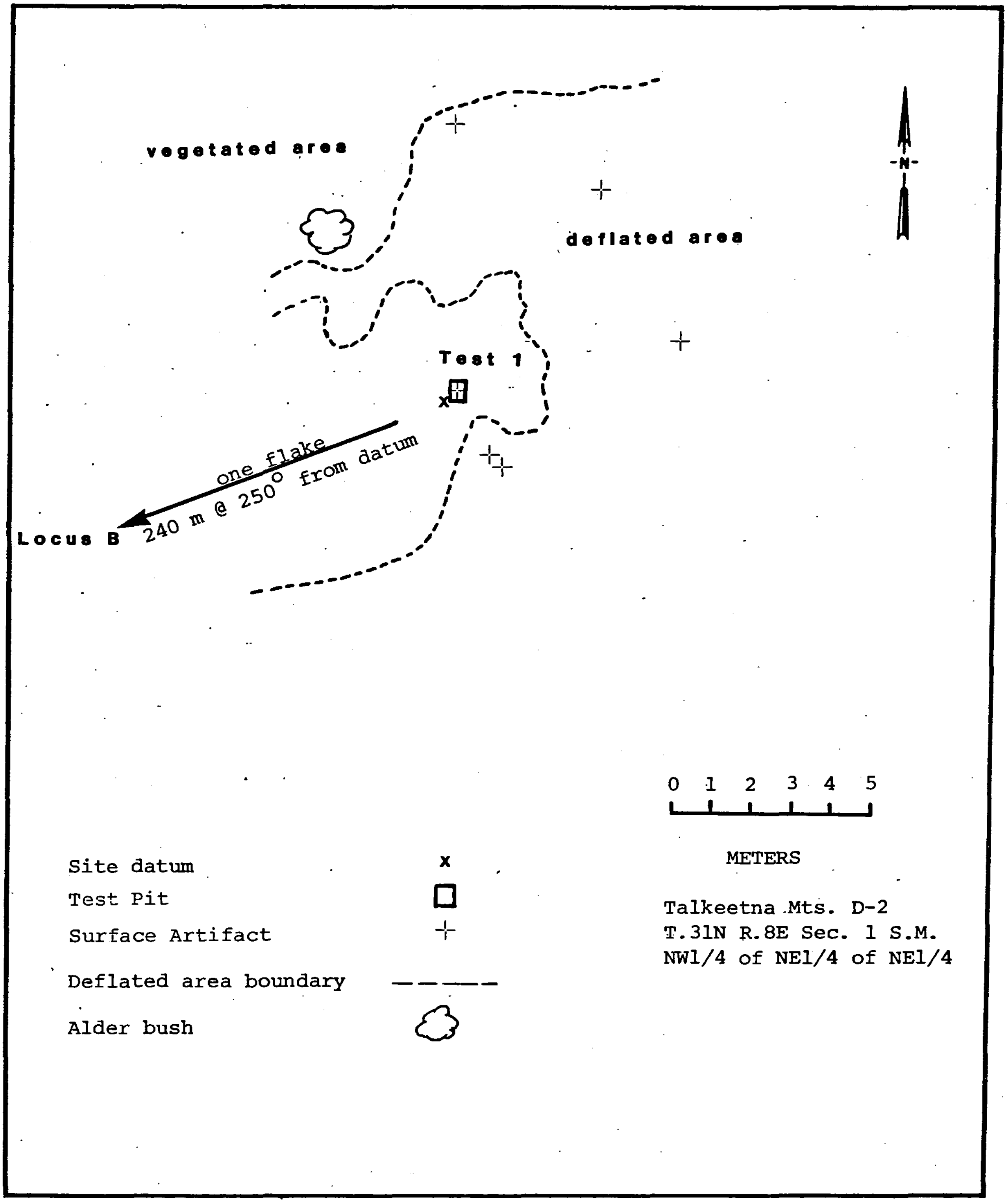


Figure 64. Site Map TLM 053.

(xix) AHRS Number TLM 054, Accession Number UA81-245

Area: ca. 2 km North of Tsusena Butte, Proposed Borrow C
Area Map: Figure 157; Location Map: Figure 277
USGS Map: Talkeetna Mts. D4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 421900 Northing 6981550

Latitude 62°57'25" N., Longitude 148°32'20" W.

T. 33 N., R. 5 E., Seward Meridian
Sec. 17, NE¼NE¼NE¼

Site Map: Figure 65

Setting: The site is located on a kame or remnant of an esker approximately 300 m east of Tsusena Creek (Figures 157, 277). Although the site is 15-20 m above the level of Tsusena Creek at an elevation of 730 m asl (2400 feet), the location affords limited visibility of Tsusena Creek and the intervening series of kames and two eskers to the west. A small clear water stream passes 70 m south of the site and in the past may have eroded the landform on which the site rests. The stream drains the 1525 m asl (5000 feet) mountains to the east through a V-shaped valley which terminates a kilometer above the site, eventually joining Tsusena Creek just below the kame on which the other site in the immediate vicinity (TLM 086) rests 150 m to the west-southwest. TLM 054 occupies the southwest quarter of the 20 m long by 10 m wide kame. The kame is oriented northeast-southwest and is distinct from the ridges and slope of the eastern valley wall. A large marsh (200 m northwest-southeast and 40 m wide) is the prominent terrain feature in view, being at the western base of the kame and 10-15 m lower in elevation. In addition to the marsh, the sinuous course of the stream to the south and the gentle slopes of valley walls to the east form the principal objects of view. The absence of the now frequent spruce trees would enhance the vantage capabilities of the site to a kilometer to the north and south as well as along the southward course of Tsusena Creek to the west. In addition to the spruce, local vegetation consists of dwarf birch, labrador tea, sphagnum moss and lichens.

Reconnaissance Testing: Two dark gray chalcedony flakes were recovered from beneath the organic mat during an initial shovel test at the location (Figure 65). The shovel test was expanded into test pit 1, resulting in the additional finding of one small bone fragment. No cultural material was found on the surface or in a second subsurface test 5 m to the northeast.

Collected Artifact Inventory

2 Dark gray chalcedony flakes

Collected Faunal Material Inventory

Test pit 1, 5 cmbs:

1 Long bone fragment, calcined, large mammal

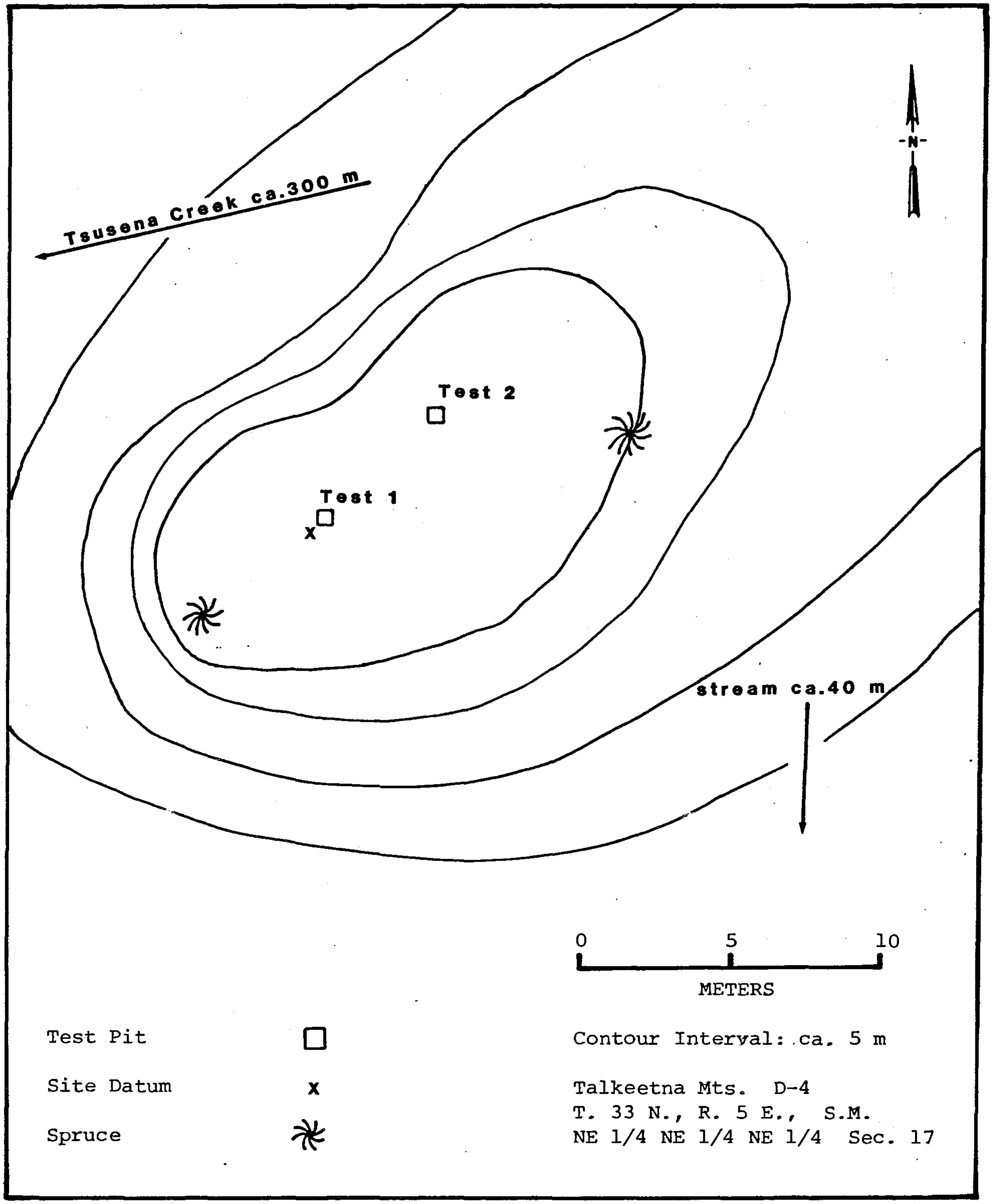


Figure 65. Site Map TLM 054.

(xx) AHRS Number TLM 055, Accession Number UA81-246

Area: ca. 1 km Northwest of Tsusena Butte, Proposed Borrow C, Tsusena Creek

Area Map: Figure 157; Location Map: Figure 277

USGS Map: Talkeetna Mts. D4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 421250 Northing 6980400

Latitude 62°56'50" N., Longitude 148°33'07" W.

T. 33 N., R. 5 E., Seward Meridian

Sec. 17, NE¼SE¼SW¼

Site Map: Figure 66

Setting: The site is located approximately 1 km north of the northwest tip of Tsusena Butte, and approximately 200 m west of Tsusena Creek (Figure 157). It lies in a north-south glacial valley about 500 m in width, dominated by marshy terrain interspersed with ice stagnation topography. The site is situated atop a 15 m circular knoll at the southern end of the valley. This discrete knoll rises only about 2 m above the immediate surrounding terrain (Figure 277). The relief in the vicinity decreases in height to the east towards Tsusena Creek, and the valley wall rises in elevation to the west of the site. Site TLM 097 is approximately 100 m northeast of TLM 055, although it lies below an intervening knoll and is not visible. Parts of Tsusena Creek are visible from the site, as is Tsusena Butte and the eastern valley wall of Tsusena Creek. Vegetation at the site consists of lichen, moss, low heath, dwarf birch and scattered spruce. The surface is somewhat uneven due to vegetation concentrations and differential soil deposition. Spruce trees cluster in the poorly drained channels surrounding the site on the slopes of the valley wall. The marshy plain to the east of the site is muskeg covered.

Reconnaissance Testing: There are no surface indications of the site. However, a shovel test revealed a pale red chert scraper (UA81-246-1; Artifact Photo I-a) at 7 cmbs in the lower part of a dark soil unit of finely divided organics. In the subsequent test (test pit 1), four gray chert flakes were found at 9 cmbs at the contact between the above soil unit and the light gray tephra unit just below. Charcoal flecks occur in the dark organic unit (none collected). The stratigraphy indicates some geologic mixing of the soil units underlying the dark organic unit and the light gray tephra, as these lower units are discontinuous throughout the test pit (Figure 66). An additional shovel test was dug prior to discovery of the site; it yielded no artifacts. During the systematic testing of site TLM 097 TLM 055 was revisited and a single 1 m x 1 m test square excavated at the site in an attempt to obtain additional diagonistic lithic material. Four burned bone fragments and five fire cracked rocks were found associated with a dense concentration of charcoal within the same finely divided organic horizon above the upper tephra from which the previous cultural material was recovered. Three very small chert flakes were the only lithic material recovered from this test square. The site appears to be single component and restricted to a very limited area in the immediate vicinity of the top of the knoll.

Collected Artifacts Inventory

1 Pale red chert scraper
4 Gray chert flakes 1 Ochre(?)/soil sample

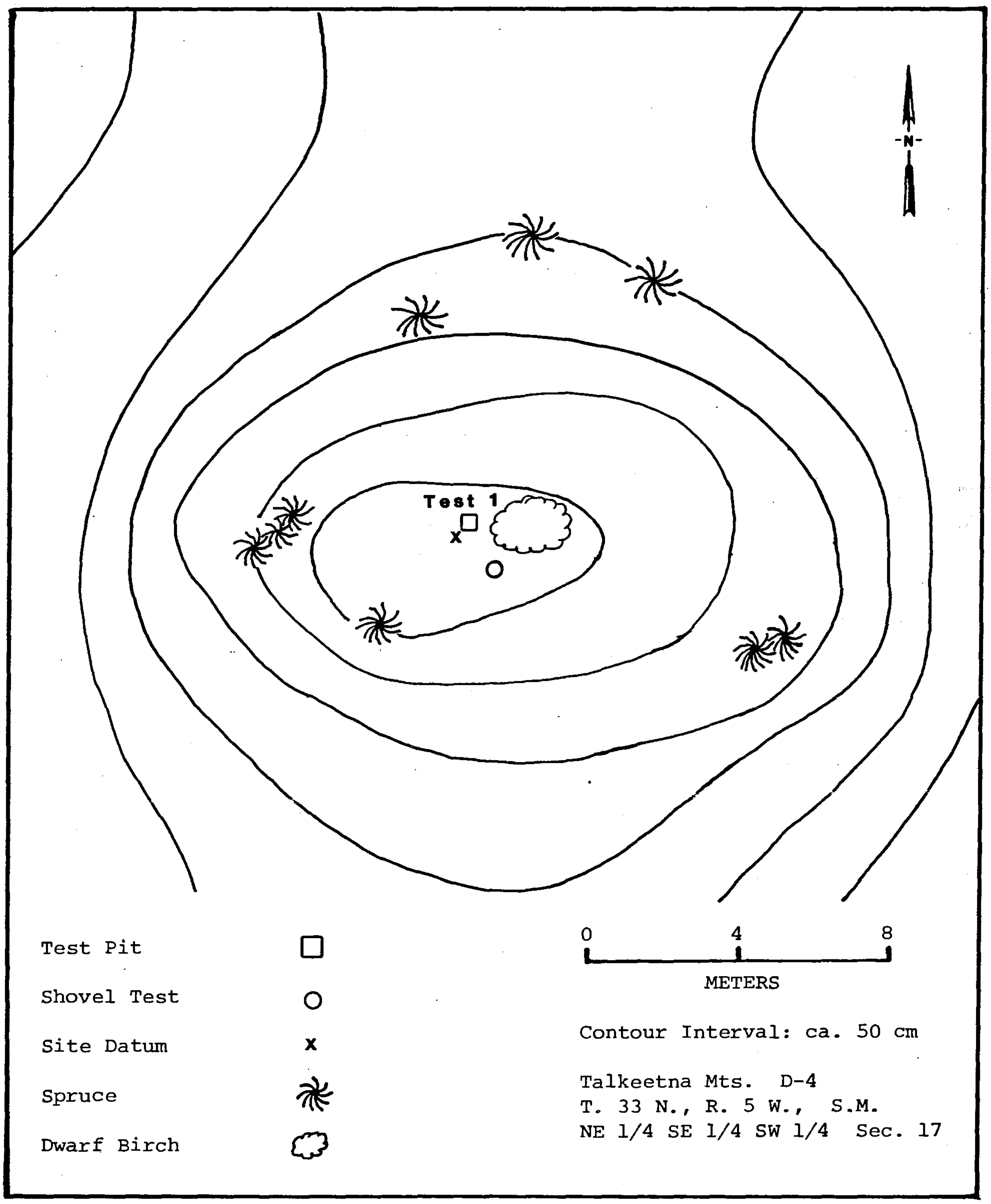


Figure 66. Site Map TLM 055.

(xxi) AHRS Number TLM 057, Accession Number UA80-255, UA81-203

Area: East Shore of Big Lake
Area Map: Figure 158; Location Map: Figure 295
USGS Map: Talkeetna Mts. D3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 439550 Northing 6983800

Latitude 62°58'58" N., Longitude 148°11'35" W.

T. 22 S., R. 3 W., Fairbanks Meridian
Sec. 30, SE¼SW¼NE¼

Site Map: Figure 67

Setting: The site is located on the east margin of Big Lake overlooking an outlet creek to the north and the lake itself to the west (Figures 158, 295). Occupying the top 30 m across a rounded knoll, the site is 100 m east and approximately 30 m above Big Lake, and about 150 m south of the creek. Terrain rises to the south of the site along the lake margin, appearing as deflated ridges and knolls, and rises to the east as well, in large rounded hills which prevent visibility of Watana Creek and the Susitna Valley. The overlook characteristic of the site, therefore, is directed toward the lake to the west and the surrounding slopes and valleys in other directions. The site is above present treeline. Dwarf birch, heath, moss, lichens, sedges and grasses cover the ground surface. Several deflated areas occur over the knoll. High brush, including dwarf birch and alder, line creek margins and poorly drained areas.

Reconnaissance Testing: The site was established on the basis of surface artifacts. A chert microblade fragment (UA81-203-4), two chert flakes, two basalt flakes, and a quartzite fragment were collected from a deflated area on the southeast slope of the knoll (scatter 1) (Figure 67). Seven plus basalt waste flakes were left uncollected in the blowout. An isolated basalt flake was collected from the surface on the northerly top of the knoll. Five shovel tests around the knoll were sterile. A 40 x 40 cm test pit (test 1) was dug on the flat top of the knoll which was also sterile. The stratigraphy, consisting of a humic mat over sandy gravels with silt, was devoid of clear tephra units (Figure 67).

Collected Artifact Inventory

1 Chert microblade fragment
3 Basalt flakes
2 Chert flakes
1 Quartzite fragment

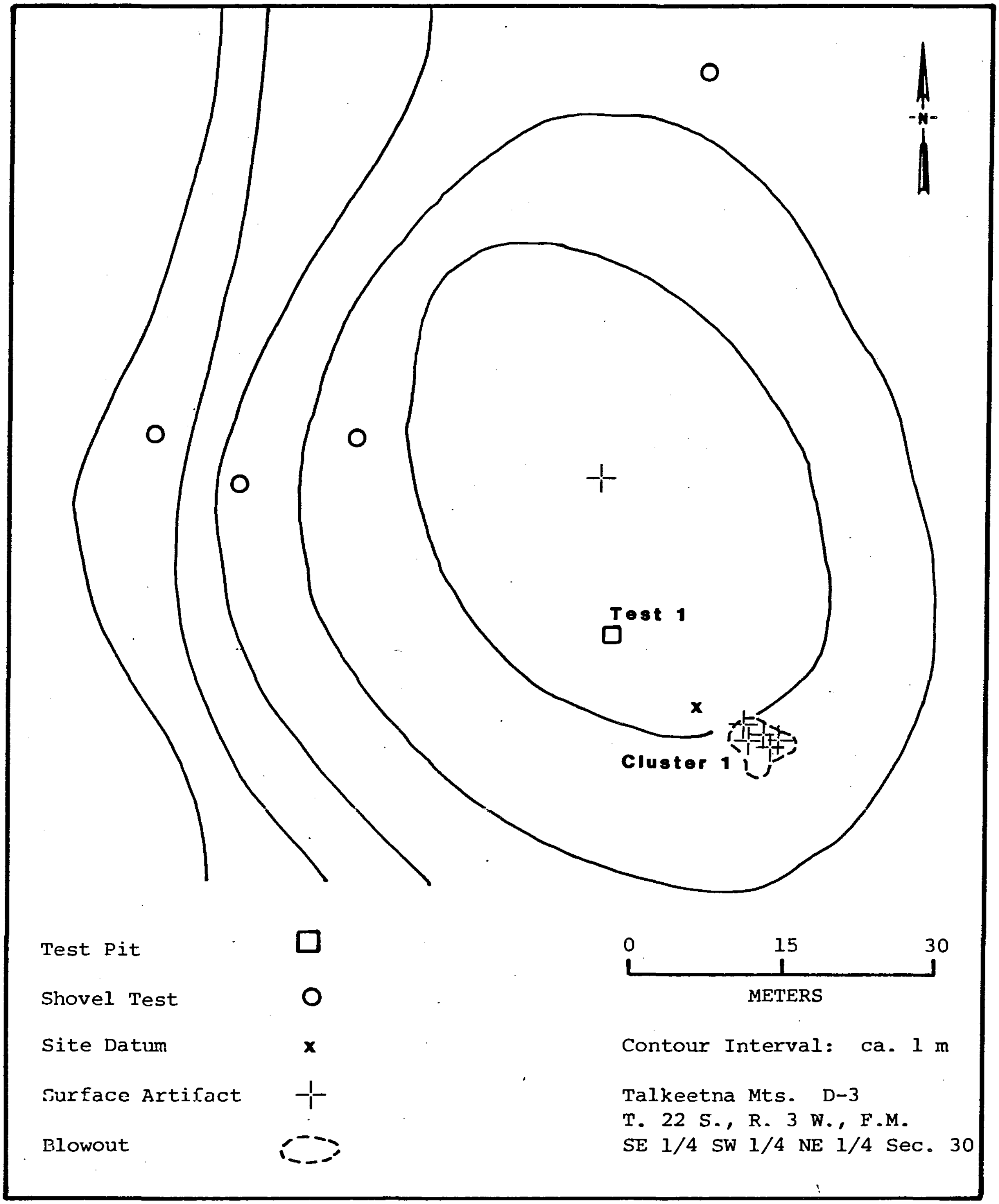


Figure 67. Site Map TLM 057.

(xxii) <u>AHRS Number TLM 066, Accession Number UA81-212</u>

Area: ca. 12 km Northeast of Watana Creek Mouth
Area Map: Figure 158; Location Map: Figure 296
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 445900 Northing 6974600

Latitude 62°54'00" N., Longitude 148°03'50" W.

<u>T. 32 N., R. 7 E., Seward Meridian</u>
Sec. 1, NW¼NE¼NW¼

Site Map: Figure 68

<u>Setting</u>: The site is located on the east-southeast slope of a ridgetop plateau ca. 3 km due east of Watana Creek near the southwest base of a 1256 m asl peak (4120 feet) at an elevation of 914 m asl (3000 feet) (Figures 158, 296). Watana Creek proper is not visible from the ridgetop although the creek valley walls can be seen along with at least seven small (less than 5 hectares) lakes on the plain above the creek. There is a fairly steep slope on the west side of the ridge down toward the plain and Watana Creek. The site is situated on the east side of the ridge on a gentle slope overlooking a small unnamed creek with a northeast to southwest running drainage which lies in a shallow valley ca. 400 m southeast of the site along the base of the ridge. This valley continues toward the northeast providing a passage to upper Watana Creek between the peak northeast of the site and a range of mountains on the far side of the drainage east of the site.

The site is located on a wind and erosional deflated surface composed of granitic rock and some shale. The terrain conists of colluvium over bedrock and bedrock exposures. Vegetation at the site includes dwarf birch, low bush cranberry, Labrador tea, and Graminae species. White spruce and stands of birch are also found in the vicinity.

Reconnaissance Testing: Three bifacially chipped tools were recovered from an exposed blowout surface (Figure 68). Intensive surface reconnaissance of other exposed areas along the ridge failed to reveal any additional cultural remains. The bifaces included: a lancolate point of gray chert found in 2 pieces (UA81-212-1 and 2; Artifact Photo J-a), the square base of a projectile point of black chert with a possibly reworked tip (UA81-212-5; Artifact Photo J-b) and an ovate biface of gray chert found in two pieces (UA81-212-3 and 4; Artifact Photo J-c). The ovate biface pieces were found in the edge of a blowout at a depth of 4 cm and 7 cm below the apparent ground surface. Test pit 1 placed at this location failed to reveal any additional subsurface cultural material (Figure 68).

Collected Artifact Inventory

2 Gray chert biface fragments (lancolate point)
1 Black chert biface fragment
2 Gray chert biface fragments (ovate biface)

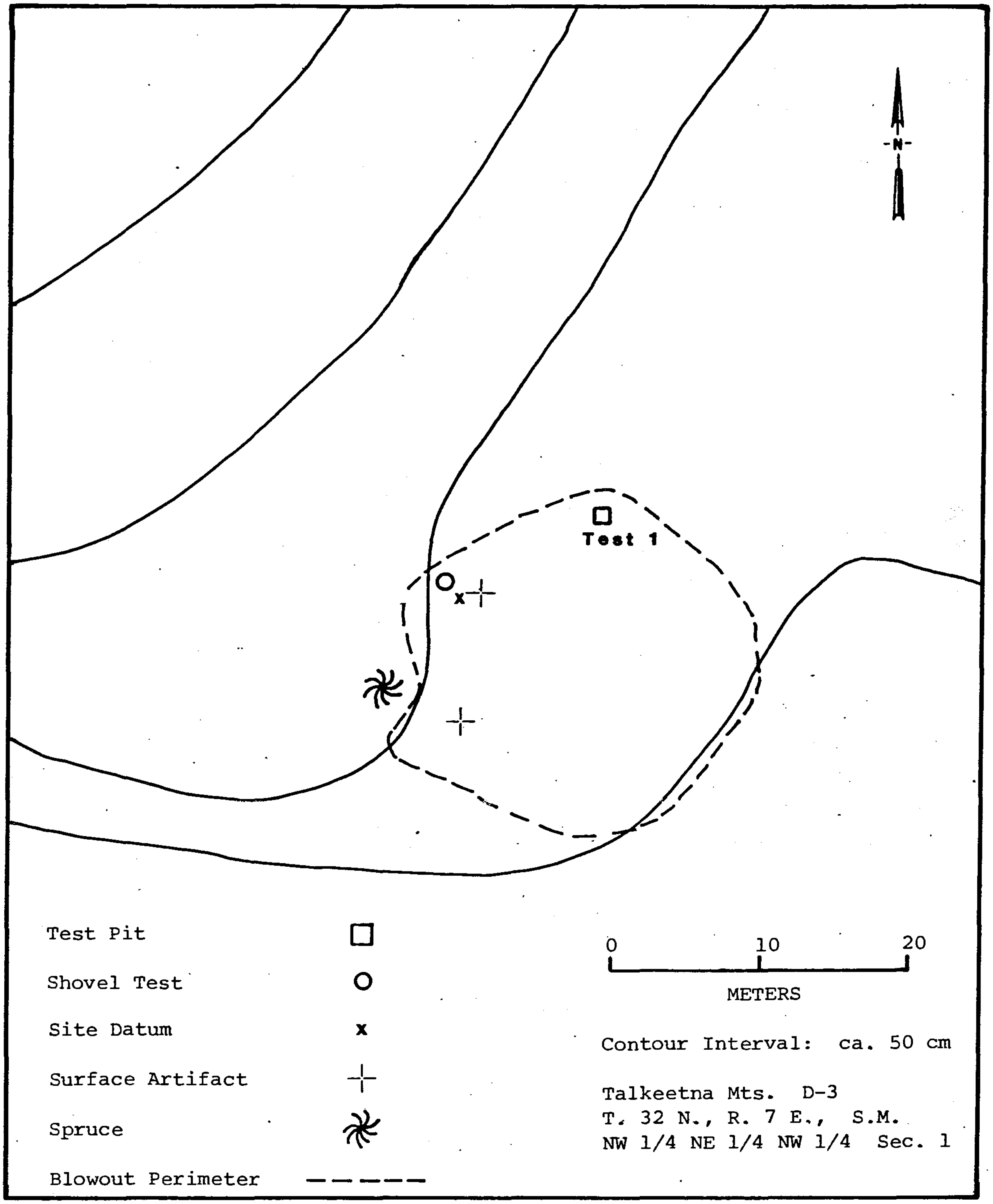


Figure 68. Site Map TLM 066.

(xxiii) AHRS Number TLM 067, Accession Number UA81-213

Area: Big Bones Ridge

Area Map: Figure 164; Location Map: Figure 297

USGS Map: Talkeetna Mts. B1, Scale 1:63,360

Site Location: UTM Zone 6 Easting 485250 Northing 6916700

Latitude 62°23'00" N., Longitude 147°17'10" W.

T. 27 N., R. 12 E., Seward Meridian

Sec. 32, NW¼SW¼SW¼

Site Map: Figure 69

Setting: The Sanona Creek site is situated on top of a 1094 m asl (3588 feet) knoll along the east side of Big Bones Ridge, 1 km west of Sanona Creek (Figures 164, 297). The knoll is a prominent feature whose eastern slope drops continuously to the level of Sanona Creek 180 m below. Higher ground in the immediate region occurs on another knoll 1.25 km west across a broad, gentle sloping saddle. Together the pair of knolls form an east-west trending ridge system which characterizes this portion of Big Bones Ridge. Sanona Creek is a clear water stream following a serpentine but northerly course. The knoll top is relatively flat, differing less than 3 m across its 100 m north-south by 75 m east-west extent. A 360° field of view is obtainable from the perimeter of the knoll. The principal vantages from the site are: (1) westward across a broad saddle to a higher knoll, bordered on the south by a northwest-southeast trending ridge and in the north by an east-west ridge; (2) to the north onto the southern slopes and tops of a series of three east-west running ridges and the 1 km wide intervening valley with a minor stream at its base; and (3) to the east down the slope onto Sanona Creek and the west facing slopes on the other side. The view is unimpared by the less than 50 cm high clumps of mosses, grasses, and lichens which constitute the cover on the vegetated two-thirds of the knolltop. The surrounding terrain is covered with low shrub, which reaches heights of 1.5 m in the valley bottoms. Treeline occurs 50 m below the top of the knoll with sporadic occurrences of spruce to the east and along minor stream channels to the north and south of the site. Some hardwoods--birch and aspen--occur along Sanona Creek.

Reconnaissance Testing: The site consists of three major surface lithic concentrations and three rock features (Figure 69). Although the bulk of cultural material is exposed on the surface, one jasper flake (UA81-213-1) was located in a subsurface test. The known lithic concentrations occur on the northwest, northeast, and southeast borders of the northern half of the knoll. Two test pits were excavated at the site. Test pit 1, producing the jasper flake, is located adjacent to cluster 1, a 1 m north-south by 3 m east-west scatter of two chalcedony points (UA81-213-3 & 4; Artifact Photo K-a, b), a jasper point fragment (UA81-213-5; Artifact Photo K-c), a quartz crystal (UA81-213-7), and flakes of chalcedony and chert. Test pit 2, located adjacent to a rock "windbreak" in the northeast portion of the knoll, did not produce any cultural material. Cluster 2, a 3 m diameter scatter in the east segment of the site, contained 30 black basalt flakes. Additional isolated material from the perimeter of the north half of the knoll consisted of retouched chalcedony flakes (UA81-213-13 & 14; Artifact Photo K-d), a black basalt biface fragment (UA81-213-17; Artifact Photo K-e), and flakes of basalt and weak red rhyolite. In the northeast corner of the site are two linear rock features which may have functioned as windbreaks. Feature 1 (Figure 69) is a 3.3 m long by 1 m wide linear rockpile oriented north-northwest by south-southeast showing definite stacking and placement of local bedrock boulders. The height of the finished wall would approach 50 cm. Feature 2 (Figure 69), a smaller "windbreak", 50 cm wide by 50 cm high, is located 2.8 m southeast of feature 1. A 3 cm wide by 12 cm high "window" formed by the two uprights and cap stone affords a view to the east. A third feature (Figure 69), located 10 m south-southeast of cluster 1 is a small, naturally formed rock ring (ca. 30 cm in diameter) encircling a smooth pebble (UA81-213-18). The 4 cm by 4 cm triangular pebble is composed of black banded green material exotic to the site and represents the only stone of probable alluvial origin found during surface reconnaissance of the knoll top.

Collected Artifact Inventory

Cluster 1

2 Chalcedony points
1 Red jasper point fragment
1 Quartz crystal
2 Chert flakes
1 Chalcedony flake
1 Possible spokeshaver
Red jasper flake

Cluster 2

5 Black basalt flakes

Miscellaneous Surface

1 Black basalt biface fragment
2 Rhyolite flakes
2 Chalcedony flakes
1 Black basalt flake
1 Chert flake
1 Green pebble
1 Cobble chopper

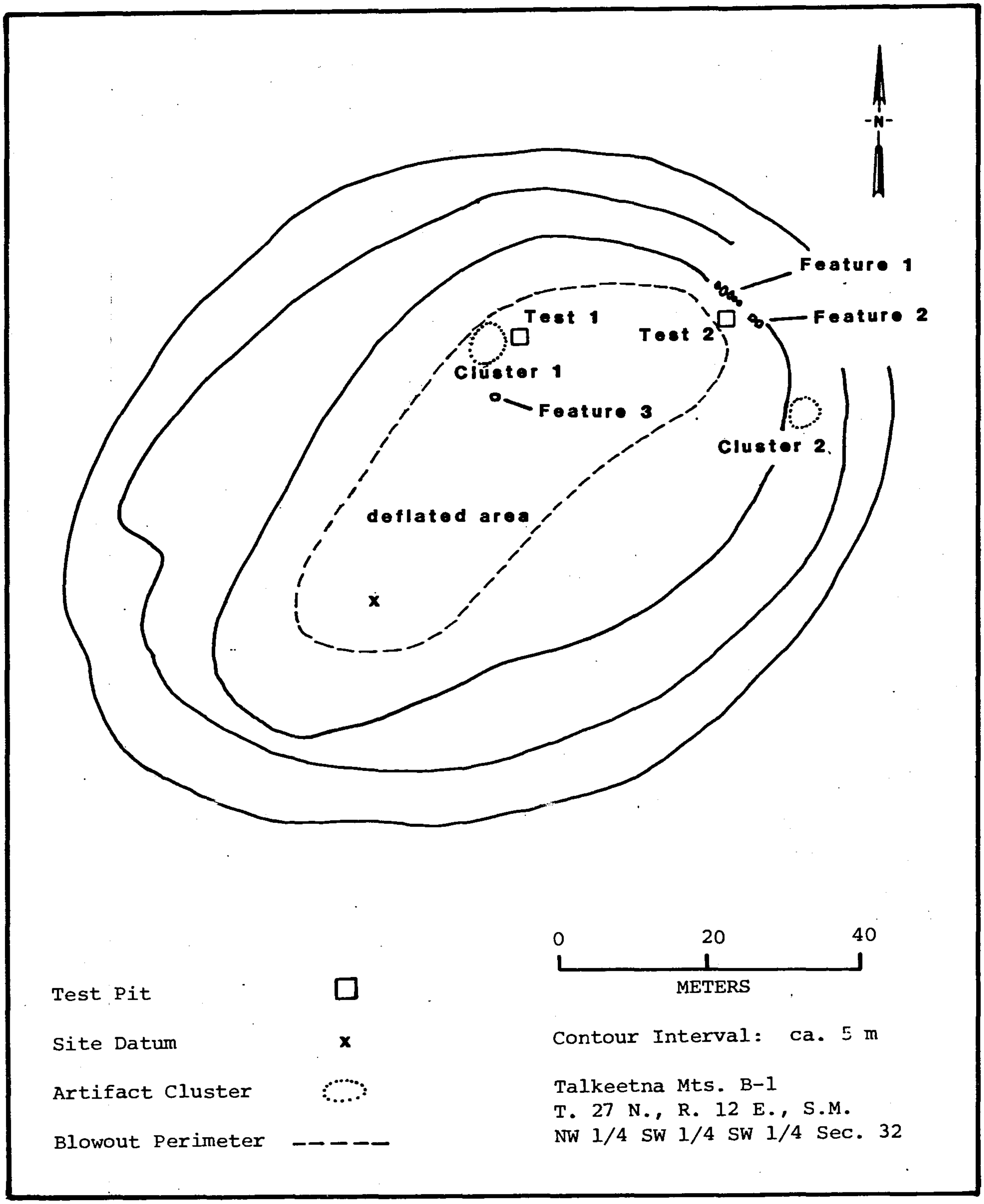


Figure 69. Site Map TLM 067.

(xxiv) AHRS Number TLM 069, Accession Number UA81-215

Area: ca. 3.5 km Northeast of Jay Creek Mouth, Survey Locale 91
Area Map: Figure 159; Survey Locale Map: Figure 259
USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 458450 Northing 6961400

Latitude 62°46'56" N., Longitude 147°48'50" W.

T. 31 N., R. 9 E., Seward Meridian
Sec. 17, NW¼NE¼NW¼

Site Map: See Section 4, Figure 141

Setting: The site is located ca. 3 km east of Jay Creek and 1 km north of the Susitna River at an elevation of 792 m asl (2000 feet). The site is situated at the top of an elongated knoll in an area of glacially scoured bedrock. An unnamed creek flows southwestward 700 m north of this knoll (Figures 159, 259). The knoll rises for a distance of 80 m to the west-northwest at a 2.5° slope to the site. From the site location the knoll descends west-northwestward at a gentler slope another 100 m. The site itself (ca. 15 x 15 m) is within a discrete flat-topped bedrock exposure measuring 20 x 30 m. Looking north from the site the view encompasses an unnamed creek drainage 700 m distant. To the east are three knolls ranging 150-200 m distant and 15-25 m higher in elevation than the site knoll. A drainage flows between them into a low, poorly drained area containing a small marshy pond which lies 50 m east-northeast of the site. Beyond these landforms to the east, the land rises sharply. To the south are three knolls ranging 100-750 m distant. The closest knoll is equal in elevation to the site knoll and the furthest southern knoll is the highest knoll in view at 823 m asl (2700 feet). To the west the land descends towards the Susitna River in a series of knolls and drainages. The site knoll is unique in comparison to the other knolls described due to its low relief and its close proximity to three water sources, the Susitna River 274 m below and 1 km to the southwest; the unnamed creek drainage 700 m to the north; and finally the pond only 50 m to the east-northeast. Vegetation surrounding the bedrock exposure consists of dwarf birch, mountain cranberry and Labrador tea upon a lichen mat. A small stand of paper birch lies in a flat area at the base of the southwest side of the knoll. Spruce trees occur along nearby drainages. There are numerous grass species surrounding the pond area.

Reconnaissance Testing: Site TLM 069 was located while placing two shovel tests within 10 m of one another. Several flakes and burned bone fragments were noted in one shovel test and one black chert flake was noted in the other shovel test. The site is comprised of a subsurface lithic and burned bone scatter, a possible hearth feature and 3 surface flakes noted in a discrete soil exposure (Figure 141). These 3 flakes were left uncollected. Three test pits (40 x 40 cm) were excavated, all within 10 m of one another and all revealed cultural material. Test pit 1 contained 762 lithic artifacts; 759 are waste flakes produced from material of chert, basalt, rhyolite, obsidian, and jasper. All of the artifacts were located within a burned earth-charcoal layer (possible hearth) 10 to 21 cmbs below a yellow-brown tephra layer 6 to 17 cmbs. A basally thinned projectile point base of light gray rhyolite (UA81-215-6; Artifact Photo L-f) was excavated from a 11 cmbs and one retouched obsidian flake (UA81-215-4) from 10 cmbs. Five possible fire cracked rocks (UA81-215-15) were located at 13-15 cmbs and a possibly burinated obsidian flake (UA81-215-5; Artifact Photo L-e) at 16 cmbs. Several hundred burned bone fragments were located in the same soil unit as the lithic material; between 10 and 21 cmbs within the burned earth-charcoal layer. Test pit 2 contained 11 waste flakes produced from material of obsidian, chert, and basalt. All of the artifacts were located within a yellow-brown tephra layer 3 to 10 cmbs. Faunal remains consisted of burned bone fragments located in association with the lithic material in this same tephra layer. Test pit 3 contained 23 lithic artifacts; 21 are waste flakes produced from chert with one of jasper. All of the artifacts were located within a yellow-brown tephra layer between 10-18 cmbs. One retouched gray chert flake (UA81-215-42) was located in the unit described above. Faunal remains consisted of ca. 100 burned bone fragments located in association with the lithic artifacts in this same tephra layer.

Collected Artifact Inventory

Test pit 1, 0-18 cmbs:

31 Gray-black chert flakes
1 Red jasper flake

10 cmbs:

1 Black obsidian utilized flake

11 cmbs:

1 Gray rhyolite biface fragment

10-15 cmbs:

183 Gray-black chert flakes
46 Gray rhyolite flakes
4 White quartzite flakes
2 Red jasper flakes
1 Black obsidian flake

12-15 cmbs:

267 Gray rhyolite flakes
38 Black basalt flakes
14 Red jasper flakes
5 Black chert flakes
4 White quartzite flakes
2 White rhyolite flakes

13-15 cmbs:

5 Fire cracked rocks

15-18 cmbs:

93 Gray-black chert flakes
15 Gray rhyolite flakes
3 White quartzite flakes
2 Red jasper flakes
1 Obsidian flake

16 cmbs:

1 Black obsidian utilized flake

Test pit 2, 3 cmbs:

1 Olive green chert flake

3-10 cmbs:

7 Gray-black basalt flakes
2 Gray chert flakes
1 Black obsidian flake

Test pit 3, 10-18 cmbs:

18 Gray-black chert flakes
2 Brown chert flakes
1 Gray utilized chert flake
1 Red jasper flake
1 White chert flake

Collected Faunal Material Inventory

Test pit 1, 0-18 cmbs:

700+ Long bone fragments, calcined, medium-large mammal

12-15 cmbs:

500+ Long bone fragments, calcined, medium-large mammal

15-18 cmbs in screen:

200+ Long bone fragments, calcined, medium-large mammal

Test pit 2, 3-10 cmbs:

59 Long bone fragments, calcined, medium-large mammal

Test pit 3, 10-18 cmbs:

80 Long bone fragments, calcined, medium-large mammal

(xxv) AHRS Number TLM 074, Accession Number UA81-228

Area: ca. 4.6 km Northeast of Oshetna River Mouth, Survey Locale 107
Area Map: Figure 162; Survey Locale Map: Figure 272
USGS Map: Talkeetna Mts. C-1, Scale 1:63,360

Site Location: UTM Zone 6 Easting 484890 Northing 6947250

Latitude 62°39'25' N., Longitude 147°17'48" W.

T. 30 N., R. 11 E., Seward Meridian
Sec. 25, NE¼SE¼SE¼

Site Map: Figure 70

Setting: The site is located on the rim of the southern upland terrace overlooking the Susitna River on a bend in the river 4.6 km northeast of the mouth of the Oshetna River (Figure 162). The gently sloping terrace edge, dissected into a string of shallow lobes is ca. 700 m asl in elevation (2300 feet). Directly and steeply downslope 50 m to the north lies the Susitna River, at 152 m asl (2180 feet) elevation. south of the site is an undulating plain consisting of small hills, ridges, and depressions. One such depression (300 m to the southwest) contains a shallow pond. The small hills and ridges rise about 2-15 m above the depressions. A low ridge running parallel to the Susitna River 10 m south of the site is 2 m higher than the site, cutting off the view of the southern plain (Figure 272). From this ridge site TLM 076 is visible ca. 500-600 m to the southwest. The site location affords a broad panorama of the Susitna River to the north, east, and west. The site is vegetated by a sparse shrub layer surrounding extensive natural exposures, and a few scattered spruce on the rise south of the site.

Reconnaissance Testing: The site contains one large quartzite cortex-backed flake, found at 10-18 cmbs in a brown tephra unit in test pit 1 and a concentration of charcoal in test pit 2 which may represent a firepit (Figure 70). A charcoal sample (UA81-228-2) was collected from test pit 2 at a depth of ca. 10 cmbs. The charcoal is concentrated in the western half from 8-23 cmbs in depth. It may have been a shrub which burned underground. The flake in test pit 1 was associated with a brown tephra, which occurs stratigraphically below a light gray tephra and above a brown sand. Seven shovel tests were placed in the area, with negative results. No surface artifacts were found.

Collected Artifact Inventory

1 Quartzite cortex flake

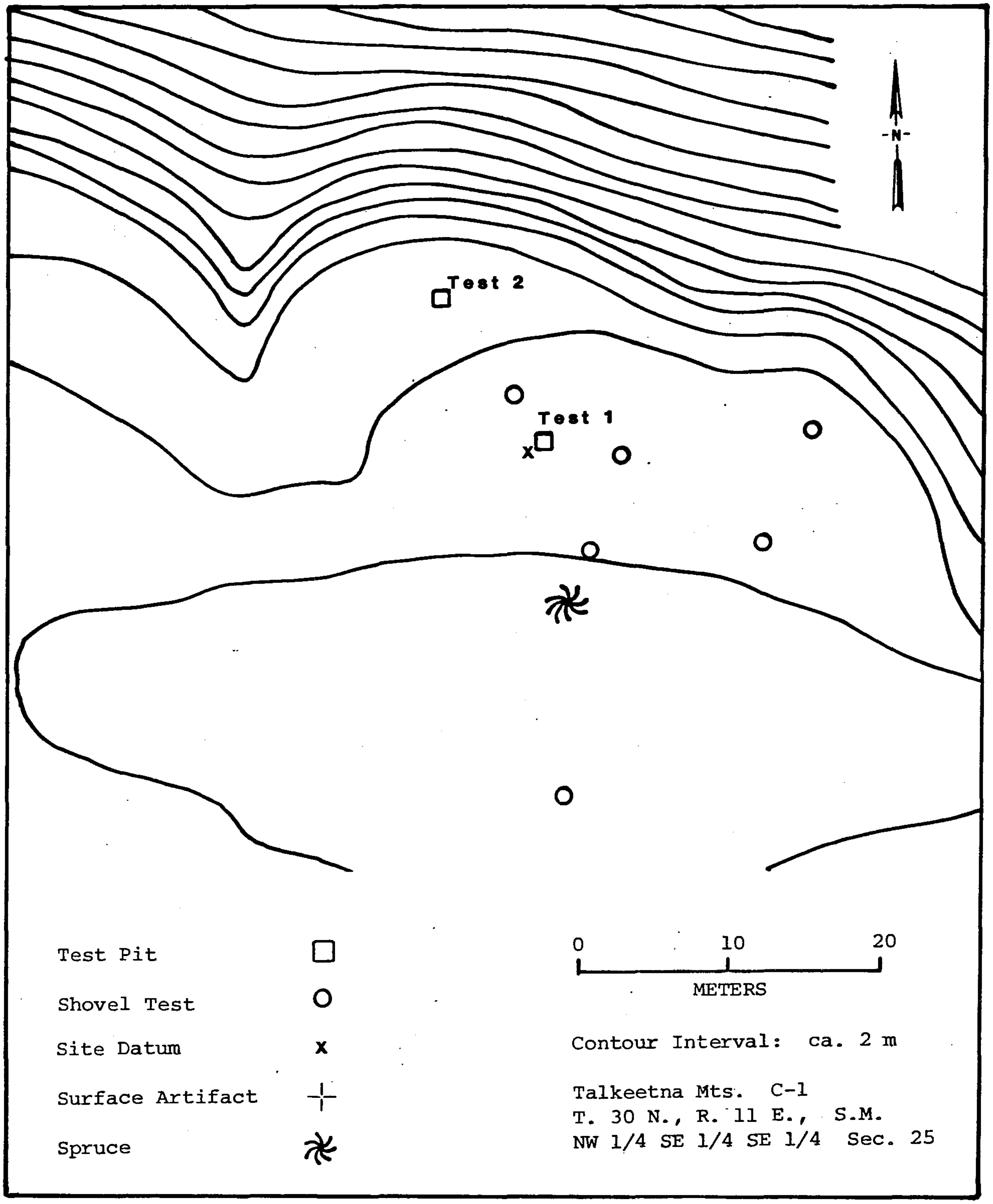


Figure 70. Site Map TLM 074.

(xxvi) AHRS Number TLM 076, Accession Number UA81-232

Area: 4.5 km Northeast of Oshetna River Mouth, Survey Locale 107
Area Map: Figure 162; Survey Locale Map: Figure 272
USGS Map: Talkeetna Mts. C-1, Scale 1:63,360

Site Location: UTM Zone 6 Easting 484500 Northing 6947000

Latitude 62°39'25" N., Longitude 147°18'15" W.

T. 30 N., R. 11 E., Seward Meridian
Sec. 25, SE¼SW¼SE¼

Site Map: Locus A: Figure 71
Locus B: Figure 72
Locus C: Figure 73

Setting: The site, consisting of three loci, is located on the south side of the Susitna 4.5 km east-northeast of the confluence of the Oshetna River and the Susitna River (Figure 162). Located at an elevation of approximately 710 m asl (2325 feet), the loci are all situated on kame knolls higher than surrounding terrain. None of these knolls directly overlook the Susitna although access to it is relatively easy and none are farther than 400 m from the river. Low lying marshy areas and standing water occur in the site area and a major drainage in the area borders the western side of the site. All knolls are visible from one another.

Locus A: Locus A is located on a discrete knoll south of the Susitna that may be ascended from all sides (Figure 272). The top of the knoll is level, about 4 m in diameter, and is about 4 m above the surrounding terrain. A small, marshy pond, about 1 hectare in area, lies 80 m east-southeast of the knoll top. The view from locus A is unobstructed to the east, north, and west, sections of the Susitna being visible in the valley below. Elevation increases gradually to the south and the visibility is limited to about 700 m. Loci B and C are visible to the southwest. Vegetation at locus A is composed of scattered white spruce and lowbush berries in addition to thin moss and lichen. The vegetation below and around locus A is predominantely marshy with mixed shrub growth and grasses.

Locus B: Locus B is ca. 200 m south-southwest of locus A (150 m south of locus C) and is located on the northern extent of a knoll overlooking the predominate drainage in the area, to the west (Figure 272). Visibility from locus B is greatest to the west, overlooking the drainage and the Susitna (300 m to the northwest). Views to the north, east, and south are limted by knolls in the site area and increasing elevation of land to the south. Locus B is ca. 12 m higher than the marshy lowlands between the three loci. Some scattered spruce occurs in the area. Ground vegetation at locus B is dominated by low bush berries and grasses in addition to mosses and lichen growth.

Locus C: Locus C is ca. 150 m southeast of locus A, 150 m north of locus B, and is located on a knoll top overlooking the drainage to the west and the Susitna River to the west-northwest, about 250 m distant (Figure 272). The visibility from locus C is similar to that of locus B, being greatest to the west and north overlooking the predominate drainage and the Susitna River Valley and uplands beyond. Views to the east and south are limited by knolls in the site area and rising elevation of land to the south. Locus C is approximately 10 m higher than the lower area between the three loci. Vegetation at locus C is similar to that of locus B; low bush berries and grasses predominately, mosses and lichens occuring in more exposed areas. Dwarf birch occurs sporadically in the area.

Reconnaissance Testing: Locus A consists of a lithic scatter and a partially exposed hearth (Figure 71). The hearth contains charcoal, burned bone fragments and fire cracked rock. An obsidian flake (UA81-232-1) was found on the surface .5 m north of the hearth. Four chert flakes were found in a deflated blowout 12 m southwest of datum. Two test pits were excavated at locus A, neither of which contained subsurface cultural material (Figure 71).

Locus B: Locus B consists of an obsidian point fragment (UA81-232-7; Artifact Photo M-a) and a possible flake, both found on the surface (Figure 72). One test pit was excavated at locus B but no cultural material was found below surface (Figure 72).

Locus C: Locus C consists of one basalt flake found on the surface in a blowout depression, 4 m southeast of the locus datum (Figure 73). The one test pit excavated on the knoll top did not provide any cultural material (Figure 73).

Collected Artifact Inventory

Locus A:

1 Obsidian flake
4 Chert flakes

Locus B:

1 Obsidian point fragment
1 Possible flake

Locus C:

1 Basalt flake

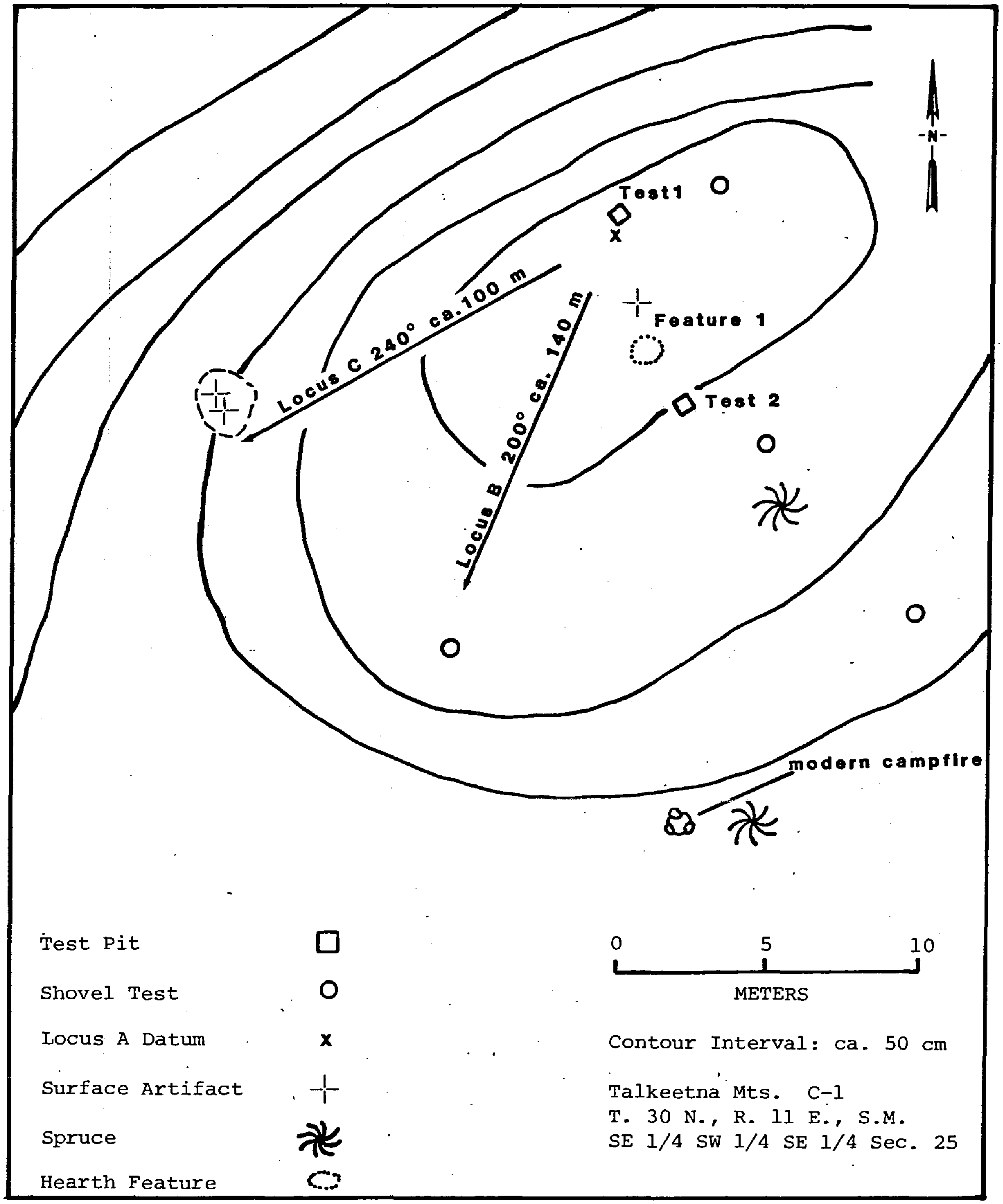


Figure 71. Site Map TLM 076 A.

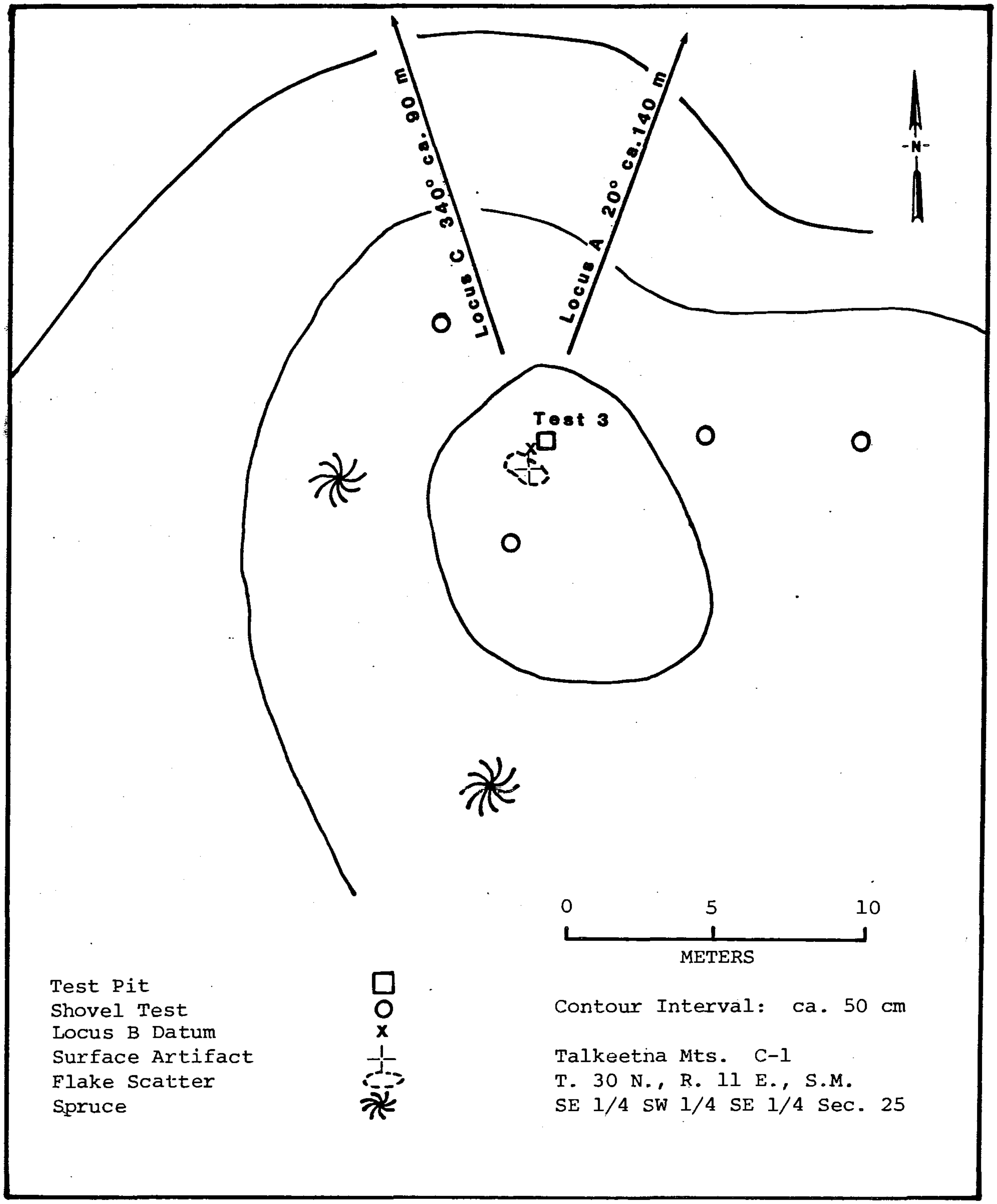


Figure 72. Site Map TLM 076 B.

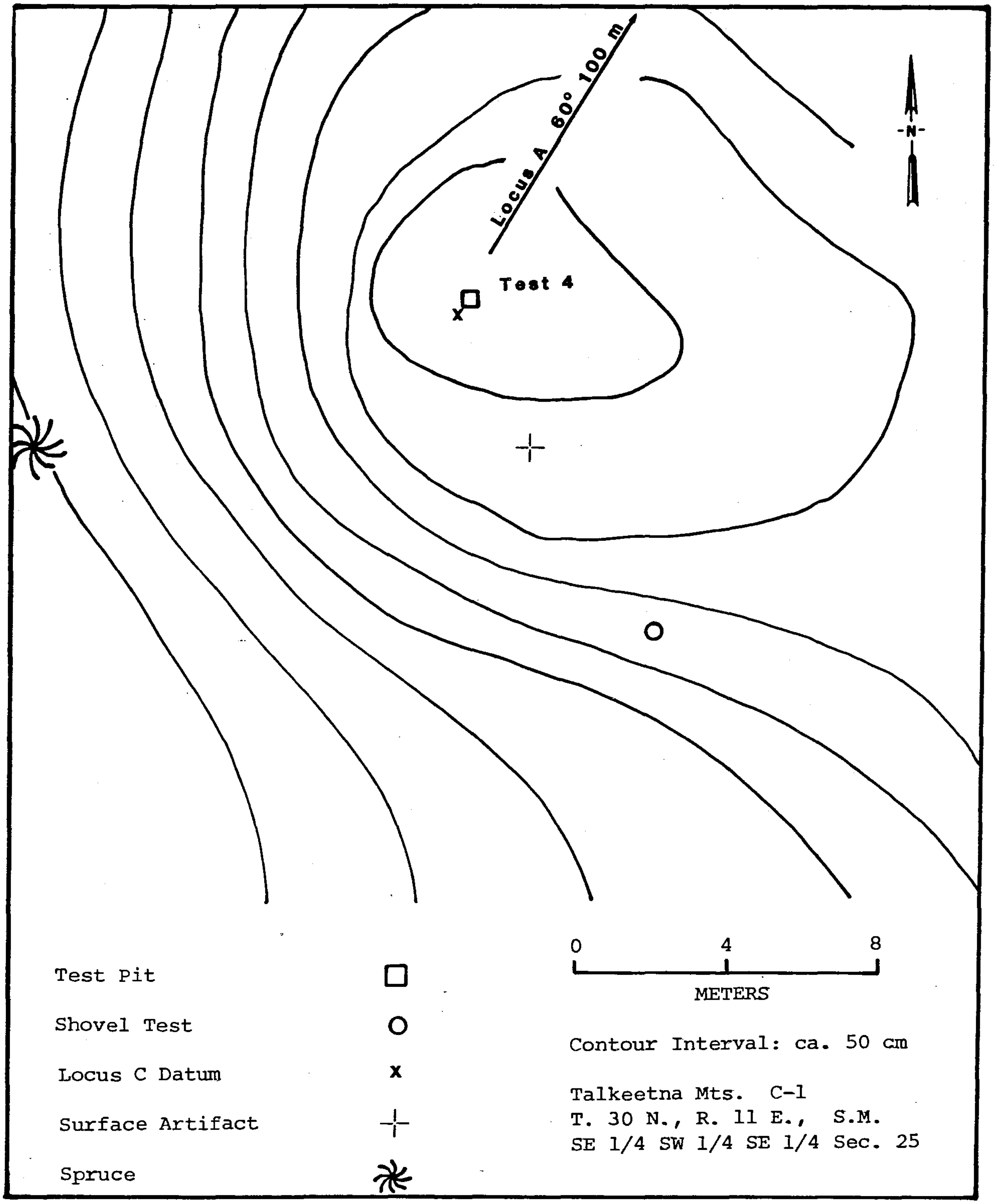


Figure 73. Site Map TLM 076 C.

(xxvii) AHRS Number TLM 078, Accession Number UA81-235

Area: ca. 6 km North of Tsusena Butte, Proposed Borrow C
Area Map: Figure 157; Location Map: Figure 280
USGS Map: Talkeetna Mts. D4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 421700 Northing 6985300

Latitude 62°59'25" N., Longitude 148°32'50" W.

T. 22 S., R. 5 W., Fairbanks Meridian
Sec. 20, NE¼SW¼SE¼

Site Map: Figure 74

Setting: The site is located on a small kame 8 m above and 40 m east of Tsusena Creek (Figures 157, 280). Situated at 730-760 m asl (2400-2500 feet), the site occurs 18 km north of the confluence of Tsusena Creek with the Susitna River in a valley greatly modified by glacial processes. Numerous eskers, kames and kettle lakes occur on the 300-400 m wide low lying area east of Tsusena Creek with the remainder of the kilometer-wide valley floor west of the creek being a moist level plain. The steep walls of the valley, reaching approximately 1525 m asl (5000 feet), are drained by numerous deeply incised streams. Two of these drainages are visible from the site. One joins Tsusena Creek 800-900 m to the north from the west side of the valley, while the other enters the creek 400-500 m to the south from the east. The kame in which the site is located is roughly circular (20 m north-south by 15 m east-west) and is part of a series of similar landforms surrounding a small pond 35 m to the southeast. The west side of the kame slopes at 15° to the edge of Tsusena Creek while to the east there is undulating ground for 70-80 m before encountering the steep valley walls. A panoramic view is available from the site with the greatest distances being to the north and south along the valley. Vegetation in the vicinity of the site includes dense concentrations of dwarf birch, labrador tea, sphagnum moss, berries, and lichen among open stands of spruce. The wooded section is limited to the valley floor with the vegetation changing rapidly to low shrubs and eventually becoming absent on the bare rock slopes of the steep valley walls to the east and west.

Reconnaissance Testing: This site was identified by the finding of a basalt flake (not collected) on the surface of the knoll (Figure 74). Additional lithic material was found in the two subsurface tests made at the site. Test pit 1, located 3 m south of the center of the landform, uncovered a single gray chert flake possibly associated with the humic unit, 8-10 cmbs (Figure 74). Test pit 2, 4 m southwest of Test pit 1, located four black basalt and two gray chert flakes from a highly oxidized dark red-brown silt at a depth of 14-16 cmbs.

Collected Artifact Inventory

3 Gray chert flakes
4 Black basalt flakes

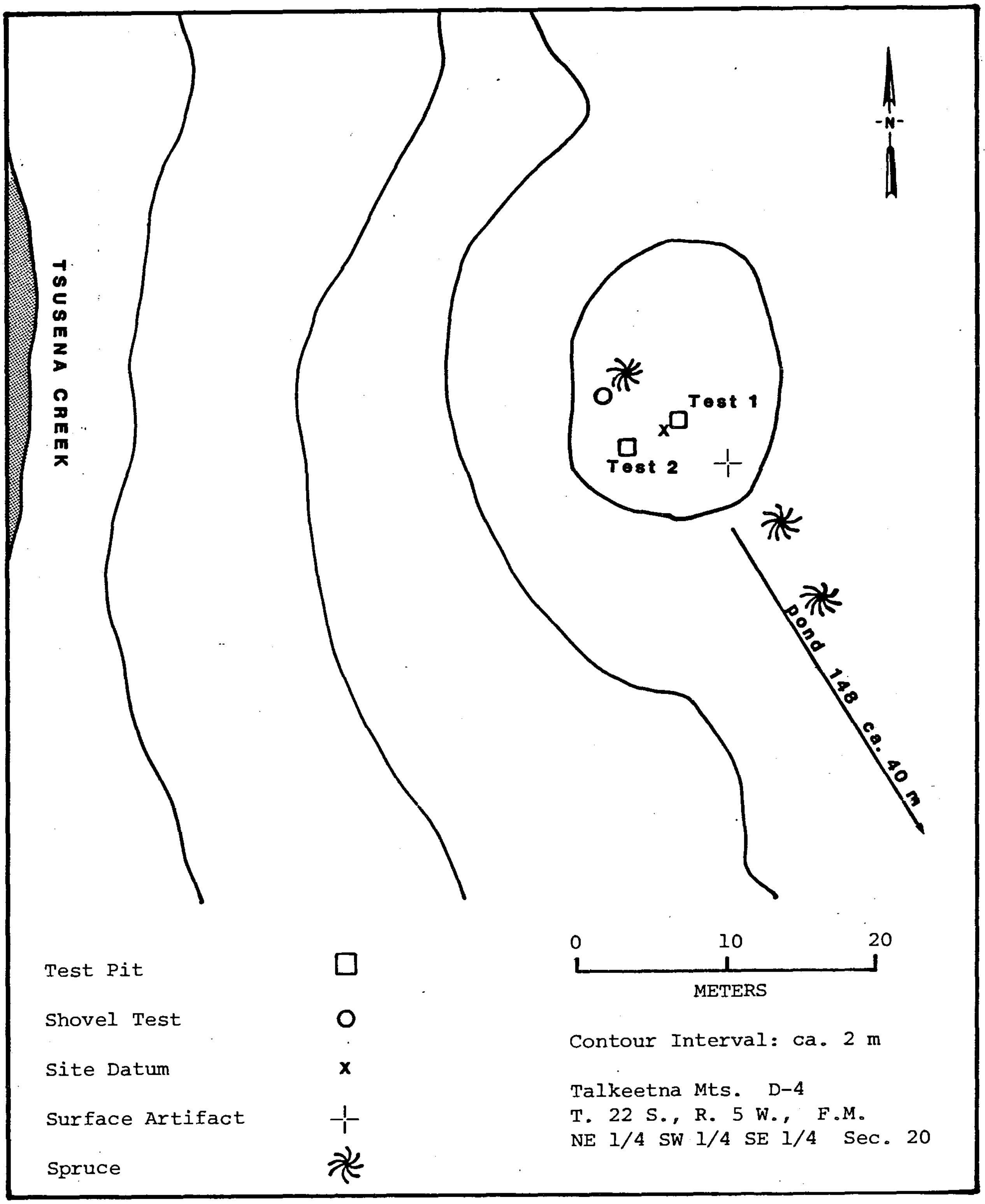


Figure 74. Site Map TLM 078.

(xxviii) AHRS Number TLM 081, Accession Number UA81-244

Area: ca. 90 m Southwest of Tsusena Butte
Area Map: Figure 157; Location Map: Figure 301
USGS Map: Talkeetna Mts. D4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 421550 Northing 6980550

Latitude 62°56'58" N., Longitude 148°32'55" W.

T. 33 N., R. 5 E., Seward Meridian
Sec. 17, SE¼NW¼SE¼

Site Map: Figure 75

Setting: This site is located on a kame both 50 m south and 90 m southeast of Tsusena Creek as it bends from westward to southward around the northern base of Tsusena Butte (Figures 157, 301). The 7 m diameter kame is 5 m higher than the level of the creek at an elevation of 730 m asl (2400 feet). Situated in the 70 m wide band of kames and eskers bordering the east side of Tsusena Creek, the site is neither at an extreme in topographic relief nor on an unusual feature in the region. The kame on which the site occurs is between two eskers oriented east-southeast--west-northwest; one bordering Tsusena Creek to the north and about 2 m lower than the site and another esker occurring southeast, which is 3 m above the level of the site. From its protected setting, the site commands an unobstructed view northward of the large, open floodplain which parallels the west side of the creek and the eastern slopes of the mountains to the west. The vegetation on the site is predominantly dwarf birch around an open lichen mat. Spruce occur infrequently on the well-drained surfaces of the kames and eskers as well as at the base of Tsusena Butte and the surrounding mountains.

Reconnaissance Testing: An initial shovel test near the center of the kame (Figure 75) unearthed two brown rhyolite flakes. Upon expanding this test into the standard 40 x 40 cm test square, an additional thirty flakes of the same material were recovered. The flakes appear to be coming from a 17 cm thick zone of mixed tephras in the thin soil between the organic mat and glacial drift.

Collected Artifact Inventory

32 Brown rhyolite flakes

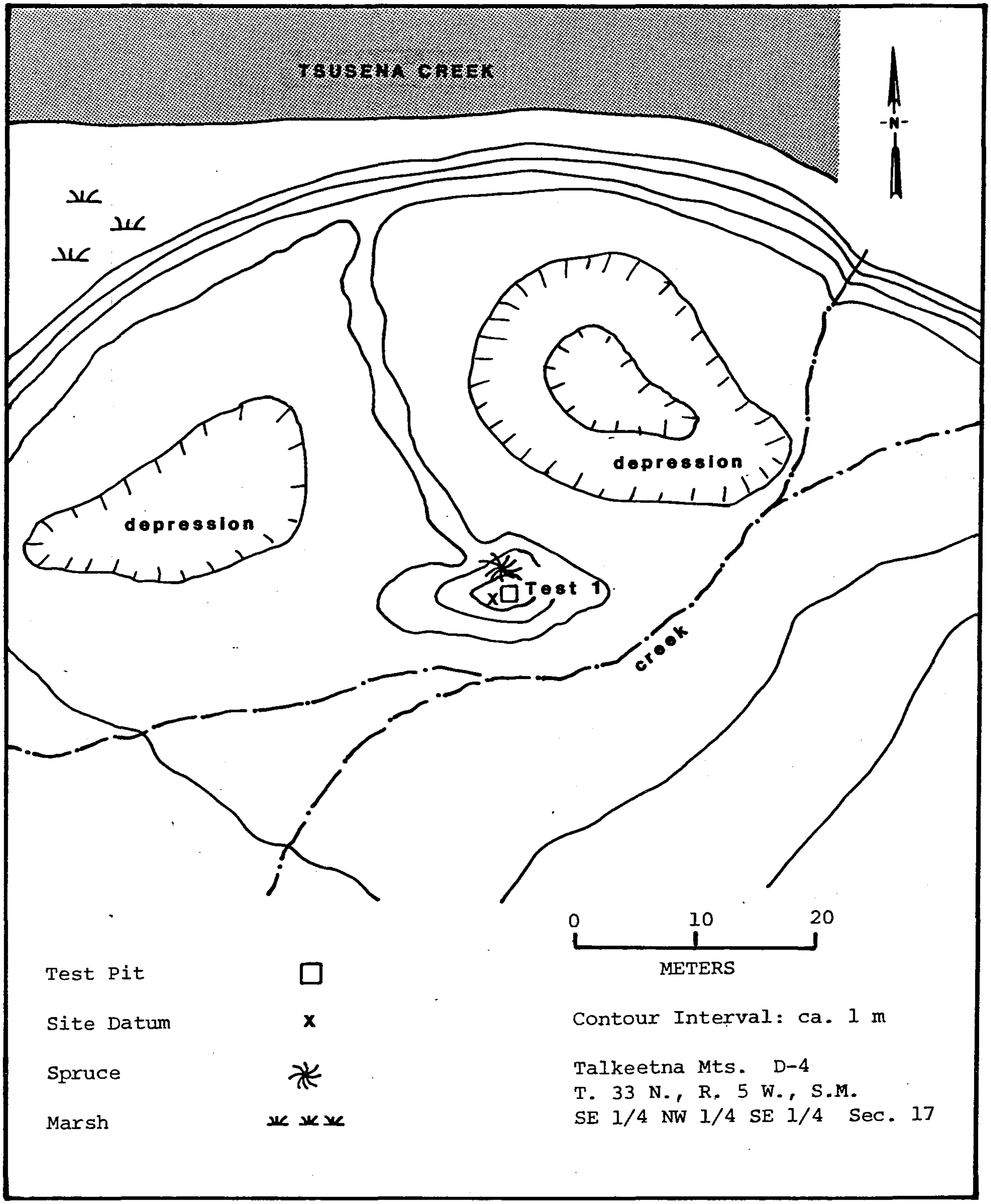


Figure 75. Site Map TLM 081.

(xxix) AHRS Number TLM 083, Accession Number UA81-237

Area: ca. 8 km North of Tsusena Butte, Proposed Borrow C
Area Map: Figure 157; Location Map: Figure 280
USGS Map: Talkeetna Mts. D4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 421600 Northing 6985900

Latitude 62°59'47" N., Longitude 148°32'55" W.

T. 22 S., R. 5 W., Fairbanks Meridian
Sec. 20, SW¼SW¼NE¼

Site Map: Figure 76

Setting: The site is situated on a kame approximately 40 m east of Tsusena Creek and 8 km north of Tsusena Butte (Figures 157, 280). To the north and northeast 50 m distant are two similar knolls which are 7 m and 12 m higher, respectively. A west fork of Tsusena Creek joins the main channel 100 m to the northwest before passing 7 m below the site on the stream's southward course to the Susitna River. The kame, oriented north-south and paralleling the present Tsusena Creek channel, is 21 m long and 7 m wide. The upper level region of the knoll is 11 m by 7 m. The site is located on a feature of sufficient relative relief to afford a panoramic view of the surrounding region. Unimpaired by the lichen mat on top of the kame and the dwarf birch, willow, and berries on the slopes, an extensive view is available of Tsusena Creek and adjacent open floodplains in the kilometer wide valley floor. East of the site, the terrain rises gently (5-10°) for 70 m before reaching the steeper (15-30°) slopes of the valley walls which terminate in ca. 1500 m asl mountains. The moist floodplain is more extensive on the west side of Tsusena Creek before reaching the eastern slopes of the mountains opposite the site. Small spruce thickets occur infrequently on the drier landscapes of the kames and lower valley slopes.

Reconnaissance Testing: No surface cultural material was found at the site. A single gray rhyolite flake with retouch was found in the shovel test which was enlarged to become test pit 1 (Figure 76). No exact provenience is available for this specimen. No additional subsurface artifacts were found in a second shovel test located 2 m to the southeast.

Collected Artifact Inventory

1 Gray patinated rhyolite flake

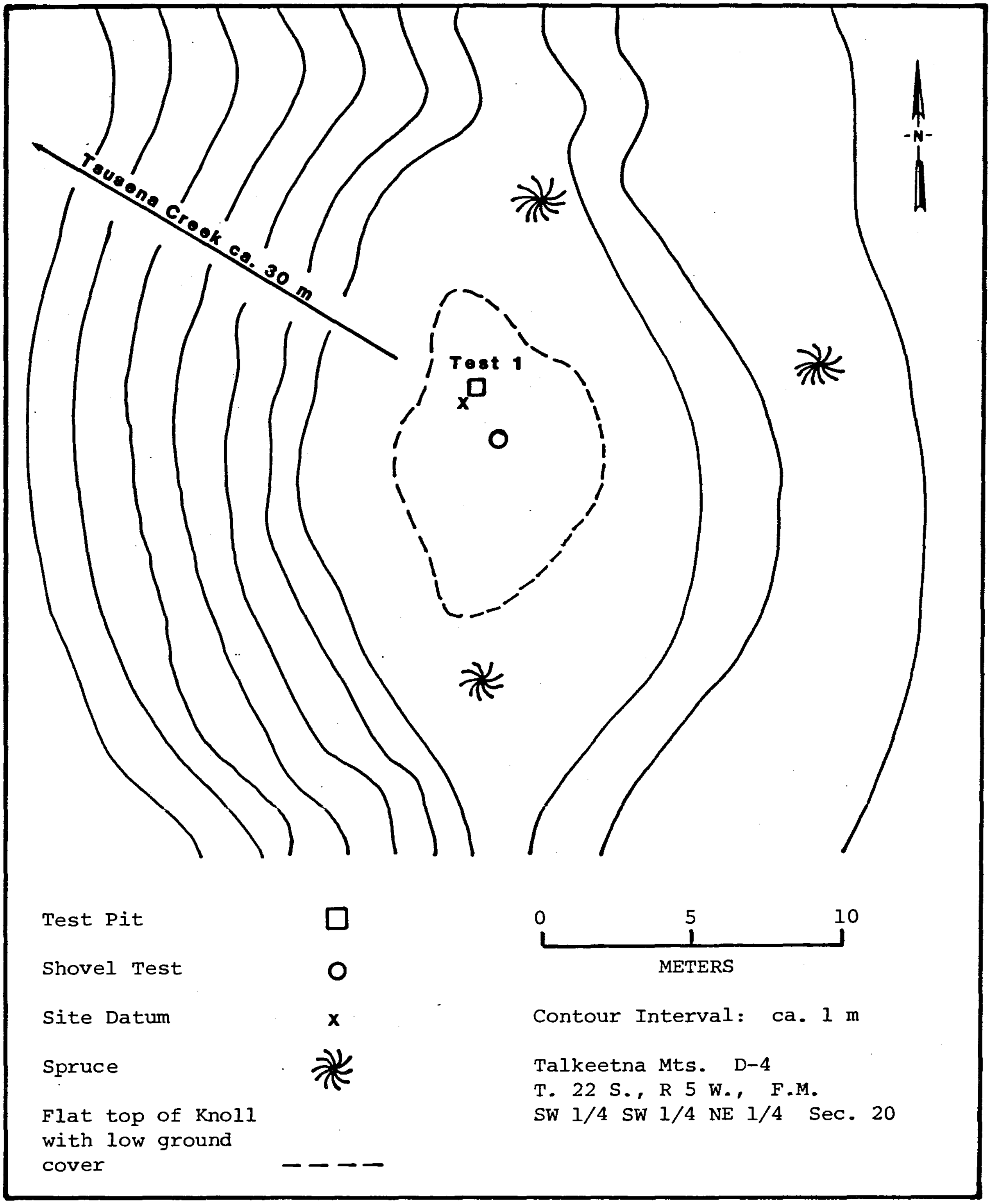


Figure 76. Site Map TLM 083.

(xxx) AHRS Number TLM 084, Accession Number UA81-236

Area: ca. 5.5 km North of Tsusena Butte, Proposed Borrow C
Area Map: Figure 157; Location Map: Figures 278, 279
USGS Map: Talkeetna Mts. D4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 421850 Northing 6983250

Latitude 62°58'20" N., Longitude 148°32'30" W.

T. 22 S., R. 5 W., Fairbanks Meridian
Sec. 32, NW¼NE¼NE¼

Site Map: Figure 77

Setting: The site is situated on top of a kame 100 m east of Tsusena Creek and 5.5 km north of Tsusena Butte (Figures 157, 278, 279). Tsusena Creek, a major clear water tributary of the Susitna River, makes a small eastward bow in its southward course northeast of the site. The east side of the creek is bounded by kettle and kame topography while the west side consists of low lying marsh in the floodplain which dominates the 1 km wide valley. Steep valley walls to the east and west restrict movement to the broad valley floor with series of kames and eskers providing dryer and more well drained terrain along the east side of Tsusena Creek. The site rests on the most northerly tip of a 30 m long by up to 22 m wide, northeast-southwest oriented kame 6 m above the wet floodplain (Figures 278, 279). The site location affords an unobscured view of Tsusena Creek to the north, TLM 085 on an adjacent kame 100 m to the southwest, and the open marsh on the sides of the creek. The surface of the kame is covered with dwarf birch, willow, and a lichen mat with numerous berry species being present. Being 50 m below treeline at an elevation of 730 m asl (2400 feet), spruce trees impair the view to the east and south of neighboring kames and eskers including site TLM 087 150 m to the south-southwest.

Reconnaissance Testing: One hundred eighty black basalt flakes were found 4-7 cmbs at the contact zone between the humas and a light reddish-brown tephra in test pit 1 (Figure 77). No surface cultural material was discovered. Test pit 2, located 8 m southeast, was sterile.

Collected Artifact Inventory

180 Black basalt flakes

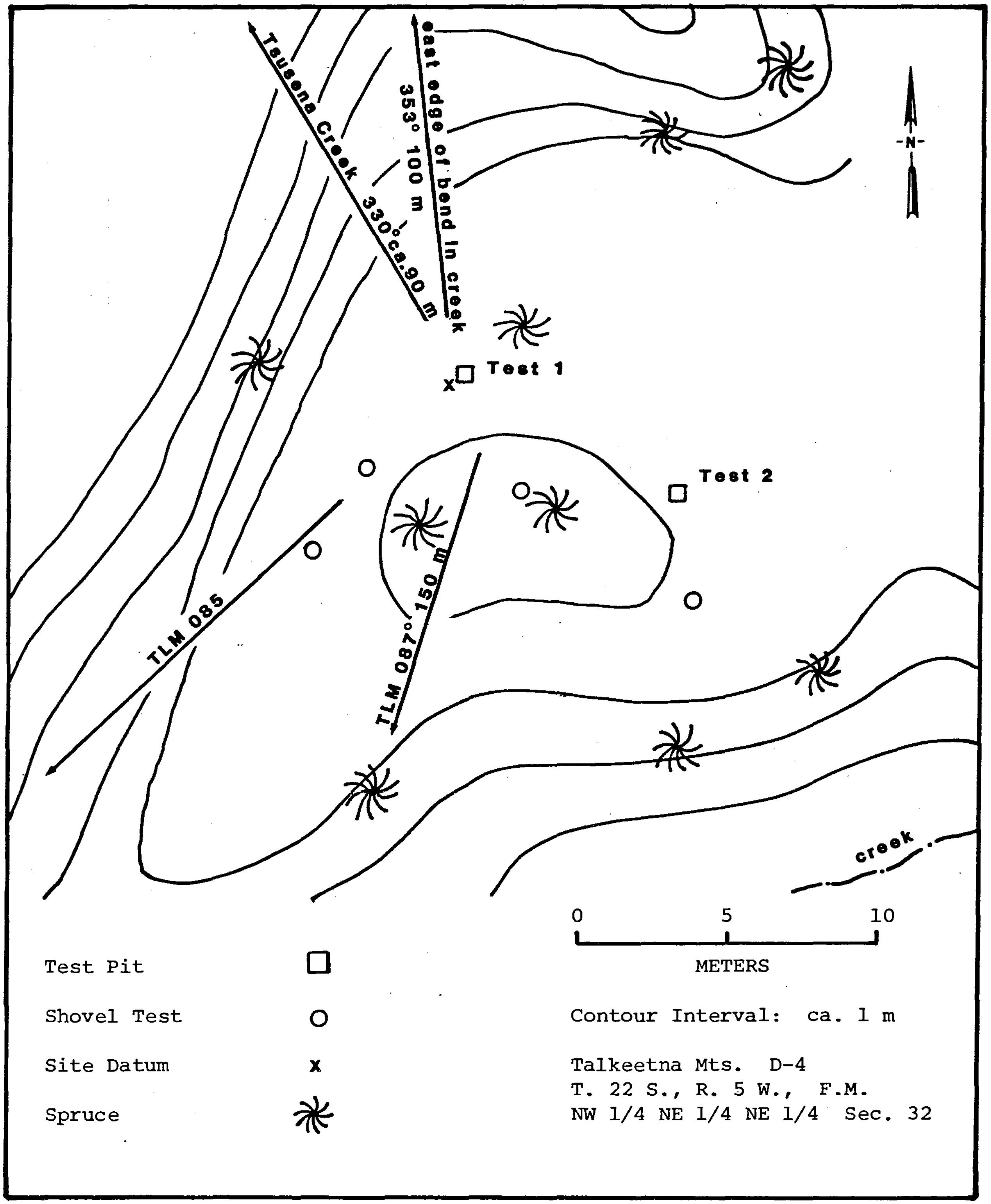


Figure 77. Site Map TLM 084.

(xxxi) AHRS Number TLM 085, Accession Number UA81-240

Area: ca. 3.5 km North of Tsusena Butte, Proposed Borrow C
Area Map: Figure 157; Location Map: Figure 278
USGS Map: Talkeetna Mts. D4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 421800 Northing 6983250

Latitude 62°58'20" N., Longitude 148°32'30" W.

T. 22 S., R. 5 W., Fairbanks Meridian
Sec. 32, NW¼NE¼NE¼

Site Map: Figure 78

Setting: The site is located on a small kame or esker remnant at an elevation of 762 m asl (2500 feet), 150 m east of Tsusena Creek (Figure 157). The 20 m long and 12 m wide kame is oriented north-south, immediately adjacent to a 7 m lower swampy floodplain which borders Tsusena Creek on the east side (Figure 278). East of the site are other kame and eskers which dominate the narrow eastern valley floor. The eastern valley wall is a steep slope with frequent intermittant drainage channels visible on the rocky slopes above treeline. One of the small drainages is located 50 m to the northeast. The site occurs on the southern portion of the kame which is separated from similar land forms on the east and south by low troughs. Being located at a bend in Tsusena Creek, the site commands an extended view of the creek along its course from the north, past the site on the east, and downstream to the south. The presence of spruce trees to the east and south preclude an extended view of the kettle and kame topography in these directions. Other sites in the vicinity on the east side of Tsusena Creek are visible 150 m to the northeast (TLM 084) and 100 m to the south (TLM 087) on similar kame or esker land forms. Low shrub vegetation consisting of dwarf birch, lichen, labrador tea, and an assortment of berries occupies the intervening spaces between the sporadic spruce trees. Lush grasses and sedges occur in the wet regions adjacent to the creek and the moister troughs in the undulating landscape.

Reconnaissance Testing: No cultural material was observed on the surface of the kame. Test pit 1, located in the south half of the land form 50 m below the highest point, revealed 69 gray-black chert or chalcedony flakes from a depth of 2-11 cmbs (Figure 78). The cultural material was found in a zone of gray to light brown tephra immediately above the red-orange glacial drift. Considerable mixing may be occurring in the less than 10 cm deep soil at the site. Test pit 2 and two initial shovel tests did not reveal additional subsurface material north of test pit 1.

Collected Artifact Inventory

69 Gray-black chert or chalcedony flakes

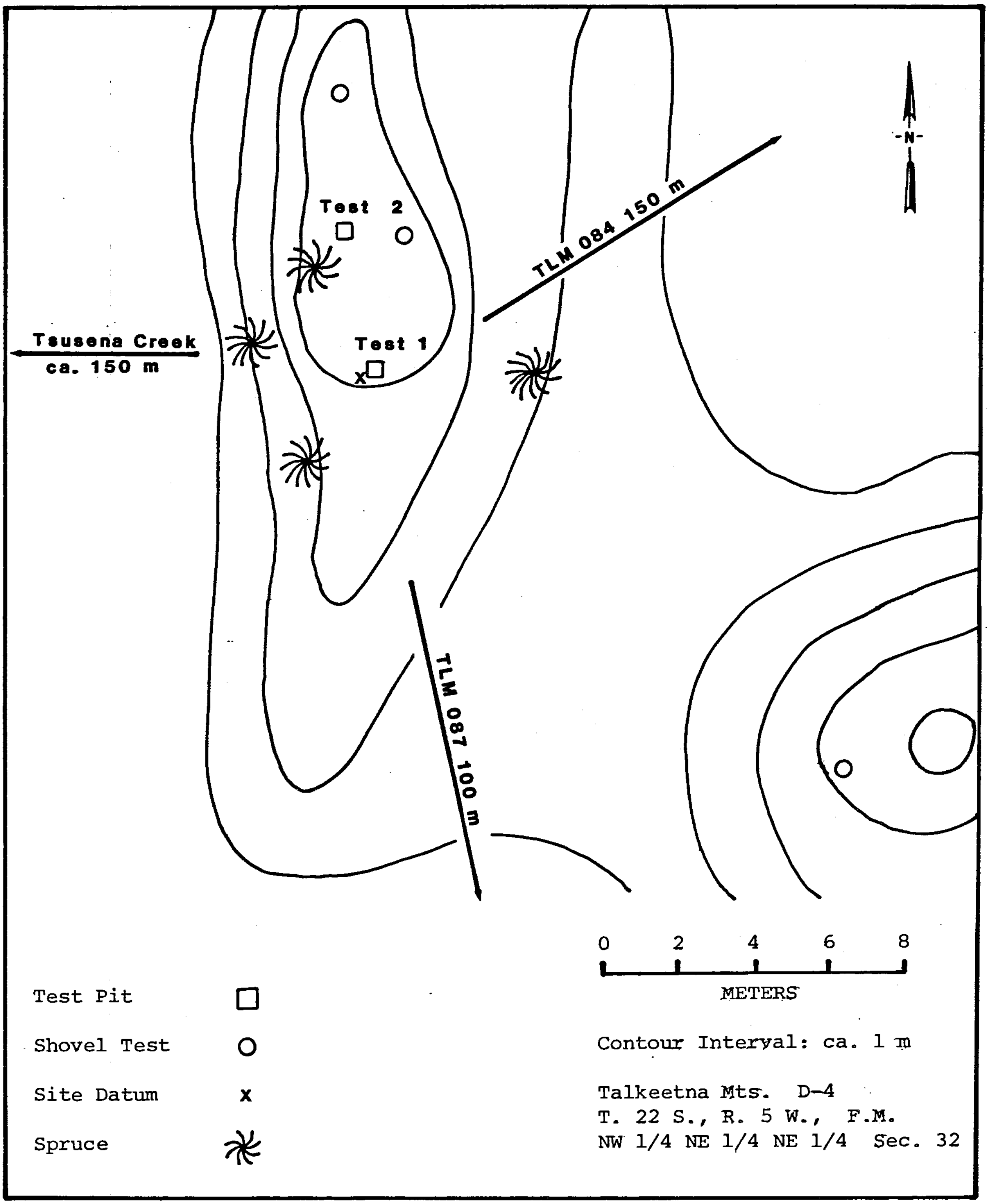


Figure 78. Site Map TLM 085.

(xxxii) AHRS Number TLM 086, Accession Number UA81-241

Area: ca. 2 km North of Tsusena Butte, Proposed Borrow C
Area Map: Figure 157; Location Map: Figure 277
USGS Map: Talkeetna Mts. D4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 421850 Northing 6981550

Latitude 62°57'30" N., Longitude 148°32'30" W.

T. 33 N., R. 5 E., Seward Meridian
Sec. 17, NW¼NE¼NE¼

Site Map: Figure 79

Setting: The site is located on the top of a small kame which is 15 m above the level of Tsusena Creek 200 m to the west and immediately north of one of its clear water tributaries (Figures 157, 277). The kame is part of the kettle and kame topography which forms a 300 m wide strip from the prominent northwest ridge of Tsusena Butte north for approximately 6 km between Tsusena Creek and the steep slopes of the east valley wall. The top of the kame is roughly oval in shape being 6 m by 12 m, with the principal axis being northeast-southwest. The sides of the feature are steep (ca. 30°) to the west facing Tsusena Creek, to the south onto the stream, and on the east side into a trough between an adjacent kame. The north side of the kame drops gently for 2 m onto an esker which continues north-northwest for approximately 750 m, forming the western border of two small kettle lakes 90 m in the distance. Spruce trees and the undulating topography to the east restricts the view from the site to the length of the esker to the north, the broad, open marsh which borders both sides of Tsusena Creek, and southward onto the stream draining the mountains to the east. The view of the other site in the immediate vicinity (TLM 054), located on a kame 150 m east-northeast and north of the same stream which passes TLM 086, is obscured by the intervening vegetation. The general vegetation in the region consists of scattered spruce on the well-drained tops and sides of the kames and eskers, interspersed with dwarf birch and willow. Lichens, Labrador tea, and a number of berry species comprise the surface cover. Sedges, grasses, and wet-adapted low brush occupy the moist regions along the streams and in the troughs between the kames and eskers.

Reconnaissance Testing: The single black chert flake from the site was found in a surface exposure on the south slope of the kame. Subsurface testing in the vicinity (test pit 1) did not reveal additional cultural material (Figure 79). Similar negative results were obtained from a shovel test 3 m to the north.

Collected Artifact Inventory

1 Black chert flake

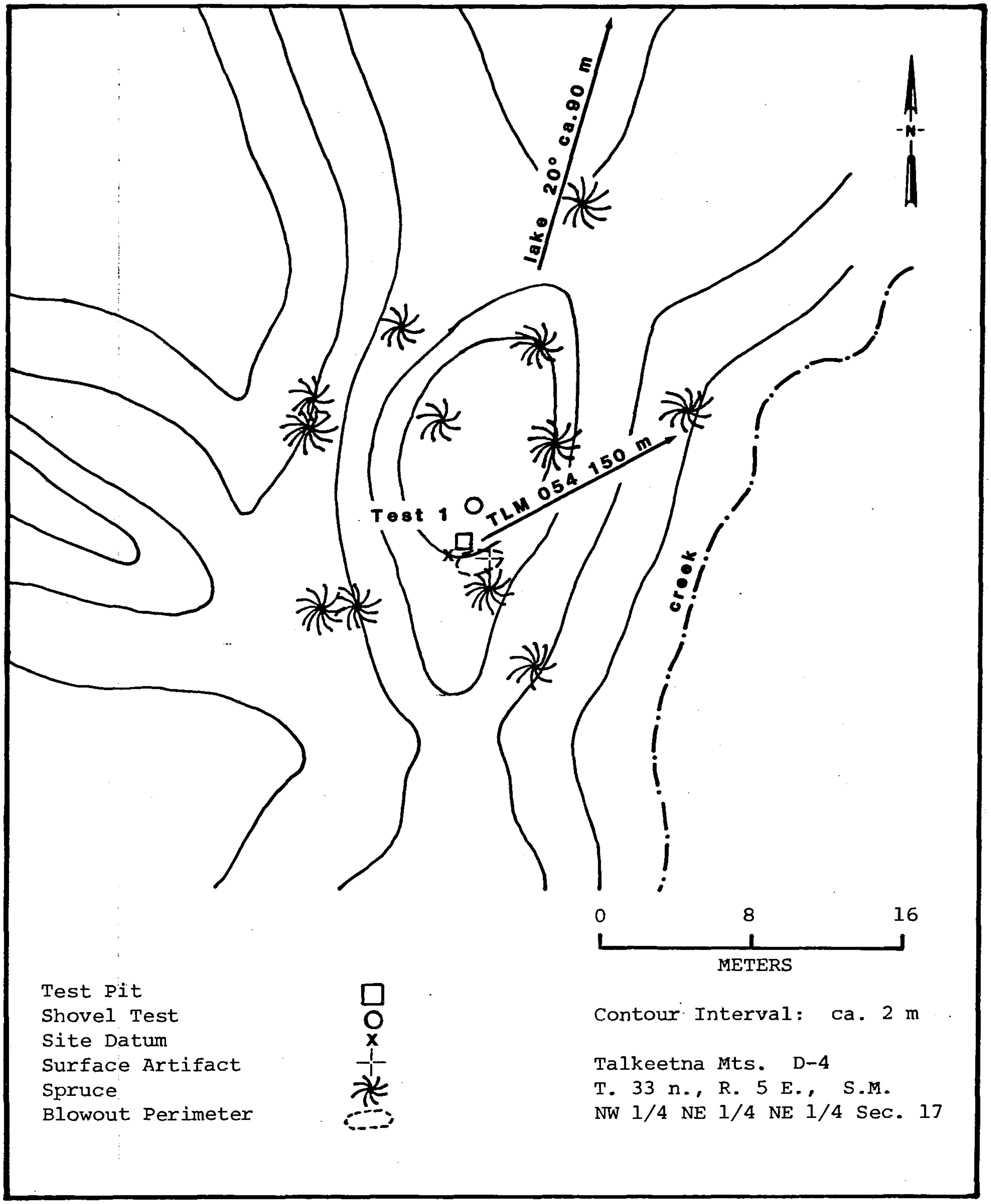


Figure 79. Site Map TLM 086.

(xxxiii) AHRS Number TLM 087, Accession Number UA81-242

Area: ca. 5.5 km North of Tsusena Butte, Proposed Borrow C
Area Map: Figure 157; Location Map: Figure 278
USGS Map: Talkeetna Mts. D4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 421800 Northing 6983150

Latitude 62°57'20" N., Longitude 148°32'30" W.

T. 22 S., R. 5 W., Fairbanks Meridian
Sec. 32, NW¼NE¼NE¼

Site Map: Figure 80

Setting: The site is located on the south half of a northeast-southwest oriented kame in the kettle and kame topography which borders Tsusena Creek 5.5 km north of Tsusena Butte. Sites TLM 087, TLM 084 (150 m to the north-northeast), TLM 085 (100 m to the north-northwest) form a tight cluster of archeological sites 70-100 m east of an eastward bend in Tsusena Creek (Figures 157, 278). Located 10-15 m above the level of the creek, the 6 m by 10 m top of the kame is of sufficient relief to provide a kilometer-long view of the southward course of Tsusena Creek and adjacent open marshlands to the west. Although the surface of the site itself consists of only dwarf birch and other low bush vegetation species, the presence of scattered spruce trees on neighboring kames restricts the view of local glacial features in the north, east, and south.

Reconnaissance Testing: No cultural material was found on the surface of the site. Test pit 1 (Figure 80), located at the highest point on the small kame, produced two gray chert flakes. One flake was found out of context while a second similar flake was found in situ in light grayish-brown silt at a depth of 11 cmbs. One additional test was excavated at the site but no other cultural material was revealed.

Collected Artifact Inventory

2 Gray chert flakes

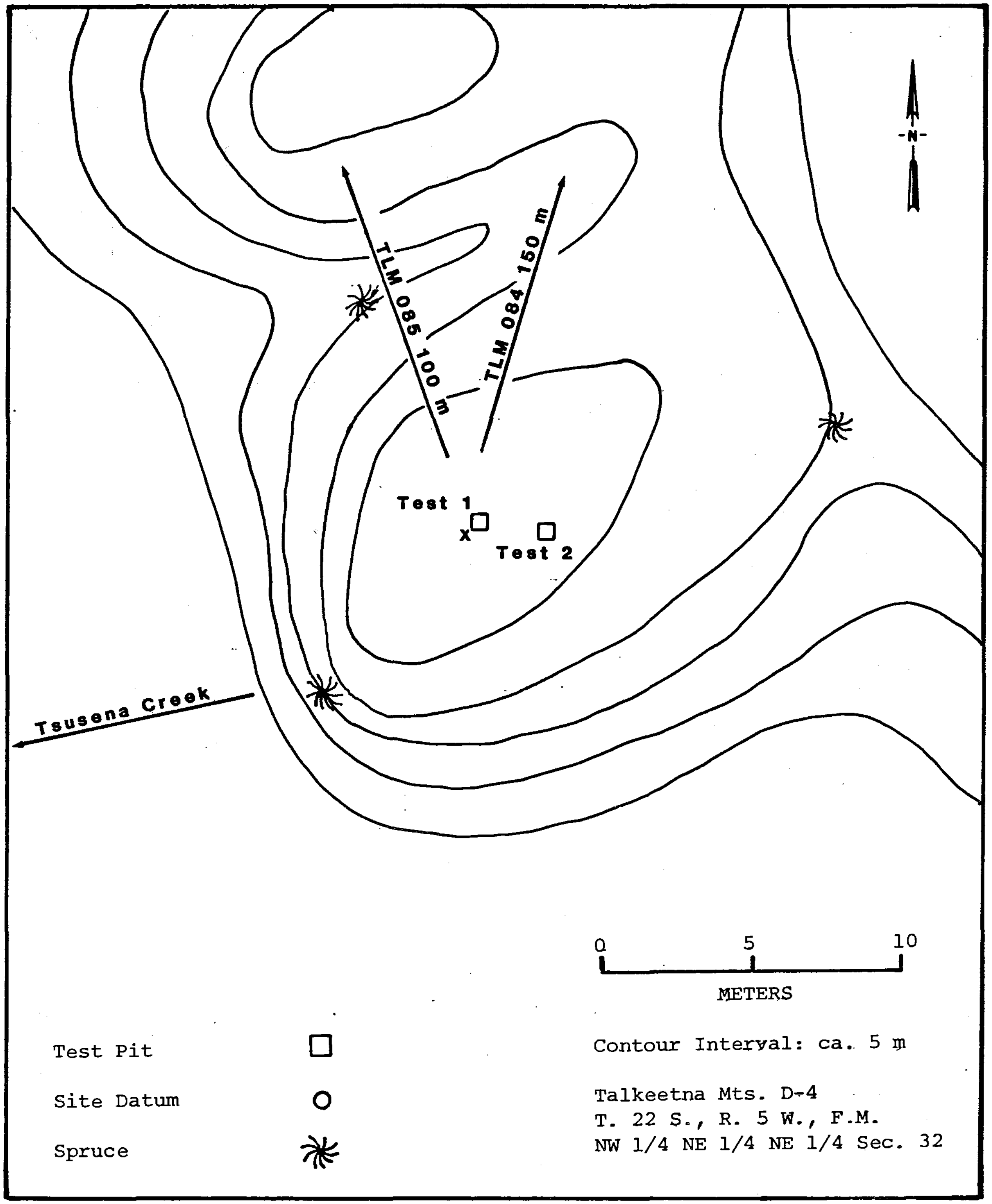


Figure 80. Site Map TLM 087.

(xxxiv) AHRS Number TLM 088, Accession Number UA81-248

Area: North of Tsusena Butte, Proposed Borrow C
Area Map: Figure 157; Location Map: Figure 277
USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 421500 Northing 6980500

Latitude 62°56'50" N., Longitude 148°32'50"

T. 33 N., R. 5 E., Seward Meridian
Sec. 17, NW¼SW¼SE¼

Site Map: Figure 81

Setting: Site TLM 088 is situated on an esker 80 m southeast of Tsusena Creek inside the right angle bend formed by the creek as it travels around the northwest slopes of Tsusena Butte. Tsusena Creek continues on its southward course 100 m west of the site (Figures 157, 277). A series of three east-west oriented eskers is located north and northeast of the site, each with its northwest end truncated by Tsusena Creek. The highest feature in the immediate vicinity is the 2 m higher esker 30 m to the northeast and separated by a 5 m deep trough. The esker on which the site was found is 80 m long, oriented northwest-southeast, tapering from 20 m wide at its northwest terminus 7 m above the level of the creek to only 6 m wide 40 m down its length, eventually merging with the north slope of Tsusena Butte. A 30 m wide, brush covered strip separates the north end of the esker from the creek. This lowlying strip, only 2 m above stream level, is wider on the west side of the esker as Tsusena Creek assumes an oblique path to the southeast. The site occurs in 6 m wide section of the esker 40 m southeast and 50 cm lower than the abrupt northwest terminus. The esker makes a 35° dogleg to the south-southeast in the vicinity of the lichen covered 10 m long by 6 m wide area of the site. Two additional sites are located in the region. TLM 097 is located 250 m west on a bluff being eroded by the opposite side of Tsusena Creek. TLM 081 is located on a low kame 80 m to the north, but is not visible from the site. Being situated far back on the esker, the site affords a primary view to only the lower brush-covered region to the south and west. Vegetation at the site consists of an open lichen mat with labrador tea, clumps of grass, and cranberry bushes. The predominant plant species in the vicinity is dwarf birch with small white spruce beginning to invade the region.

Reconnaissance Testing: TLM 088 consists of a small 15 cm deep depression and subsurface lithics (Figure 81). Feature 1, located 2.2 m southeast of site datum at test pit 1, is a 1 m northwest-southeast by 80 cm northeast-southwest rectangular depression. Given the small size of the depression, an initial 25 cm diameter test in the feature was re-excavated, but not enlarged, to become test pit 2. Although no cultural material was found in test pit 2, the profile indicates considerable subsurface disturbance not reflected in nearby test pit 1 (Figure 81). Test pit 1 revealed 22 black basalt flakes at a depth of 8-15 cm, in the lowest of the three tephras discernable at the site. Feature 1, the depression, represents reuse of the site after the formation of the lithic scatter. No surface lithics were found.

Collected Artifact Inventory

22 Fine grained black basalt flakes

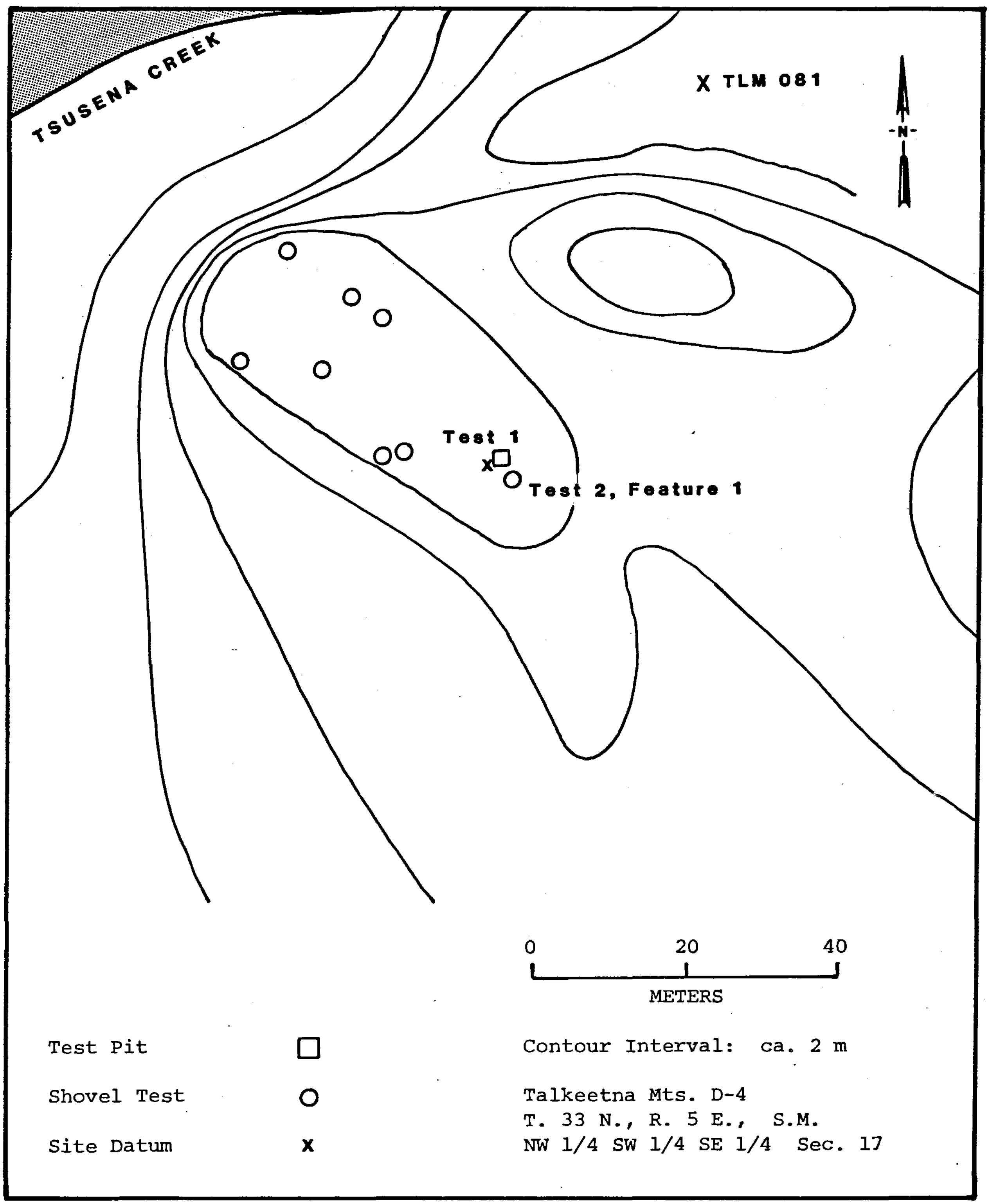


Figure 81. Site Map TLM 088.

(xxxv) AHRS Number TLM 089, Accession Number UA81-247

Area: Tsusena Butte

Area Map: Figure 157; Location Map: Figure 301

USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 422200 Northing 6980750

Latitude 62°57'00" N., Longitude 148°32'00" W.

T. 33 N., R. 5 E., Seward Meridian

Sec. 16, NW¼NW¼SW¼

Site Map: Figure 82

Setting: TLM 089 is situated at approximately 807 m asl (2650 feet) on the northern ridge of Tsusena Butte, a 1314 m high butte which dominates the local landscape (Figures 157, 301). This ridge overlooks a 6 km stretch of the U-shaped valley to the north through which Tsusena Creek flows southward toward the Susitna River. Tsusena Creek is 100 m below the site with its length visible from 3 km north to where it makes a right angle southwards around the base of the butte, adjacent to sites TLM 081, 088 and 097, 800 m to the west-southwest. The major northern ridge crest passes 30 m to the west and is separated from the ridge section with the site by a narrow ravine. The site sits on a ridge segment which is 20 m across at the point where it merges with the main ridge 50 m south of its terminal overhang. This minor ridge tapers from an average width of 15 m to only 5 m across at its abrupt termination 5 m above a 30° slope running down to the kettle and kame topography at the base of the butte. A series of six soil exposures, numbered from north to south, occur next to exposed bedrock on the ridge crest (Figure 301). Each of the exposures contained surface artifacts. From its location on the east side of the northern ridge, the site overlooks a 500 m wide marsh 50 m below with adjacent low rolling terrain at the eastern base of the ridge. The kilometer long marsh drains both into Tsusena Creek in the north and into the north arm of Tsusena Lake, visible 800 m to the southeast. Vegetation at the site consists of lichen, clumps of grass, bearberry, cranberry, and dwarf birch. Low brush with scattered white spruce typifies the lowlying surrounding terrain. Spruce trees are just beginning to colonize at the level of the site.

Reconnaissance Testing: TLM 089 consists of surface artifacts from six soil exposures and abundant faunal and lithic remains from test 1 (Figure 82). The six discrete exposures are nested between bedrock outcroppings, with outer limits of 25 m north-south by 15 m east-west. The exposures range in size from 3 m by 5 m for exposure 1 down to only a 2 m square for exposure 3. Exposure 1, located on the north slope near the termination of the ridge, shows extensive erosion with downslope displacement of artifacts. The exposures contained over a hundred black basalt flakes, the bulk of which were left in situ. A brown speckled, white chert biface fragment (UA81-247-3; Artifact Photo M-c) was located in exposure 3. Other lithologies appearing on the surface are gray and white rhyolites and cherts of white, green, brown and gray colorations. Test pit 1, located between exposures 3 and 4, uncovered a possible hearth containing numerous bone fragments and flakes in and above a thick charcoal unit. The 40 cm square test was reduced to 20 cm by 40 cm at the 15 cm level due to the large quantity of material being recovered. Approximately 4000 bone fragments of various sized mammals were recovered from this test. Most of the bone fragments had dimensions of less than 5 mm although phalange (UA81-247-53) and carpal/tarsal fragments (UA81-247-54) were sufficiently preserved for analysis. Over 500 flakes of basalt and chert were also recovered from the test.

Collected Artifact Inventory

1 Pale red rhyolite flake
1 Reddish-white chert flake
1 Heavily patinated rhyolite flake
1 Brown speckled white chert biface fragment
1 White rhyolite blade-like flake

2 Light green patinated chert flakes
1 Black basalt cortex flake
2 Light brown chert flakes
1 Gray (patinated) rhyolite flake
1 Translucent flake
6 Green-gray chert flakes
10 Dark gray chert flakes
19 Tan-gray chert flakes
36 Black basalt flakes
498 Brown chert flakes

Collected Faunal Material Inventory

Test pit 1, organic mat:

800+ Long bone fragments, calcined, medium-large mammal, 1 with cut marks

4-10 cmbs:

45 Long bone fragments, calcined, medium-large mammal

15-25 cmbs: (charcoal layer)

1 3rd phalanx, calcined, caribou (Rangifer tarandus)
3000+ Long bone fragments, calcined, medium-large mammal
1 Metatarsal-metacarpal fragment, distal portion, possible caribou (Rangifer tarandus)
1 Metacarpal, proximal 1/4, calcined, small-medium mammal
1 Phalanx, proximal 1/2, calcined, small mammal
22 Long bone fragments, calcined, small-medium mammal
4 Tooth fragments, possible caribou (Rangifer tarandus)

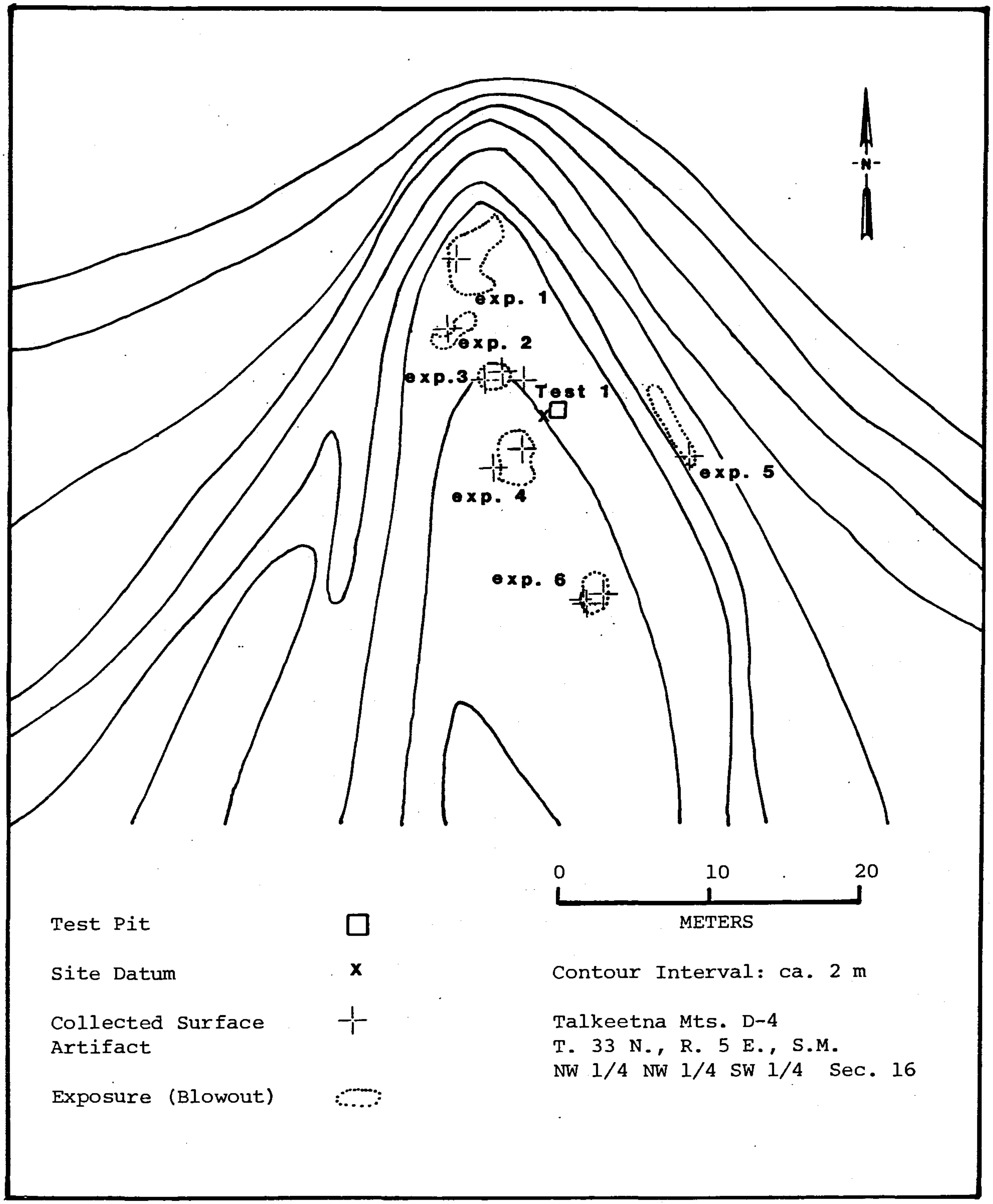


Figure 82. Site Map TLM 089.

(xxxvi) AHRS Number TLM 090, Accession Number UA81-253

Area: Tsusena Butte

Area Map: Figure 157; Location Map: Figure 301

USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 422050 Northing 6980450

Latitude 62°56'50" N., Longitude 148°32'10" W.

T. 33 N., R. 5 E., Seward Meridian

Sec. 17, SE¼NE¼SE¼

Site Map: Figure 83

Setting: The site is located at 853 m asl (2800 feet) on a level bench of the north ridge of Tsusena Butte, a prominnt 1314 m high mountain overlooking the Tsusena Creek and Susitna River valleys (Figures 157, 301). Situated in a soil exposure on the eastern edge of a 20 m wide by 40 m long, level stretch of the ridge, the site offers a vantage of the areas to the north, east, and southeast. A 2 m high rock ridge in the western portion of the bench obstructs the view to the west from the vicinity of the exposure. However, from on top of this ridge, it is possible to follow the course of Tsusena Creek as it bends southward around the northwest base of the butte. Sites TLM 081, 088 and 097 are readily identifiable to the west 600 m away and 130 m below the ridge. Tsusena Creek's adjacent flood plains, and kames and eskers east of the creek are visible for 2 km north of the terminus of the ridge. The northern arm of Tsusena Lake is visible 800 m to the southeast. The dominant view is of the 500 m wide, wet valley bottom 70-80 m below the site situated between the ridge and the 167 m asl (5500 feet) high mountains to the east. The marsh is only 20-30 m higher than the level of Tsusena Lake and appears to drain both into the lake and northwest into Tsusena Creek. The view to the north-northwest includes a small 50 m long eastern extension of the main ridge 40-50 m below. TLM 089 is visible on the north terminus of this minor ridge only 250 m distant.

An unimproved vehicle trail passes between the two sites leading to Tsusena Creek from the hunting camp at the north end of Tsusena Lake. Site TLM 093 is visible on the knolltop just west of the camp. Bearberry, cranberry, crowberry, labrador tea, lichen and scattered clumps of grass cover the ridgetop. Dwarf birch and willow comprise the only vegetation over 30 cm high with the birch being the predominant surface cover on the ridge. Spruce trees are just attempting to colonize the level of the ridge. Alder thickets occur in drainage channels on the slopes. Tussocks of grasses and sedges occupy the marshlands to the east.

Reconnaissance Testing: Five black basalt flakes, one of which was collected, were found on the surface of a small exposure (2.5 m north-south by 1.3 m east-west). Seven shovel tests placed in the vicinity and test pit 1 placed adjacent to the exposure were sterile (Figure 83). A zone of charcoal was found at 12-15 cmbs which could not be related to the cultural material in the exposure.

Collected Artifact Inventory

1 Black basalt flake

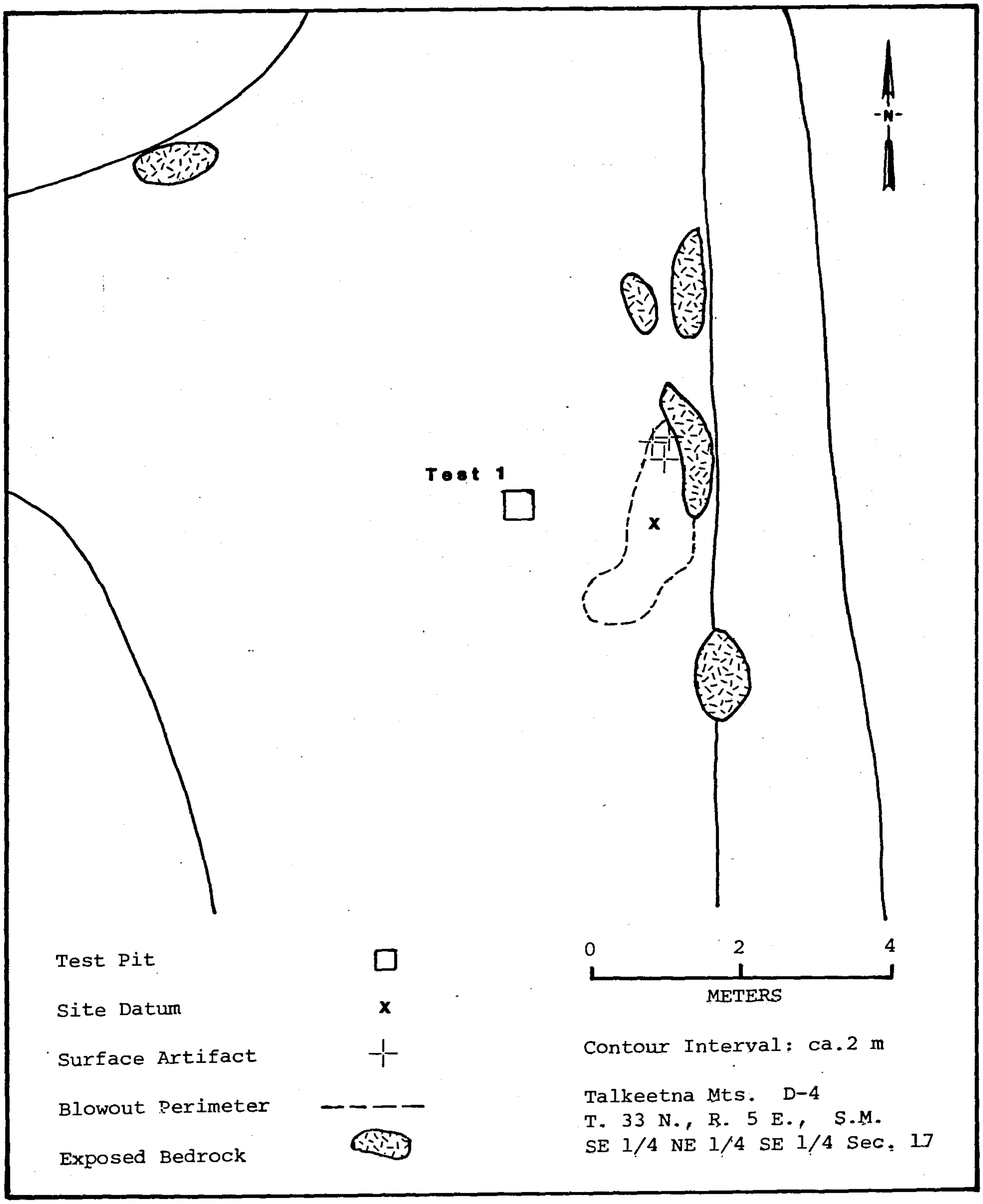


Figure 83. Site Map TLM 090.

(xxxvii) <u>AHRS Number TLM 091, Accession Number UA81-254</u>

Area: Tsusena Butte

Area Map: Figure 157; Location Map: Figure 301

USGS Map: Talkeetna Mts. D4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 421050 Northing 6980100

Latitude 62°56'43" N., Longitude 148°32'7" W.

<u>T. 33 N., R. 5 E., Seward Meridian</u>

Sec. 17, SE¼SE¼SE¼

Site Map: Figure 84

<u>Setting</u>: Site TLM-091 is located on the southern end of a 1 km long north-south trending narrow bedrock ridge, 2.2 km north (350°) of the highest point of Tsusena Butte (Figures 157, 301). The ridge, composed of exposed blocks of granite, slopes gradually but irregularly downwards to the north into Tsusena Creek Valley, and falls off steeply to both the east and west. The site, composed of two loci, is located at ca. 883 m asl (2900 feet) on two sides of a dip separating the high point of the ridge from Tsusena Butte. The two loci, recorded as a single site, occupy two highly different settings in the dip.

Locus A is situated 20 m north of the low point of the saddle, on the eastern edge of the ridge (Figure 84). It is seated on the southern edge of a gently undulating crescent-shaped area 25 m long (northwest-southeast) by 17 m wide (northeast-southwest), which is separated from surrounding terrain by abrupt sides dropping 3-25 m in all directions, steepest to the east. The surface of locus A is marked by numerous granite boulders and bedrock exposures, a small number of natural soil exposures, and a fairly continuous but low cover of lichen and dwarf birch.

Locus B is located on the opposite side of the saddle, ca. 100 m to the south of locus A (Figure 84). It is situated on a steep (50°) rocky slope, 20 m above the elevation of locus A. The slope rises to the uplands leading to Tsusena Butte to the south and it is composed of talus boulders eroding from a steep bedrock massif. In the vicinity of the locus the talus slope is heavily vegetated with creeping shrubs and lichens.

From the site, the northern part of Tsusena Lake and the swampy area north of it is easily visible. Ranges on both sides of Tsusena Creek Valley are also visible, but terrain to the north and south, and Tsusena Creek Valley to the west, is obscured by higher ground. A small seasonal drainage flows eastward about 200 m east of the site.

Reconnaissance Testing: Locus A consists of ten black basalt flakes located on the surface of a bedrock-soil exposure, in an area about 30 cm square (Figure 84, scatter 1). Three of these were collected. Test pit 1, located 1 m to the south of site datum at scatter 1, contained no cultural material (Figure 84). Locus B consisted of an isolated black basalt point tip (UA81-254-4; Artifact Photo M-d). No further testing was conducted at this locus.

Collected Artifact Inventory

Locus A:

3 Black basalt flakes

Locus B:

1 Black basalt point tip

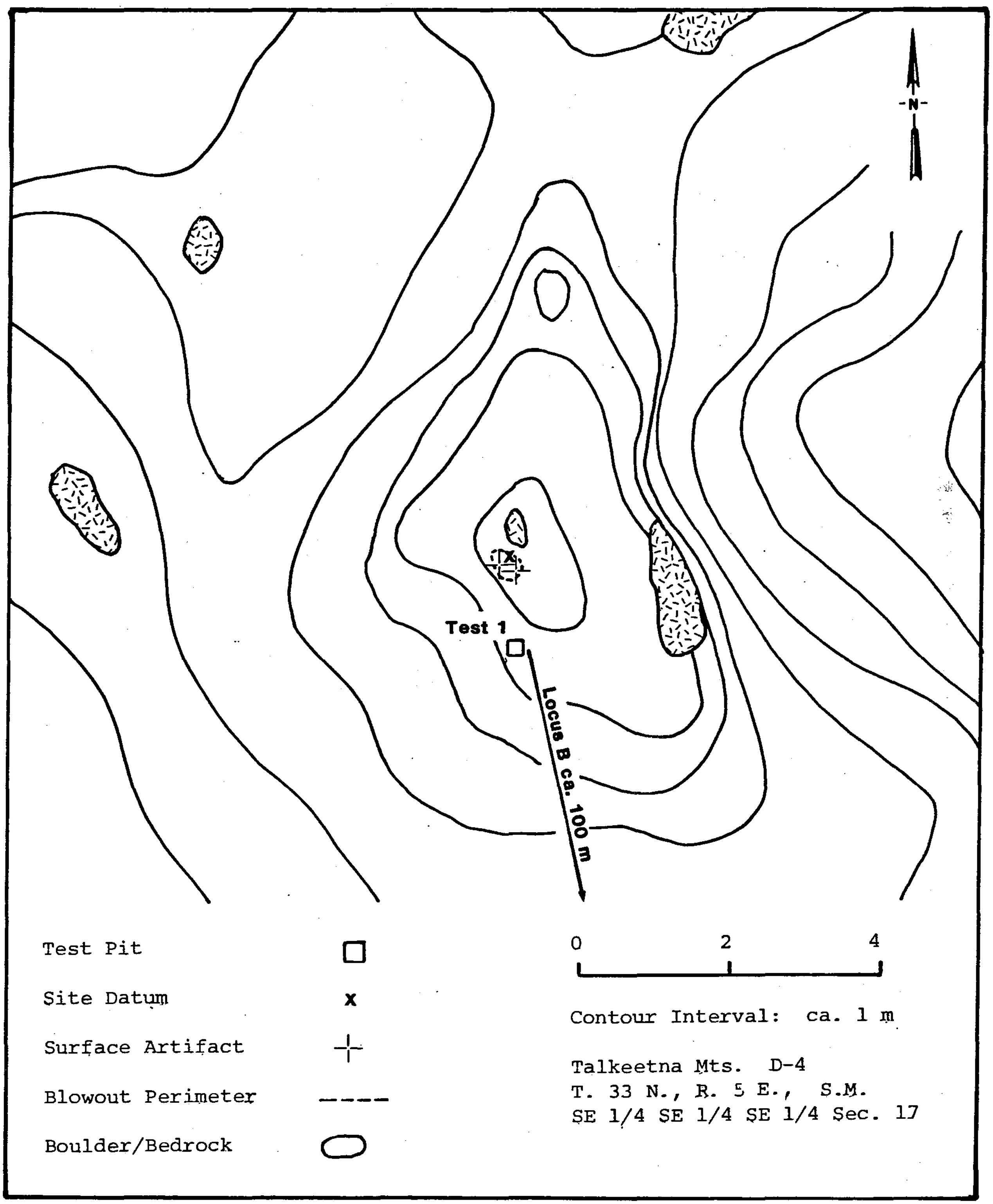


Figure 84. Site Map TLM 091.

(xxxviii) AHRS Number TLM 092, Accession Number UA81-255

Area: Tsusena Butte

Area Map: Figure 157; Location Map: Figure 301

USGS Map: Talkeetna Mts. D4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 422600 Northing 6979600

Latitude 62°56'22" N., Longitude 148°31'30" W.

T. 33 N., R. 5 E., Fairbanks Meridian

Sec. 21, SW¼NE¼NW¼

Site Map: Figure 85

Setting: The site, located on a north-south oriented bedrock ridge at an elevation of 823 m asl (2700 feet), is on the west side of the northern arm of Tsusena Lake; the lake immediately east of Tsusena Butte (Figures 157, 301). The site is situated on a flat area (30 m x 8 m) at the eastern edge of the southern end of the ridge where a bedrock exposure occurs. The terrain slopes 15-20° on both the eastern and western sides of the ridge. To the north of the site the terrain rises to two higher prominant bedrock exposures, the most distant (60 m) is ca. 10 m higher than the site area and is the highest point on the ridge. To the south the terrain decends in several 5 m steps for a distance of 100 m, where the slope then drops down to Tsusena Lake at an angle of 15°-20°. The view from the site is panoramic. South, the view encompases Tsusena Lake, and westward, Tsusena Butte is visible beyond a 100 m wide ravine which separates the ridge from the butte. The view east includes the lake as well as much of its adjoining flat margin. North the view is obscured by the rising terrain of the ridge. Tsusena creek, located 1.3 km to the north, is not visible from the site but both the creek and lake are easily accessible. Vegetation at the site consists of a lichenous mat with cranberry, bearberry and blueberry surrounded by the bedrock outcrop. Adjacent to the site area are thick dwarf birch shrubs, both on the ridge and on all slopes nearby. The lake margin is swampy with grasses, muskeg, and willows present.

Reconnaissance Testing: The site consists of a surface lithic scatter in a soil exposure measuring 90 cm x 40 cm within a bedrock outcrop (Figure 85). A total of 3 black fine grained basalt waste flakes were surface collected from this blowout. No other cultural material was observed on the surface. Test pit 1, excavated 30 cm northwest of the soil exposure, did not reveal any other subsurface cultural material. Large bedrock boulders and fractured rock were present in the test below 10 cm. A charcoal concentration 7-13 cmbs was located in the southeast corner between a discontinuous upper whitish tephra and a lower oxidized tephra. A charcoal sample was not collected since cultural material was not present in this test.

Collected Artifact Inventory

3 Black fine grained basalt flakes

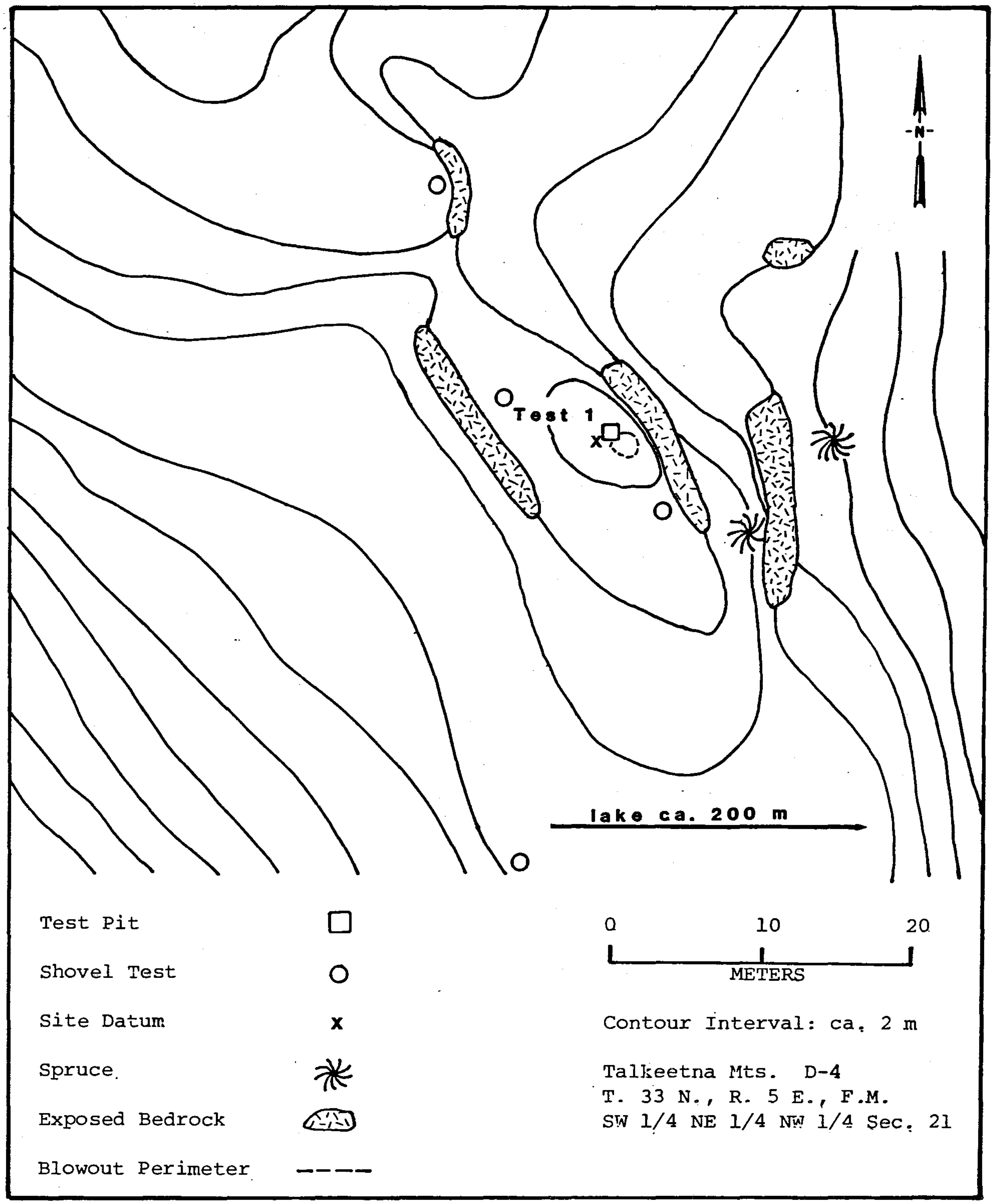


Figure 85. Site Map TLM 092.

(xxxix) AHRS Number TLM 093, Accession Number UA81-256

Area: Tsusena Butte

Area Map: Figure 157; Location Map: Figure 301

USGS Map: Talkeetna Mts. D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 422600 Northing 6979900

Latitude 62°56'34" N., Longitude 148°31'38" W.

T. 33 N., R. 5 E., Seward Meridian

Sec. 21, NW¼NE¼NW¼

Site Map: Figure 86

Setting: The site is located approximately 300 m southwest of the extreme northwestern end of a 2.7 km long lake which lies northeast of, and adjacent to, Tsusena Butte (Figures 157, 301). Situated on an exposed bedrock knob at an elevation of ca. 833 m asl (2700 feet), the site occupies the relatively level 20 m by 35 m top of this outcrop located on the lower slopes of Tsusena Butte but separated from the main bedrock and talus slope by a northwest-southeast oriented ravine ca. 30-40 m lower in elevation. The top of this prominant knob is highest at its southeastern end and slopes gradually at a 5° to 10° angle in a drop of ca. 4 m to a broad rounded ridge line which rises at a moderate slope to another lower, more rounded point approximately 150 m to the northeast. At the eastern edge of the site a bedrock exposure drops vertically ca. 6 m after which the slope continues at an angle of 15° to 20° to the west margin of the lake approximately 200 m away.

The principle views from the site are to the north, encompassing a broad 700 m wide pass which leads into the Tsusena Creek Valley, and to the east, encompassing the east and west margins of the narrow 100 m wide northernmost end of the lake. This site is an outstanding overlook with a panoramic view encompassing the entire surrounding area.

Numerous other exposed bedrock knobs and ridges are located in the immediate vicinity overlooking the same terrain features. Sites TLM 092, 091, 090 and 089 are all located in the same general topographic context within a 1 km radius of site TLM 093. Vegetation in the site area is primarily low (50 cm) dwarf birch, bearberry, labrador tea and a generally thin moss and lichen mat overlying bedrock. A single white spruce occurs at the top of this knob. Shrub birch and willow are present on the slopes of the knob and scattered black and white spruce occupy the kettle and kame topography on the valley floor and the vicinity of the lake margins. The northern lake margin is marshy with grass and areas of standing water at the extreme northern end of the lake. Much of the surrounding higher elevation terrain is composed of vertical bedrock exposures and steep talus slopes.

Reconnaissance Testing: The site occupies an area of approximately 5 m by 6 m at the higher southeastern end of the 20 m by 35 m top of this bedrock knob. Both surface and subsurface cultural material is present with three clusters of surface flakes observed in blowouts which occur among bedrock exposures (Figure 86). A total of 70 flakes were observed on the surface, of which 22 were collected. A gray basalt cortex flake with unifacial retouch along one margin (UA81-258-8; Artifact Photo M-e) was collected from cluster 2. All other observed flakes were waste flakes.

Cluster 1: is exposed in a 1 m by 1.6 m blowout, contained 15 flakes, 7 of which were collected. Two brown rhyolite, two gray rhyolite and four gray basalt flakes were left in place. Cluster 2: is exposed in a 50 cm by 70 cm blowout, contained four flakes, three of which (including the retouched basalt flake) were collected and a single gray basalt flake was left in place. Cluster 3: occurring in a 1.9 m by 40 cm wide blowout, was the greatest concentration of surface flakes at the site with 51 flakes exposed of which 12 were collected. The 39 flakes left in place at cluster 3 were all gray basalt. Lithologies of surface flakes collected from these three blowouts includes brown and gray rhyolite, gray and black basalt and one cryptocrystaline bedded chert flake from cluster 3. Intensive surface reconnaissance of the entire top of the nob did not reveal additional surface material.

Subsurface testing at the site included one 40 x 40 cm test pit (test pit 1) and eight shovel tests. Test pit 1 was excavated 2 m northeast of cluster 2 at the edge of a bedrock exposure (Figure 86). A total of 33 dark gray basalt flakes were excavated from 5-8 cmbs in this test. These flakes were associated with a dark brownish gray tephra which occurred directly below the organic mat and contained flecks of charcoal. An additional dark gray basalt flake was excavated 33 cmbs from a very dark grayish black silt or possible tephra which also contained charcoal flecks. The single lower flake is stratigraphically well below the other flakes present in test pit 1 and separated from them by a sterile tephra ranging in color from an oxidized dark red brown to a light medium brown. The fact that the flake is of the same lithology as the flakes may indicate it is intrusive into the lower level. Additional testing would be required to determine whether or not two components are present at the site.

All eight shovel tests (Figure 86) dug at the top of the nob were sterile and it appears the site is restricted to the immediate vicinity of the exposed surface flakes.

Collected Artifact Inventory

Cluster 1:

3 Gray basalt flakes
1 Red chert flake
1 Gray chert flake
2 Brown rhyolite flakes

Cluster 2:

1 Gray basalt retouched flake
1 Black basalt flake
1 Gray rhyolite flake

Cluster 3:

7 Black chert flakes
3 Dark gray chert flakes
1 White-translucent chert flake

<u>Test pit 1</u>:

34 Dark gray basalt flakes

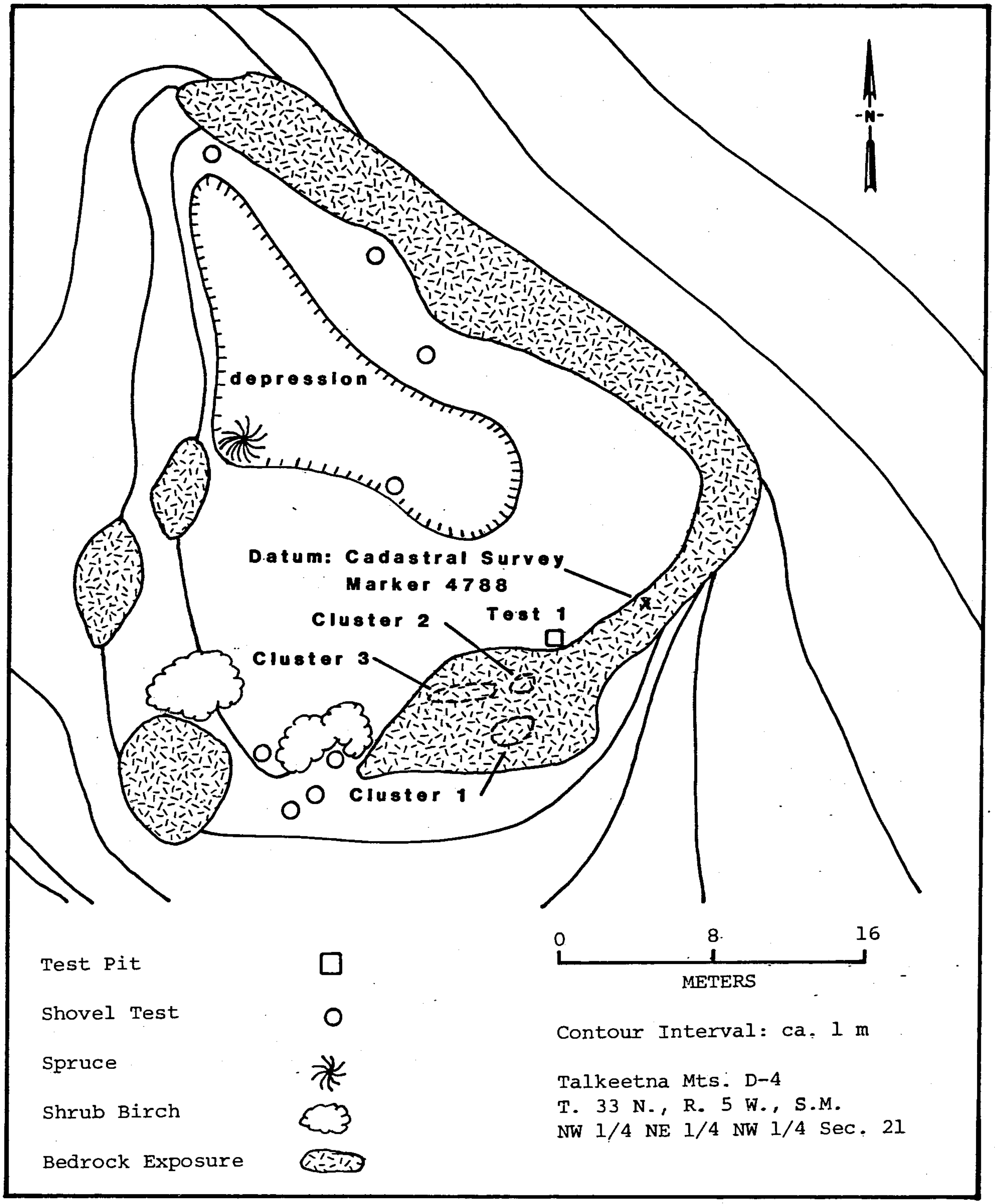


Figure 86. Site Map TLM 093.

(xl) AHRS Number TLM 094, Accession Number UA81-251

Area: ca. 3 km North of Tsusena Butte, Proposed Borrow C
Area Map: Figure 157; Location Map: Figure 278
USGS Map: Talkeetna Mts. D4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 421450 Northing 6982800

Latitude 62°58'8" N., Longitude 148°32'58" W.

T. 22 S., R. 5 W., Fairbanks Meridian
Sec. 32, NW¼SW¼NE¼

Site Map: Figure 87

Setting: The site is located approximately 150 m west of Tsusena Creek, and 3 km north of the northern limit of Tsusena Butte (Figures 157, 278). It is situated on the south end of a kame which rises about 5 m above the surrounding marshy floodplain, and is oriented east-west (15 m) and north-south (5 m). To the north the kame descends to an area of lower knolls averaging about 2 m above the marsh. To the west, south, and east the kame descends steeply to the marsh. The site lies at an elevation of approximately 739 m asl (2425 feet). It constitutes one of the higher kames on the valley floor west of Tsusena Creek. Visibility from the site is generally panoramic, of the north-south corridor drained by Tsusena Creek. Site TLM 096 is visible on a knoll approximately 400 m west of TLM 094. TLM 095, TLM 084, TLM 085, and TLM 087 are barely visible through the spruce forest on the alluvial plain of Tsusena Creek. The creek itself is partially obscured to the east by the spruce forest. There is a presently-flowing, braided creek at the eastern base of the site knoll. Vegetation at the site consists of lichen, moss, low heath, dwarf birch and scattered spruce. Black spruce and muskeg characterize the surrounding vegetation.

Reconnaissance Testing: The site was recorded on the basis of the discovery of a flake scatter in an approximately 1 m x 1 m gravel exposure on the southwest end of the kame (Figure 87, scatter 1). The twelve flakes located in the exposure comprise two lithologies: chert and basalt. Six of the twelve were collected, including flake specimens of light brown chert, black and gray basalt, and two articulate pieces of a gray basalt biface fragment (UA81-251-5). These chert flakes and three basalt flakes remain uncollected. A 40 cm x 40 cm test (test pit 1) 1.5 m northeast of the surface scatter produced subsurface flakes representative of varying grades of chert: four translucent brown flakes, from 3-7 cmbs, and one white chert flake from 4-7 cmbs, were associated with the humic unit and the upper tephra unit. Two light chert flakes were found from 4-10 cmbs in an oxidized tephra. One black chert flake was recovered from 11 cmbs in a gray-brown silt below the oxidized tephra unit.

Deposition below approximately 5 cmbs shows considerable mixing, possibly due to cryoturbation; therefore, positive correlation with depositional units is uncertain.

Collected Artifact Inventory

11 Chert flakes
1 Basalt flake
2 Basalt biface fragments, articulated

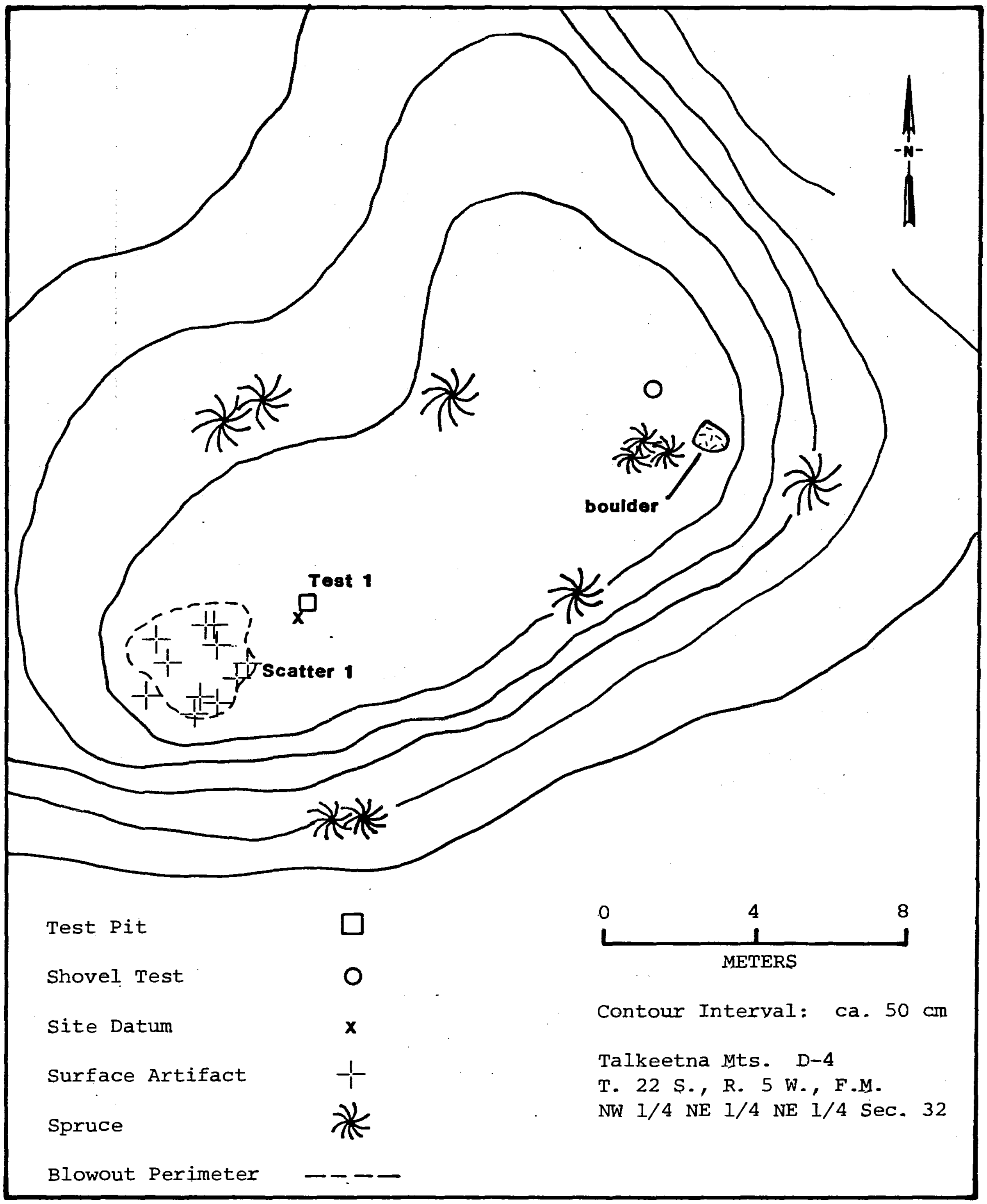


Figure 87. Site Map TLM 094.

(xli) AHRS Number TLM 095, Accession Number UA81-249

Area: ca. 5 km North of Tsusena Butte, Proposed Borrow C
Area Map: Figure 157; Location Map: Figures 278
USGS Map: Talkeetna Mts. D4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 421500 Northing 6983300

Latitude 62°58'22" N., Longitude 148°32'55" W.

T. 22 S., R. 5 W., Fairbanks Meridian
Sec. 32, NW¼NW¼NE¼

Site Map: Figure 88

Setting: The site is located on the west side of Tsusena Creek approximately 5 km north of Tsusena Butte in Borrow Area C (Figures 157, 278). Located in a confined 1 km wide north-south oriented glacial valley with steep talus slopes, the site is situated at ca. 732 m asl (2400 feet) in kettle and kame topography which characterizes the valley floor. The site is located on a discrete six-meter high kame knoll which forms a low rounded amorphous rise covering an area approximately 60 m in diameter. This knoll, composed of two low summits, slopes very gradually westward for a distance of 30 m to a grassy marsh with areas of standing water ca. 4 m lower in elevation than the site. Eastward the knoll slopes gradually to a flat gravelly flood plain terrace ca. 8 m lower where a shallow, south flowing creek is located ca. 50 m from the site. Present visibility from the site is restricted by forest cover to less than 300 m and Tsusena Creek, located ca. 200 m east of the site, is not in view. Without the present tree cover, the view would be greatly increased and would include Tsusena Creek and the entire width of the valley floor. The entire surface of the knoll is occupied by dense 1 m high shrub birch and scattered black spruce. The ground surface is covered with a mat of moss and lichen with bog blueberry, bearberry and Labrador tea present. Shrub birch becomes less dense on the lower slopes of the knoll. A dense spruce forest is located to the east between the site and Tsusena Creek but spruce are absent to the west where marsh grass and standing water are present. Five additional sites (TLM 084, 085, 087, 094, 096) are located within a 1 km radius of TLM 097 in the same general topographic setting.

Reconnaissance Testing: No surface artifacts were observed at the site, however, two out of seven shovel tests placed at the two areas of highest elevation at the northwestern and southeastern ends of the knoll revealed cultural material (Figure 88). Four shovel tests were dug at the northwestern end of the knoll, one of which revealed cultural material and was expanded to test pit 1.

Fifty fine grained black basalt or possibly rhyolite flakes were excavated 5-12 cmbs within or slightly above the lowest of three tephra units present in this test. This is a gray sandy tephra directly overlying glacial drift.

One of three shovel tests dug at the southeastern end of the site knoll also revealed cultural material and was expanded into test pit 2. Twenty-three fine grained black basalt or rhyolite flakes, similar in lithology to those from test pit 1, were excavated from test 2 7-14 cmbs associated with a dark red oxidized tephra and a reddish brown pebbly silty sand.

Collected Artifact Inventory

73 Black basalt or rhyolite flakes

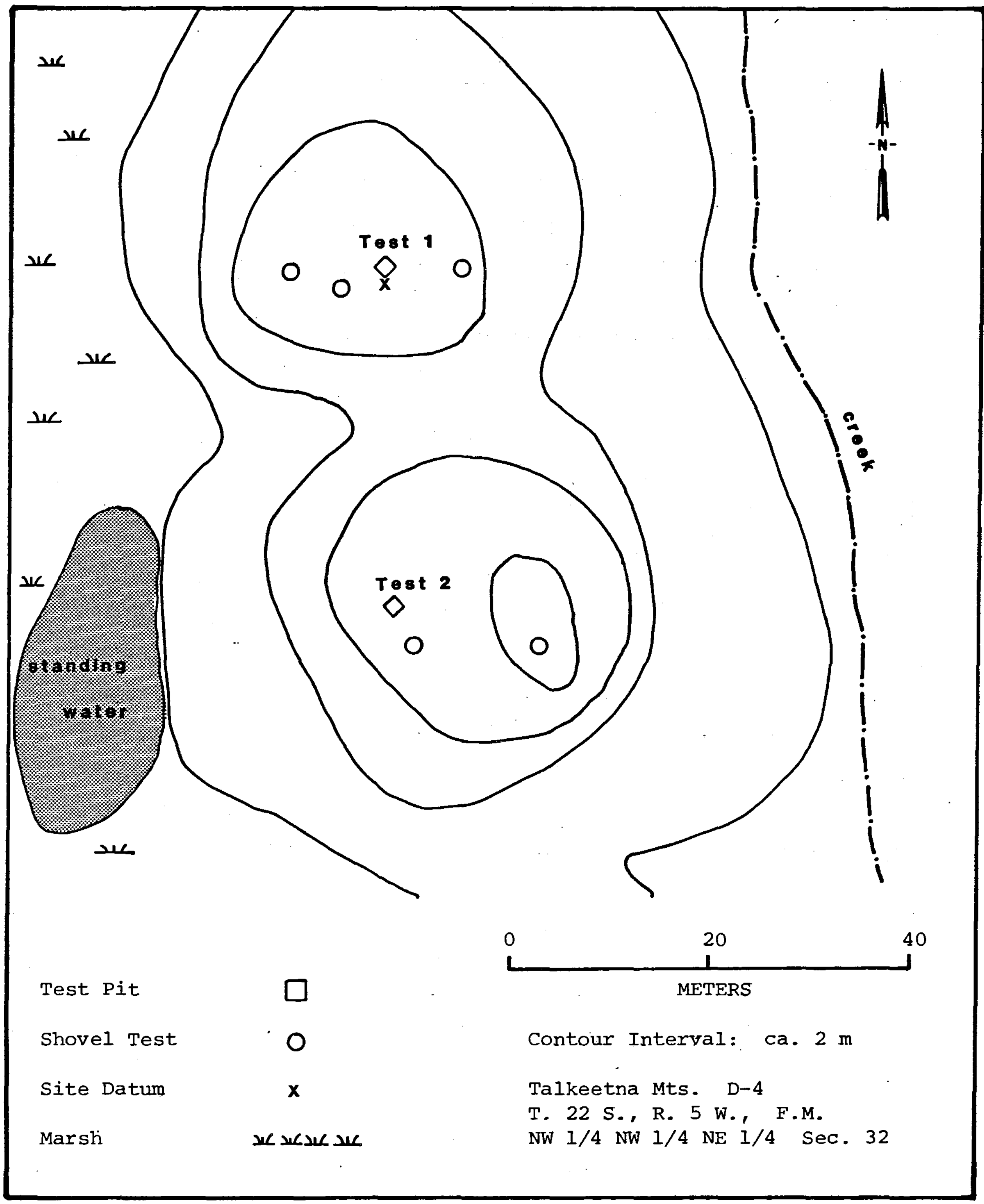


Figure 88. Site Map TLM 095.

(xlii) AHRS Number TLM 096, Accession Number UA81-250

Area: ca. 3 km North of Tsusena Butte, Proposed Borrow C
Area Map: Figure 157; Location Map: Figure 278
USGS Map: Talkeetna Mts. D4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 421150 Northing 6982750

Latitude 62°58'04" N., Longitude 148°33'20" W.

T. 22 S., R. 5 W., Fairbanks Meridian
Sec. 32, NW¼SE¼NW¼

Site Map: Figure 89

Setting: This site is located 3 km north of Tsusena Butte approximately 500 m west of Tsusena Creek at the western edge of a marshy alluvial plain (Figures 157, 278). It is situated on the top of a low narrow east to west trending ridge at an elevation of 754 m asl (2475 feet). The ridge is approximately 9 m wide and 3.5 m high and extends 35 m eastward into the surrounding floodplain. To the west the ridge rises gradually blending into the gentle slope (10°) leading up to the base of the valley wall 200 m from the site. The creek valley east of the site is approximately 1 km wide and contains low ridges and kame knolls on both sides of Tsusena Creek. Both the east and west valley walls are quite steep (30°) rising 609 m above the valley floor to an elevation greater than 1370 m asl (4500 feet).

Vegetation at the site consists of lichens, moss, blueberry, labrador tea and low dwarf birch. To the west on the lower valley slope and east along Tsusena Creek are dense stands of black spruce with occasional white spruce.

Reconnaissance Testing: No surface artifacts were observed at the site, however one whitish gray chert waste flake was found in a shovel test. This test was expanded into a 40 cm x 40 cm test (test pit 1) and a second 40 cm x 40 cm test (test pit 2) was excavated 6 m to the northeast (Figure 89). Test pit 1 revealed two additional chert flakes of the same lithology as the one from the probe. These were found 6-9 cmbs in the uppermost of three tephras present in the test, a whitish gray tephra directly below the organic zone. A charcoal lense was present at the contact between the middle light yellow brown tephra and the lowest gray tephra. Charcoal sample (UA81-250-5) produced a date of 2750 ±215 years: 800 B.C. (DIC 2285).

Test pit 2 was sterile of cultural material but also contained a charcoal lense at the contact between the two lower tephras. Six shovel tests along the east-west top of the site knoll failed to reveal additional cultural material.

<u>Collected Artifact Inventory</u>

3 Whitish gray chert flakes

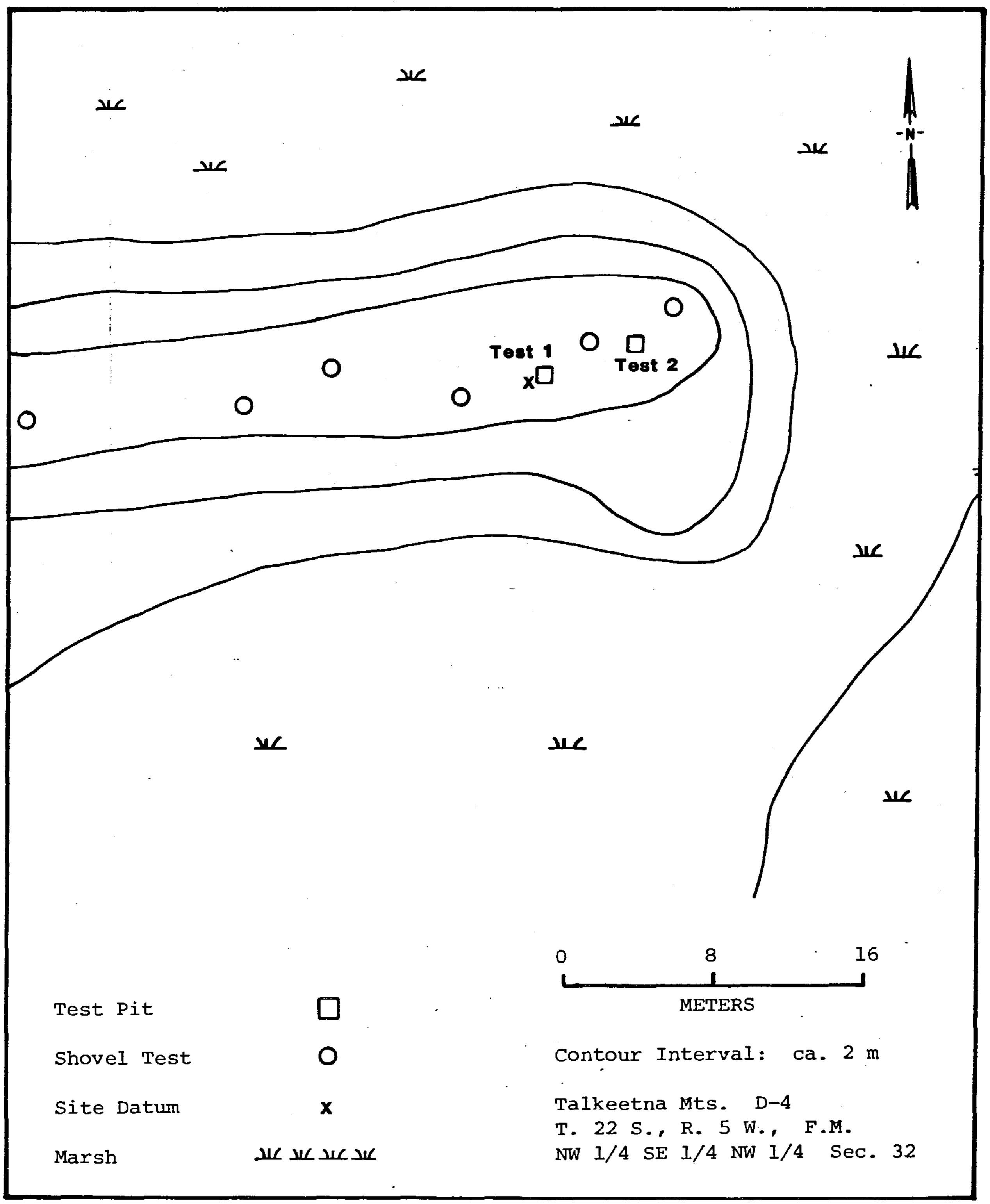


Figure 89. Site Map TLM 096.

(xliii) <u>AHRS Number TLM 097, Accession Number UA81-252</u>

Area: ca. 2.5 km Northwest of Tsusena Butte, Proposed Borrow C
Area Map: Figure 157; Location Map: Figure 277
USGS Map: Talkeetna Mts. D4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 421250 Northing 6980550

Latitude 62°56'55" N., Longitude 148°33'15" W.

<u>T. 33 N., R. 5 E., Seward Meridian</u>
Sec. 17, SE¼NE¼SW¼

Site Map: See Section 4, Figure 143

<u>Setting</u>: This site is located in Borrow Area C on the west side of Tsusena Creek ca. 2.5 km northwest of Tsusena Butte (Figures 157, 277). Located at the southern end of a 1 km wide north-south oriented glacial valley, the site is situated at an elevation of ca. 731 m asl (2400 feet) at the top of an east facing bluff which overlooks Tsusena Creek ca. 20 m lower in elevation and ca. 50 m to the east. Terrain mophology in the site vicinity consists of kettle and kame topography with what appear to be north-south oriented esker ridges associated with very irregular ridges and knolls on the east side of Tsusena Creek and a relatively level flood plain with only isolated kame knolls on the west side of the creek. The valley walls rise steeply (>35°) from 762 m asl (2500 feet) to over 1371 m asl (4500 feet).

The land form on which the site is situated appears to be an outwash terrace which has been downcut by Tsusena Creek forming a steep (>35°) east facing exposure. The steep valley wall begins ca. 100 m west of the site. The site directly overlooks Tsusena Creek and is located ca. 50 m southwest of a sharp southeast bend in the creek channel. Access to the creek and the surrounding valley floor is excellent. Tsusena Creek is a clear 30-35 m wide smooth flowing channel less than 1 m deep with gravel bars and a slough visible 80-150 m northeast of the site. To the south drainages flow from the west wall of the valley fan forming a series of three confluences with Tsusena Creek. The northernmost of these confluences is ca. 200 m southeast of the site. The field of view is panoramic with the depth of view greatest to the northeast overlooking a broad (300-400 m wide) alluvial plain. Forest cover restricts the view somewhat to the north but the steepness of the slope immediately northeast of the site affords an excellent overlook to the northeast. Sites TLM 081, 088, 089, 090 and 091 located within 1 km of TLM 097 are concentrated on knolls and ridges to the east and are visible from the site.

Site vegetation consists of dense shrub birch (1.5 km high) and scattered mixed black and white spruce with blueberry, labrador tea and a continuous mat of moss and lichen forming the ground cover. Dense stands of black spruce occupy poorly drained areas north of the site while muskeg and marsh grass predominate to the northeast in poorly drained areas of alluvial plain.

Reconnaissance Testing: The site occupies an area at least 20 m north-south and 10 m east-west along the edge of the bluff and consists of both surface and subsurface cultural material (Figure 143). A basally ground and thinned gray chert lanceolate point (UA81-252-1; Artifact Photo M-f), complete except for a fragment broken off the distal end, was found on the eroded face of a southwest exposure, approximately 1 m below the top of the bluff. Intensive surface reconnaissance of the exposed bluff face produced an additional gray basalt-like flake ca. 20 m to the north on a northeast facing exposure at approximately the same relative position on the slope. Both of these artifacts were surface collected and no other surface artifacts were observed at the site.

Twelve shovel tests were dug along the top of the bluff edge and up to 30 m in from the exposure. Two of these tests revealed subsurface cultural material and were expanded into 40 x 40 cm tests. Test 1, 40 cm in from the bluff edge, produced a total of 46 flakes, one bone fragment and one fire cracked rock in apparent association with a concentration of charcoal 8 cmbs and a pinkish white tephra unit 7-22 cmbs. One black chert flake, one gray chert flake and 38 fine grained gray basalt-like flakes were excavated 7-20 cm below the test datum from both within the pinkish white tephra and from the contact between the tephra and the charcoal. The irregularity of the contact between the tephra and the charcoal made it difficult to distinguish if the cultural material was directly associated with the charcoal or was restricted to only the tephra. Nine additional fine grained basalt-like flakes were excavated 17-19 cm from within a yellow brown tephra. The lithology of the flakes from this unit is similar to the lithology of flakes from the pinkish white tephra and the association of flakes with two tephra units is probably a result of cryoturbation rather than seperate site components. A single fire cracked rock was excavated 10 cmbs from the contact between the charcoal and the uppermost tephra. An unburned bone fragment from a large mammal was recovered from the east wall of the test 4 cmbs in the organic humus. The well preserved bone fragment was found well above the charcoal concentration and does not seem to be associated with the lithic material on the charcoal. It may represent a later occupancy of the site or it may be of natural origin.

Test pit 2, located 6.5 m southwest of test 1 produced only a single gray fine grained basalt-like flake which was recovered from the initial shovel test backdirt and has no provenience. The presence of a flake in test pit 2 does indicate the site extends well back from the bluff edge and is still relatively intact even though a portion of it has obviously been eroded.

Charcoal samples collected during systematic testing produced dates of 1400 ±55 years: A.D. 550 (DIC 2245) and 4020 ±65 years: 2070 B.C. (DIC 2283) (see Chapter 4).

Collected Artifact Inventory

1 Gray chert biface (lanceolate point)
2 Gray fine grained basalt-like flakes
47 Dark gray fine grained basalt-like flakes
1 Black chert flake
1 Gray chert flake

Collected Faunal Material Inventory

Test pit 1, 4 cmbs:

1 Rib fragment, large mammal

(xliv) AHRS Number TLM 098, Accession Number UA81-261

Area: ca. 2 km Southwest of Deadman Lake Outlet
Area Map: Figure 158; Location Map: Figure 302
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 433700 Northing 6985700

Latitude 62°59'50" N., Longitude 148°18'30" W.

T. 22 S., R. 4 W., Fairbanks Meridian
Sec. 22, NW¼SW¼NW¼

Site Map: Figure 90

Setting: The site is located near the center of an elongated knoll 100 m east of a major northern tributary of Deadman Creek and 500 m north of the confluence of the two streams (Figures 158, 302). The 200 m long knoll is oriented north-northwest--south-southeast at 930 m asl (3050 feet). The site is located on the south end of the third rounded knob from the south, which increases a total of 10 m in elevation from south to north. The site occurs 25 m south and 2 m lower than the summit of the knoll. Despite its position on a knoll, the site does not afford as good a view of the surrounding terrain as is possible from other locations in the vicinity. Neighboring knolls to the east and northeast are 10 m and 50 m higher respectively, with site HEA 180 being situated on the latter 1 km distant.

Site TLM 098 occurs within a region of undulating topography consisting of a series of north-south oriented knolls marking the southwestern extension of Deadman Mountain before being truncated by Deadman Creek and its northern tributary. The knoll with the site possesses little higher relative relief to the regions to the north with the view to the south being obstructed by the southern continuation of the knoll. The clear water tributary of Deadman Creek has cut a steep channel 20 m below the site and separates it from a similar knoll 100 m to the west on which TLM 117 occurs. The surface lithic scatter which defines the site occurs in the northeast portion of an amorphous 5 m north-south by 15 m east-west region of exposed angular pebbles. From the vicinity of the site, it is possible to view the west slope of a higher knoll with TLM 099 100 m to the east, the highest knoll in the region with HEA 180 to the northeast, and southwest over the low slopes adjacent to Deadman Creek below the confluence. Being placed north of the southern face of the knoll overlooking the confluency, the force of the wind and noise of the streams is noticeably lessened. Shrub birch dominates the lowlying regions between the knolls. Lichens, grasses, and berries covered the vegetated portions of the knolltops, being frequently interspersed with exposed boulders and angular pebbles.

Reconnaissance Testing: TLM 098 is a surface lithic scatter consisting of two patinated gray chert flakes (Figure 90). Continued surface reconnaissance and subsurface testing at test pit 1 failed to reveal additional cultural material. The two flakes, separated by one meter, were found in a region of exposed angular pebbles.

Collected Artifact Inventory

1 Patinated gray chert flake

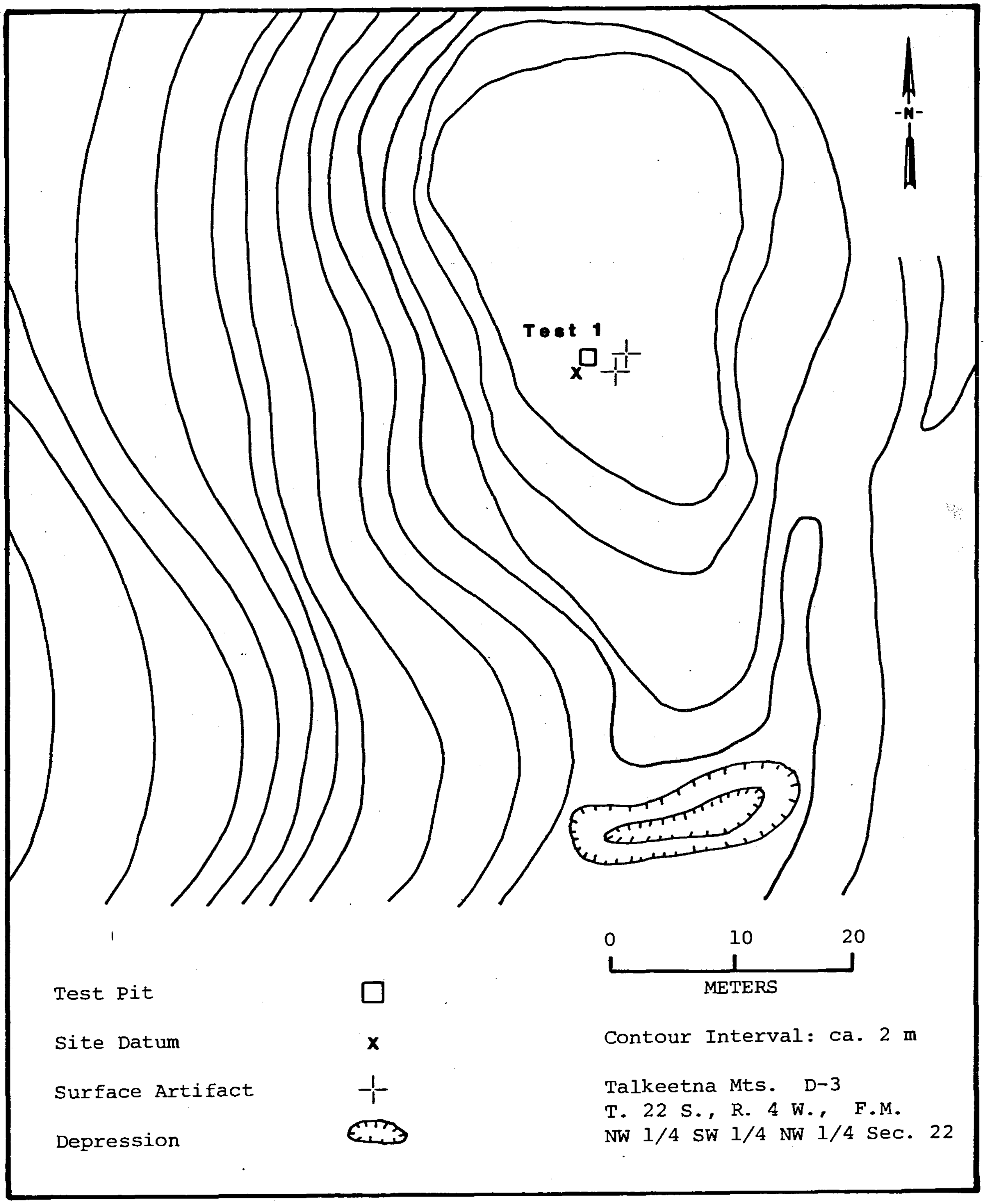


Figure 90. Site Map TLM 098.

(xlv) AHRS Number TLM 099, Accession Number UA81-264

Area: ca. 2 km Southwest of Deadman Lake Outlet
Area Map: Figure 158; Location Map: Figure 302
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 434000 Northing 6985700

Latitude 62°59'50" N., Longitude 148°18'10" W.

T. 22 S., R. 4 W., Fairbanks Meridian
Sec. 22, NE¼SW¼NW¼

Site Map: Figure 91

Setting: This two loci site is located on two adjacent knolls 1.5 km southwest of Deadman Lake and 700 m north of the confluence of Deadman Creek and one of its northern tributaries (Figures 158, 302). Situated at an elevation of 945 m asl (3100 feet), the knolls are part of the undulating terrain which border the north side of Deadman Creek and are confined by Deadman Lake and Deadman Mountain to the east and northeast and by the tributary stream 400 m to the west. The rolling terrain continues for 1 m north culminating in a high knoll 700 m to the north which dominates the local landscape with site HEA 180 on its broad, level top. Farther north is the kilometer wide valley formed by Deadman Mountain on the east and an unnamed 1524 m asl (5000 foot) high mountain on the west side through which the tributary of Deadman Creek meanders southward. The valley to the north and the low broad valley bordering Deadman Creek below the confluence possess stepped slopes resulting from a combination of soluflaction and minor drainage channels which have dissected the region into numerous small benches. Two additional archeological sites occur on the knolls to the west at approximately the same level forming the moderate highlands overlooking the north side of Deadman Creek and its confluence with its northern tributary. TLM 098 occurs on a low knoll to the west 200 m distant adjacent to the tributary. TLM 117 occurs 500 m west on the other side of the tributary opposite TLM 098. The two loci of TLM 099 are 73 m apart being separated by a north-south oriented trough which is 10 m wide at the base and 6-8 m lower than locus A. The view from both loci is similar but is better at the eastern loci B which is slightly higher. To the west are the rolling knolls, the tributary (not visible), and the undulating slopes in the distance. To the south is the confluence of Deadman Creek and the tributary and an adjacent open wetlands. The south end of Deadman Lake is visible to the northeast across fairly level lowlands and a wet marshy area. Both loci occur on the south slope of the knolls but still offer a limited view of the high knoll with HEA 180 and intervening low brush to the north. Low brush characterized the regional vegetation. Brush birch, mosses and lichens occur adjacent to the rock exposures in which the flakes were located.

Reconnaissance Testing: Surface cultural material was found in two loci (Figure 91). Locus B, the larger of the two loci at 16 m northeast-southwest by 1 m, is 73 m north-northeast of locus A which is 5 m northwest-southeast by 2 m. Fourteen black flecked gray rhyolite flakes were located on the surface of locus A of which three were collected, one possessing retouch flaking. Only two flakes were found at locus B, a white patinated chert flake and a black basalt flake, both collected. A 30 x 30 cm test at locus A (Figure 91) and a 30 x 40 cm test at locus B (Figure 91) failed to reveal subsurface artifacts.

Collected Artifact Inventory

Locus A:

3 Black flecked gray rhyolite (one with retouch)

Locus B:

1 White patinated chert flake
1 Black basalt flake

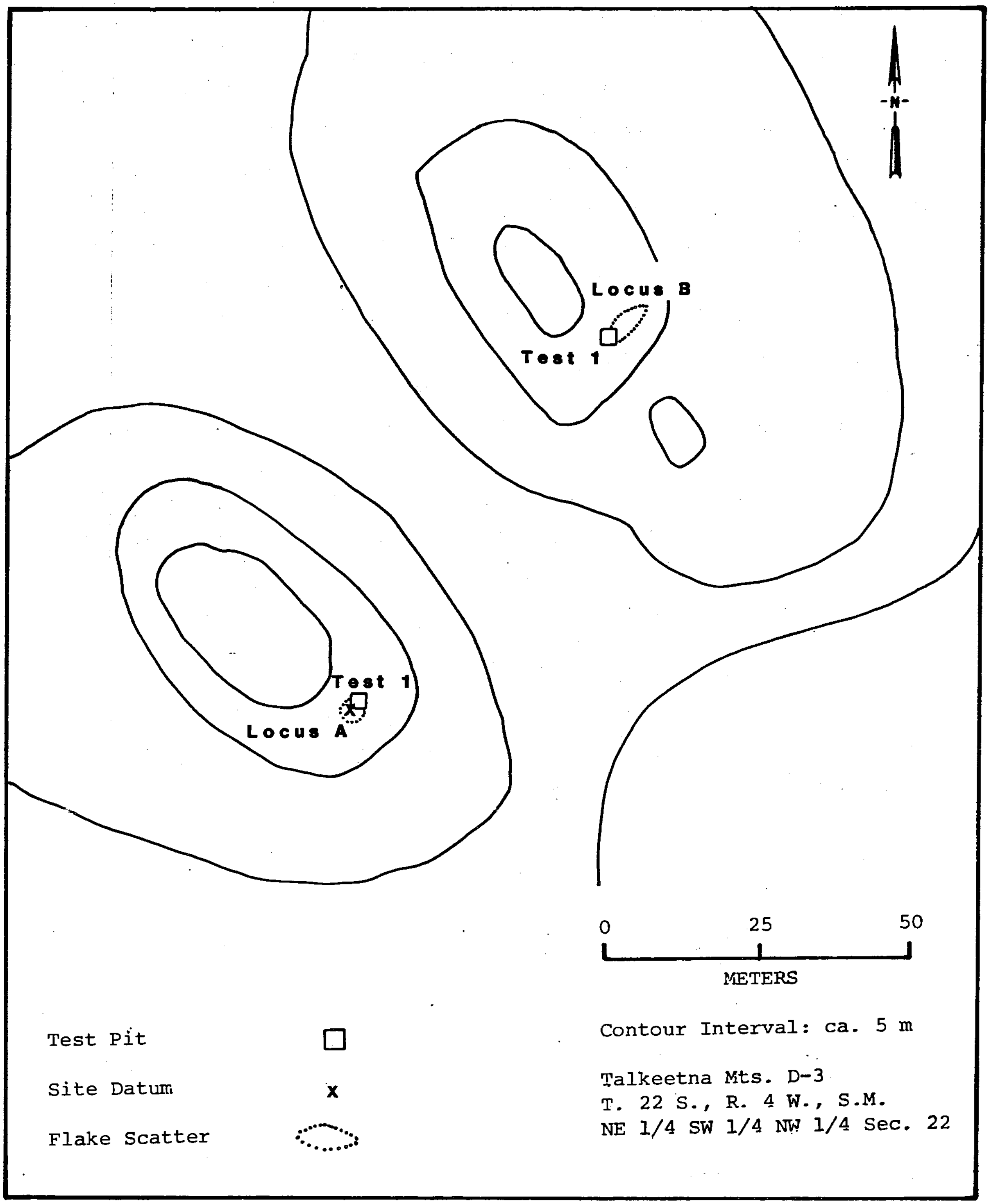


Figure 91. Site Map TLM 099.

(xlvi) AHRS Number TLM 100

Area: Clarence Lake Outlet
Area Map: Figure 161; Location Map: Figure 303
USGS Map: Talkeetna Mts. C-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 456200 Northing 6949050 (Locus A)
Easting 455950 Northing 6948900 (Locus B)

Latitude 62°40'19" N., Longitude 147°51'20" W. (Locus A)
Latitude 62°40'13" N., Longitude 147°51'43" W. (Locus B)

T. 30 N., R. 9 E., Seward Meridian
Sec. 19, NW¼SW¼SW¼ Locus A

T. 30 N., R. 8 E., Seward Meridian
Sec. 24, SE¼SE¼SE¼ Locus B

Site Map: Locus A: Figure 92
Locus B: Figure 93

Setting: This site, consisting of two loci (A & B), is located at the western end of Clarence Lake, within 200 m of Gilbert Creek, the lake outlet stream feeding Kosina Creek and the Susitna River to the northwest (Figures 161, 303). The site consists of 13 rectangular, square, or round depressions on terrain features slightly elevated above lake level and the lake margin in this area. Elevation at the site is estimated to be 876 m asl (2875 feet).

Locus A consists of 11 depressions of variable shape and size on the western shore of Clarence Lake, and overlooking the beginning of the outlet stream, Gilbert Creek, 77 m to the southeast (Figure 92). The largest of these depressions, feature 1, measures 6 x 6.5 m oriented basically northwest-southeast and lies approximately 55 m west of the lake shore. Seven depression features, none larger than 4 x 4 m or 3 m diameter are clustered approximately 40 m northeast of feature 1 overlooking the lake at a distance of about 7 m from the shoreline. These features are oriented as a group basically north-south, the three northernmost being circular, the others square or rectangular. Two other depression features, 33 m southeast of feature 1, lie about 15 m west of the lake shore and 34 m northwest of the outlet mouth. These features comprise locus A and all are on slightly elevated terrain between 1.5 and 3 meters above lake level. All features are between 20 and 110 cm deep with fairly vertical walls and thick sphagnum moss growth dominating the vegetation on the depression bottoms. Visibility is unobstructed to and across Clarence Lake and to the surrounding hills. Vegetation of the Locus A area is dominated by dwarf birch with moss and lichens covering areas without brush vegetation. Drainage is good relative to the surrounding lake margin, where marsh grasses, tussocks, and some low brush characterize poorly drained areas of standing water.

Locus B consists of two depression features near the southern end of a northwest-southeast oriented low ridge, 200 m southwest of locus A (Figure 93). The larger of the two measures 4 x 4 m oriented northwest-southeast, and is about 23 m northwest of the smaller, which is a 1.3 x 1.1 m rectangular, oriented basically the same. The depressions on this small ridge are approximately 2 meters above the marshy wet margins of the Gilbert Creek outlet stream, which flows west about 100 m south of the locus. Sphagnum moss is also thick in the bottoms of the depressions, and dwarf birch dominates the vegetation at the locus. Visibility from locus B is good in all directions. Clarence Lake to the east is only partially obscured by brush vegetation and low rolling terrain. Drainage is good off this low ridge, becoming marshier east towards the lake and south towards the outlet stream channel. Vegetation around locus B is similar, with dwarf birch dominant, and moss and lichens covering ridge and knoll tops. Tussocky marsh grasses and low brush dominate the less well drained stream and lake margins.

<u>Reconnaissance Testing</u>: Recording of this site was carried out at the reconnaissance level with no subsurface testing done due to the number

and integrity of extant features. A site map was drawn for both loci in relation to each other and to features within the loci (Figures 193, 93). Specifications of all features were also recorded. No collections were made.

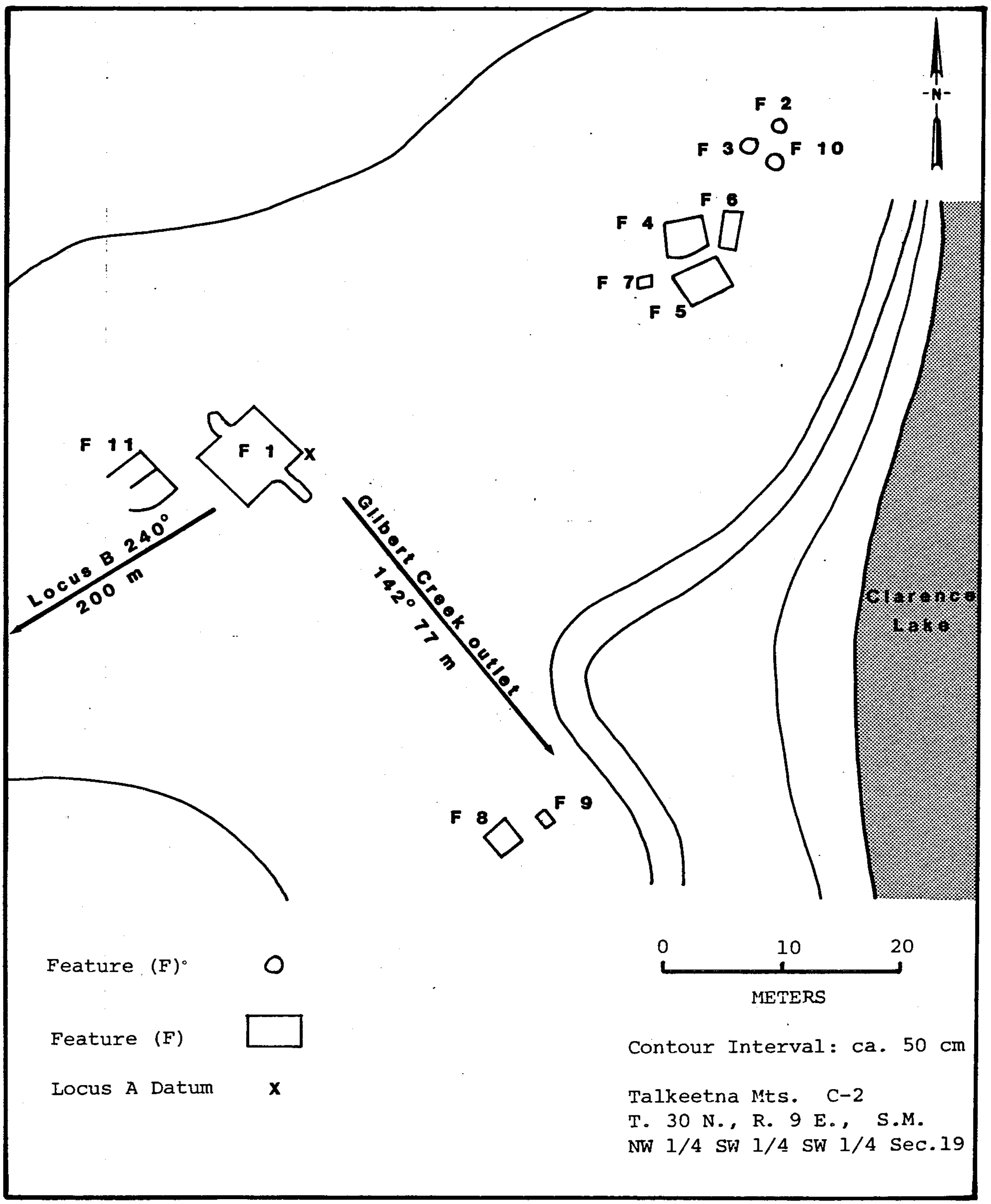


Figure 92. Site Map TLM 100 A.

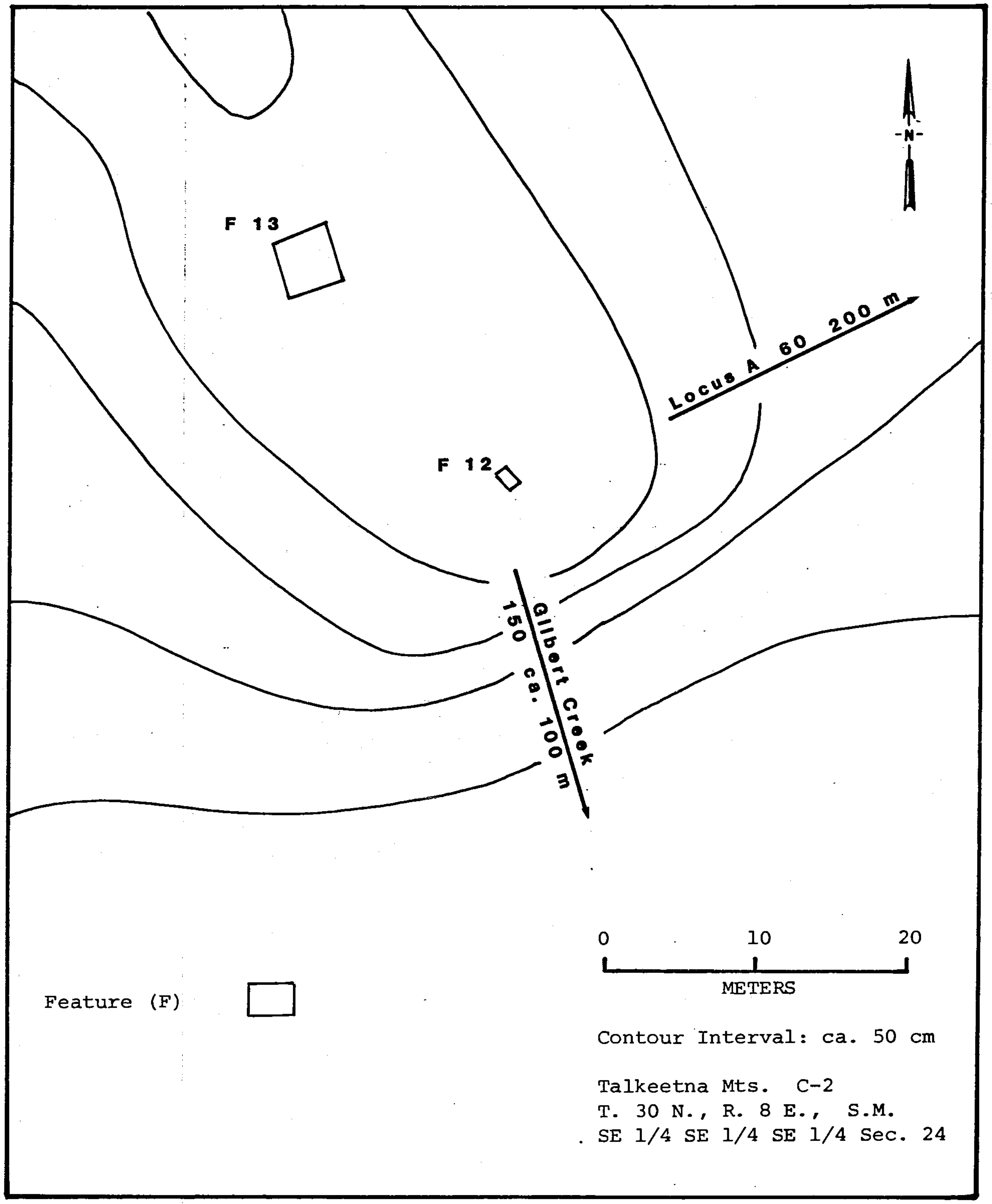


Figure 93. Site Map TLM 100 B.

(xlvii) AHRS Number TLM 105

Area: North Shore Clarence Lake
Area Map: Figure 161; Location Map: Figure 303
USGS Map: Talkeetna Mts. C-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 457200 Northing 6949700

Latitude 62°40'40" N., Longitude 147°50'20" W.

T. 30 N., R. 9 E., Seward Meridian
Sec. 19, SE¼SW¼NE¼

Site Map: Figure 94

Setting: TLM 105 is located on the southern edge of the top of a broad flattened hill on the north shore of Clarence Lake, 300 m west of the mouth of a small creek which feeds into the north shore of the lake (Figures 161, 303). The hill stands at 876 m asl (2875 feet), about 20 m above the level of Clarence Lake and is about 100 m north of the lake shore. The hill is roughly rectangular, 100 m long east-west and 50 m wide northeast-southwest at the top, with gradually sloping stepped sides to the east and west, and steeper slopes to the north and south. The hill is 5 to 20 m higher than the surrounding topography, and is the highest land form adjacent to Clarence Lake in the immediate vicinity. Clarence Lake and adjacent lowlying swampland are completely visible to the south, east, and west. Site TLM 100, a site with several housepits on the Gilbert Creek outlet, is visible ca 1.2 km away to the west. The small creek to the east is visible until it passes from sight in the gently rolling uplands to the northeast. These uplands dominate the view to the north, northeast and northwest, as well as beyond Clarence Lake to the south.

A continuous low mat of lichens, cranberry, and dwarf birch covers the entire site, except for two artificially exposed surfaces on the southern edge. These two rectangular areas, both approximately 3 x 4 m in area, were cleared of sod for unknown reasons. One is a dump site, the other may be a tent pad. Upturned sod segments are scattered about this area. Vegetation of the surrounding region is similar to that onsite, except in poorly drained lowlands, which is swamp.

Reconnaissance Testing: The cleared level area thought to be a tent pad (scatter 1) contains a lithic scatter containing approximately 85 observed flakes of four different lithologies (Figure 94). An additional 20 flakes were observed in the upturned sod pieces. Thirty flakes were collected from this scatter and disassociated sods. No other artifacts were noted on the surface. Test pit 1, situated 60 cm north of scatter 1, contained one black basalt flake at 18 cmbs at the contact between yellow-brown silt (possible tephra) and coarse sand with gravel. Test pit 2, 30 m west of site datum contained 30 small white rhyolite waste flakes at 0-5 cmbs. A shovel test was placed on the hilltop, with negative results.

Collected Artifact Inventory

12 Black basalt flakes
1 Blue-gray cryptocrystalline flakes
2 White rhyolite flakes
9 Brown chert flakes
1 Quartz flake
2 Gray rhyolite flakes
3 Gray-white chert flakes
30 White rhyolite flakes

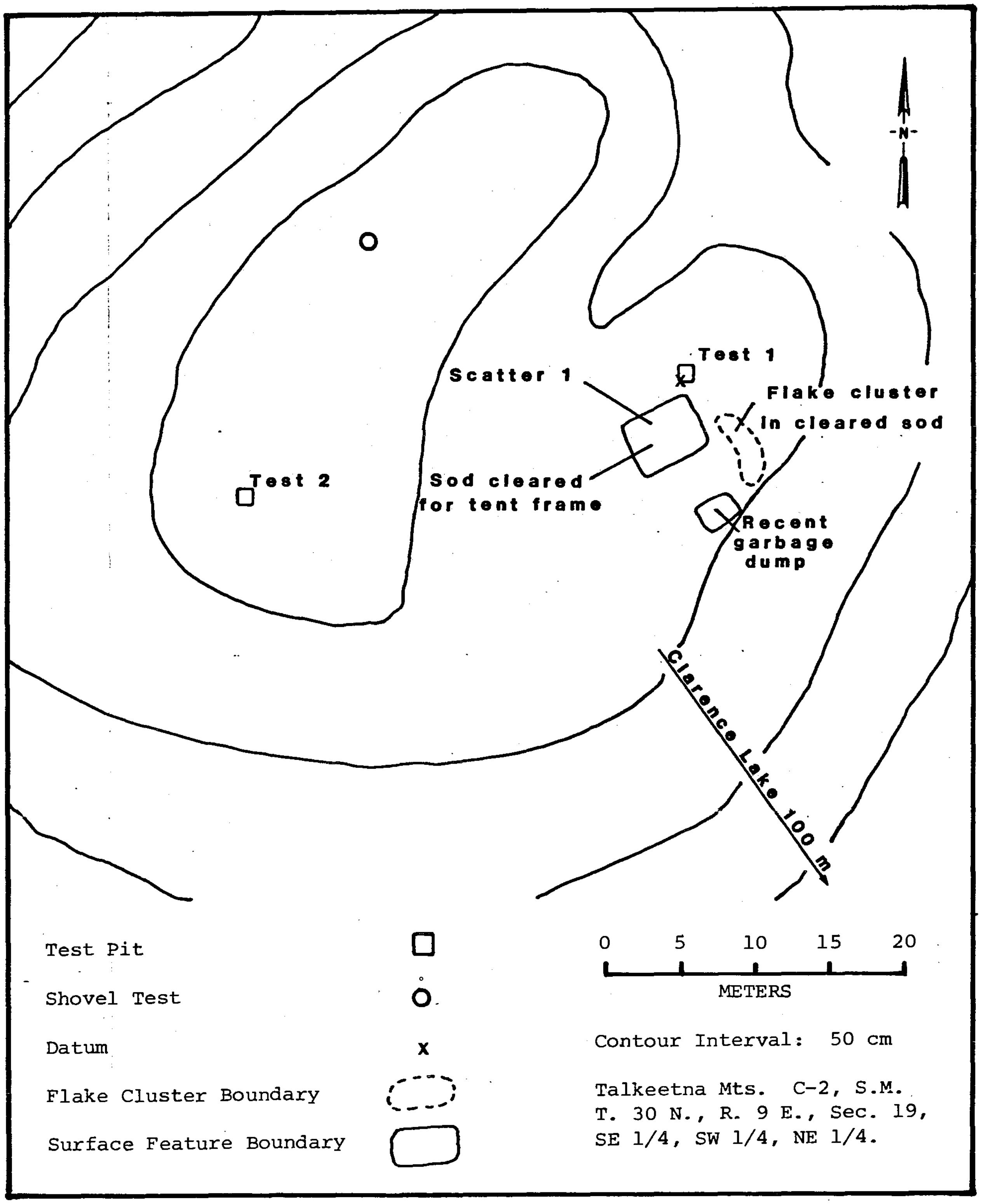


Figure 94. Site Map TLM 105.

(xlviii) AHRS Number TLM 116

Area: ca. 1 km Southeast of Tsusena Lake

Area Map: Figure 158; Location Map: Figure 307

USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 424750 Northing 6976950

Latitude 62°55'00" N., Longitude 148°29'00" W.

T. 33 N., R. 5 E., Seward Meridian

Sec. 27, NE¼SW¼SE¼

Site Map: Figure 95

Setting: The site, a rock cairn, is situated in the highest aspect of a hill at an elevation of 840 m asl (2800 feet). The hill is a feature of locally high relief approximately 1 km southeast of the east portion of Tsusena Lake (Figures 158, 307). The upper portion of the northwest-southeast oriented hill is 75 m long by 35 m wide. The surface of the hill is composed of exposed granite bedrock and boulders both above and below the surface. The 1.3 m high cairn rests on an area of exposed bedrock. A panoramic view is available from the site with the greatest depth of view to the south and west. The glacial terrain bordering the Susitna River are visible to the south all the way to the Talkeetna Mountains. Tsusena Butte and Tsusena Lake appear in the northwest. Higher terrain to the east obstructs a view up the drainage of Deadman Creek. A stream draining a small pond south of the site flairs west of the site. The cairn is composed of approximately 40 angular and flat pieces of local granite. The base of the cairn is approximately square being ca. 1 m long on each side oriented parallel to cardinal directions. The rocks have been stacked into a pyramid arrangement with an open framework. The rocks used in construction are generally 50 cm long and there is no evidence of small stones being employed for chinking or leveling. The open framework construction allows all of the rock surfaces to be viewed. A 15 cm long piece of broken bone was the only object found in the cairn. Given the well preserved nature of the bone in contract to the lichen covered surfaces of adjacent stones, the bone is likely to have been introduced into the cairn by falling down from the top before becoming lodged 75 cm above the base. The differential lichen growth between the exterior and interior surfaces of the stones suggests that the structure has been standing for a period of time. Two similar cairns are known from the vicinity. One occurs on the summit of Tsusena Butte to the west-northwest but is not discernable from the site. The other cairn occurs on a ridge southeast of Deadman Lake.

Reconnaissance Testing: No additional cultural material was found in the vicinity of the cairn and no subsurface testing was attempted due to the rocky nature of the surface (Figure 95). The rocks of the cairn were not disturbed. The piece of mammal bone was withdrawn to be photographed and then returned to its original location. The cairn was photographed and, being a feature, no collections were warranted.

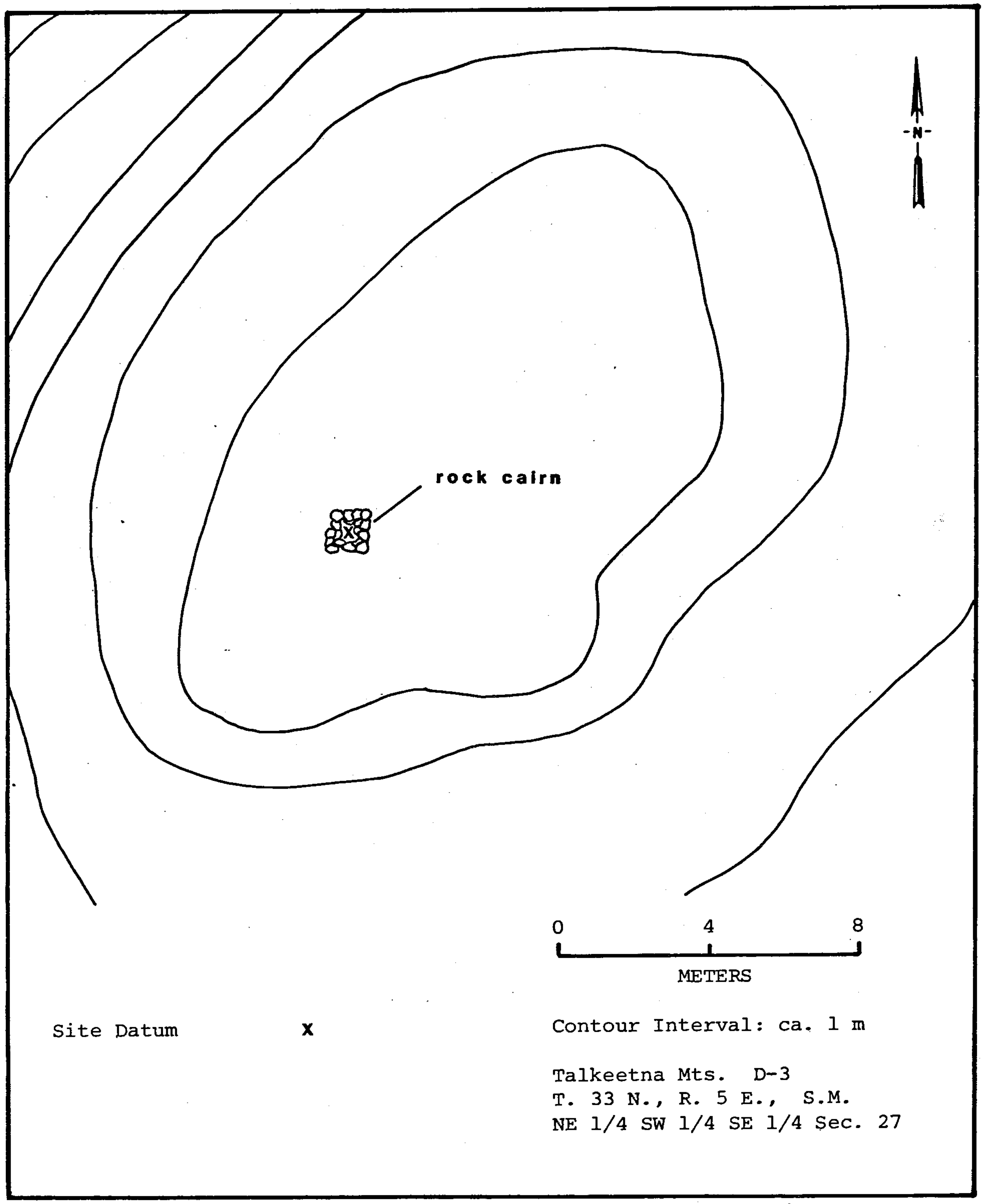


Figure 95. Site Map TLM 116.

(xlix) AHRS Number TLM 117, Accession Number UA81-275

Area: ca. 2 km Southwest of Deadman Lake Outlet
Area Map: Figure 158; Location Map: Figure 302
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 433400 Northing 6985600

Latitude 62°59'45" N., Longitude 148°18'45" W.

T. 22 S., R. 4 W., Fairbanks Meridian
Sec. 21, SE¼SE¼NE¼

Site Map: Figure 96

Setting: The site is located on a north-south oriented ridge which overlooks the confluence of Deadman Creek, flowing west-southwest, and one of its northern tributaries 600 m to the southeast (Figures 158, 302). Situated on the northern quarter of the 100 m long ridge at an elevation of 945 m asl (3100 feet), the site is 70 m west of the tributary which flows southward 25 m below the ridge. The ridge is one of several rolling low ridges which border the north side of Deadman Creek and have been truncated by it. A panoramic view is possible from the ridge. To the south are the brush covered lowlying region adjacent to the confluence and the gentle north facing slopes beyond. The view westward is onto the east slopes of the 1524 m asl (5000 feet) high mountains and the intervening hillocks which have been dissected by numerous drainage channals. North of the site is the tributary valley bordered by soluflucted slopes. Northeast, across the tributary is the most prominent hill in the vicinity at an elevation of 975 m asl (3200 feet) with HEA 180 located on the summit. Eastward there is a continuation of the rolling hills with TLM 098 (directly east of the tributary) TLM 099 (out of view 200 m further east), and Deadman Mountain's southern ridge. Vegetation at the site consists of shrub birch, cranberry, and bearberry. The surrounding terrain is similarly vegetated with higher brush growing adjacent to the confluence.

Reconnaissance Testing: The surface lithic scatter was found on the northern half of the ridge, 1 meter below the centrally located high point of the ridge (Figure 96). Only four flakes were located during reconnaissance testing being equally divided between black basalt and gray chert. The scatter extended 25 m north-south by 8 m east-west. Test pit 1, located two meters southwest of the northern flakes, failed to reveal any cultural material below the surface. No tephras were present in the test.

Collected Artifact Inventory

1 Black basalt flake
1 Gray chert flake

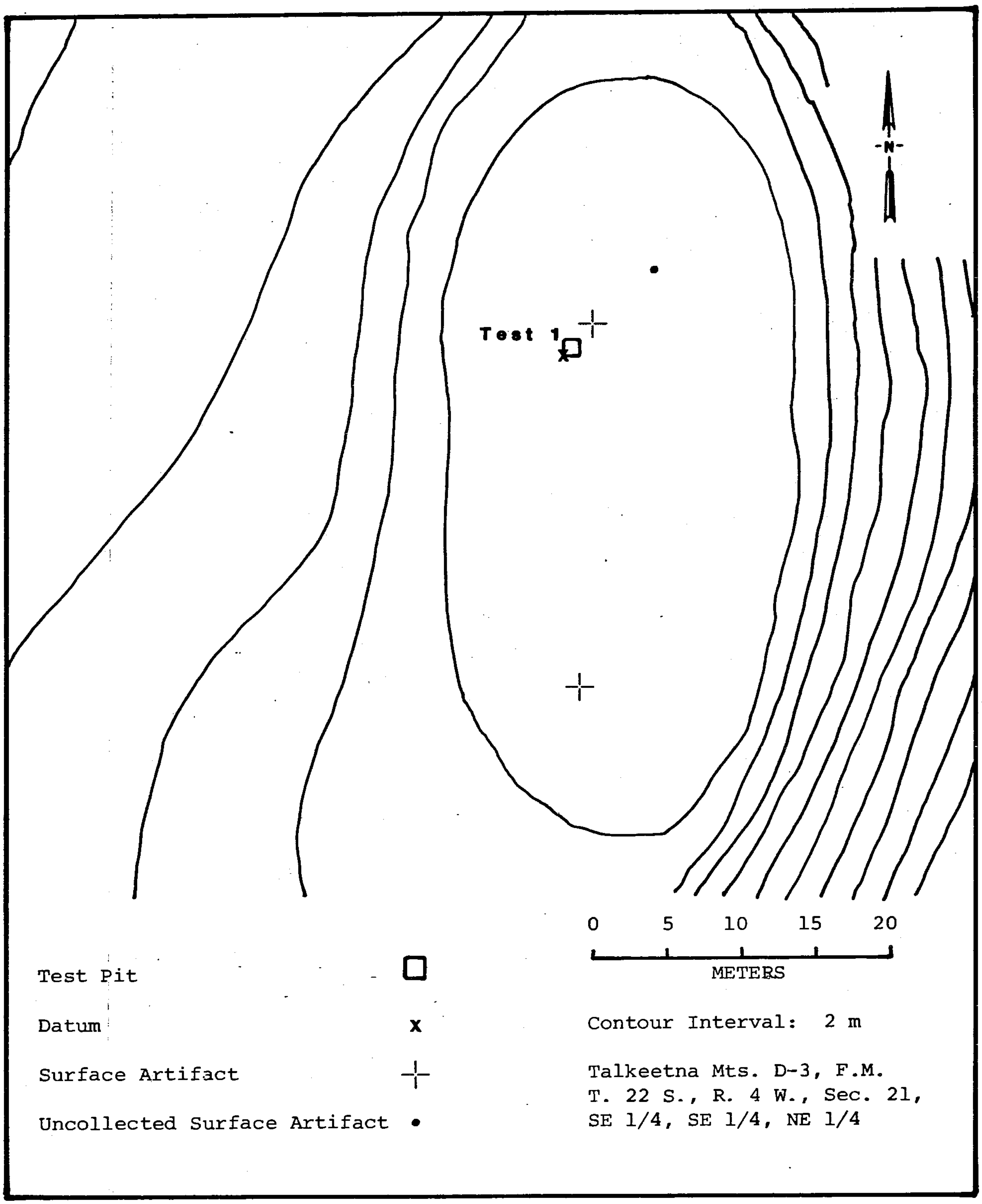


Figure 96. Site Map TLM 117.

(1) AHRS Number HEA 174, Accession Numbers UA80-252, UA81-201

Area: Northeast Shore Deadman Lake
Area Map: Figure 165; Location Map: Figure 308
USGS Map: Healy A3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 437900 Northing 6987400

Latitude 63°00'45" N., Longitude 148°13'45" W.

T. 22 S., R. 4 W., Fairbanks Meridian
Sec. 13, SW¼NW¼NE¼

Site Map: Figure 97

Setting: The site is located in glacially scoured terrain at the northeastern end of Deadman Lake at an elevation of approximately 961 m asl (3150 feet), approximately 600 m northeast of the point where Deadman Creek enters the lake (Figures 165, 308). The site lies near the highest elevation of a 30 m high deflated knoll which is connected to the main valley wall to the north by a ridge approximately 15 m lower in elevation than the top of the knoll. In all other directions the knoll slopes moderately down to Deadman Lake on the east; Deadman Creek on the west and low, poorly drained muskeg terrain to the southeast. This knoll lies at the intersection of two major glacial valleys and in close proximity to two large lakes, Deadman Lake (190 hectares) ca. 200 m to the southwest and Big Lake (390 hectares) to the southwest approximately 1.4 km. Both of these lakes are in view and easily accessible from the site location. Intervening land between these two lakes is low, poorly drained terrain with standing water. Deadman Creek, 400 m east of the site, and in view, meanders slowly through this flat valley bottom in a deep narrow channel.

The view from the site is expansive and panoramic overlooking Deadman Lake to the west. Deadman Creek to the south and southeast and Deadman Creek valley to the northeast.

The site is well above tree line and vegetation consists of low shrubs and lichen on an extensively deflated ground surface. Dwarf birch is present in more protected portions of the knoll. Lower terrain in the vicinity of the site is primarily moist tundra with concentrations of willow and alder along the creek drainage.

Reconnaissance Testing: The site is a surface lithic scatter on the top, western and southeastern slope of this deflated knoll (Figure 97). A sidescraper (UA80-252-1) and a basalt blade-like flake were surface collected from the western slope of the knoll during a brief 1980 reconnaissance. The site was revisited in 1981 to complete the recording of data and an additional 15 surface artifacts were collected at the site. These included a gray quartzite lanceolate point (UA81-201-1; Artifact Photo O-a), three black chert scrapers (UA81-201-2, 3, 4; Artifact Photo O-b, c, d), a red-brown jasper endscraper fragment (UA81-201-5; Artifact Photo O-e), six retouched flakes and four waste flakes. Lithologies present at the site include chert, rhyolite, chalcedony, quartz, quartzite and jasper. No concentration of lithic debitage indicating a chipping station was observed.

No subsurface cultural material was found at the site. Test pit 1, a 50 x 50 cm test excavated 10 m northwest of the 1981 datum, was sterile and showed glacial drift to directly underly the patchy organic mat. No further subsurface testing was done because most of the ground surface was deflated. The observed size of the site based on the distribution of surface artifacts is approximately 25 m by 80 m (Figure 97).

Collected Artifact Inventory

1 Sidescraper
1 Basalt blade-like flake
1 Gray quartzite lanceolate point (complete)
2 Black chert endscrapers
1 Black chert scraper fragment
1 Red brown jasper endscraper fragment
2 Brown jasper retouched flakes
2 Gray chert retouched flakes
2 Gray rhyolite retouched flakes
1 Gray rhyolite flake
1 Gray chert flake
2 Quartz flakes

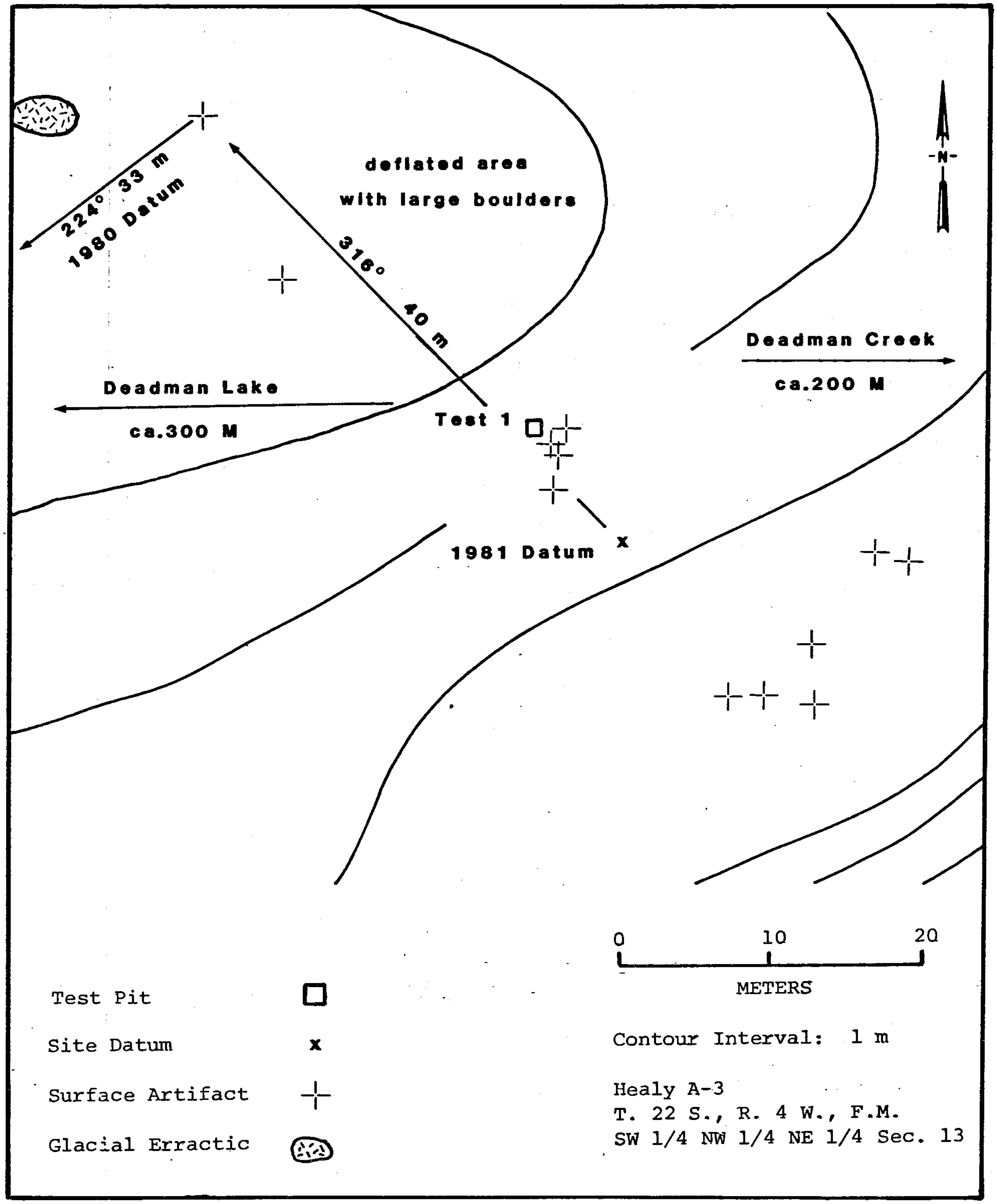


Figure 97. Site Map HEA 174.

(1i) AHRS Number HEA 175, Accession Numbers UA80-253, UA81-200

Area: South Shore Butte Lake
Area Map: Figure 166; Location Map: Figure 309
USGS Map: Healy A-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 455550 Northing 7005050, Locus A
UTM Zone 6 Easting 455550 Northing 7005400, Locus B

Latitude 63°10'25" N., Longitude 147°53'05" W., Locus A
Latitude 63°10'35" N., Longitude 147°53'05" W., Locus B

T. 20 S., R. 2 W., Fairbanks Meridian
Locus A: Sec. 23, NE¼NE¼NW¼
Locus B: Sec. 14, NE¼SE¼SW¼

Site Maps: See Section 4, Figures 145, 146

Setting: The site is located at the southwest end of Butte Lake, a 300-hectare lake at the divide of a mountain pass, from which to the northeast the terrain descends toward the base of the Alaska Range, and southwest into a long glacial trough which constitutes a portion of the Susitna watershed (Figures 166, 309). The site, consisting of two loci, is focused around two knolls within 200 m northwest of the Butte Creek outlet (Figure 145, locus A1, A2), and on a ridgeline running along the west shore of the lake.

Locus A: is situated approximately 30 m above lake level on two knolls of a north-south ridgeline. The higher and more distant knoll from the lake and outlet creek is slightly elliptical with steeper slopes to the northwest and more gradual slopes to the southeast. Approximately 92 m to the southeast lies the second and slightly lower knoll, also sloping gradually southeast toward the creek. The view from both knolls consists of Butte Lake and its margins, the Alaska Range, and to the southwest, the descending valley slopes and outlet creek. Vegetation on the site consists of dwarf birch and low willow, with a lichen, moss, heath ground cover. Deflated sandy gravel blowouts interrupt the site vegetation on the tops and slopes of the knolls, predominantly to the southeast toward the lake and creek. The site lies above timberline.

Locus B: 500 m to the north and ca. 50 m from the lake shore is situated on a relatively flat-surfaced ridge sloping gently to the south. Towards the lake the ridge drops sharply, meeting the shoreline within approximately 50 m. To the north the benched slopes of the valley rise toward the upland hills. Locus A is in clear view to the south. To the north, visibility is similar to that of locus A, although not as extensive. Vegetation on the ridge is likewise the same as that of locus A.

Reconnaissance Testing: The site is defined by a surface lithic scatter covering the two knolls of locus A and the ridge of locus B, and subsurface lithic material from two tests at locus A (Figures 145, 146). Six shovel tests dug at locus B revealed no cultural material. The surface scatter at locus A consists of a side-notched point (UA81-200-1; Artifact Photo P-a), a point base (UA81-200-23; Artifact Photo P-e), three blade fragments, two microblades (UA81-200-3; Artifact Photo P-c; UA81-200-8; Artifact Photo P-d), a possible microblade (UA81-200-29), and a burin (UA81-200-2; Artifact Photo P-b). This material was collected. In addition, 81 flakes and a core fragment were observed and mapped. Twenty-three were collected. This material is concentrated in three scatters on the higher knoll of locus A, in two scatters on the lower knoll, and in isolated locations around the knoll. Locus B contains three basalt flakes which remain on the site. Test pit 1, placed near the top of the highest knoll of locus A, yielded a microblade fragment (UA81-200-32), and six flakes of chert, rhyolite, and basalt between 10 cm and 15 cm below surface, and four flakes of chert, rhyolite and basalt between 15-18 cmbs. The associated stratigraphy is described as dark brown sandy silt with gravel, and coarse red-brown silt with gravel. Test pit 2, on the lower knoll of locus A, yielded a microblade fragment (UA81-200-43) and six flakes of chert and basalt between 10 cm and 15 cm below surface, and four flakes of chert, rhyolite, and basalt, and a microblade (UA81-200-54) between 15 cm and 20 cm below surface.

The cultural stratigraphic unit is described as red to light brown mottled silt with gravel.

Collected Artifact Inventory

1 Side-notched point
1 Burinated flake
1 Point base
2 Possible microblades
3 Blade fragments
25 Chert flakes
13 Rhyolite flakes
6 Basalt flakes
3 Microblade fragments

(lii) <u>AHRS Number HEA 176, Accession Numbers UA80-254, UA81-202</u>

Area: East Shore Deadman Lake

Area Map: Figure 165; Location Map: Figure 308

USGS Map: Healy A3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 438050 Northing 6986600, Locus A

UTM Zone 6 Easting 438150 Northing 6986750, Locus B

Latitude 63°00'20" N., Longitude 148°13'30" W., Locus A

Latitude 63°00'25" N., Longitude 148°13'20" W., Locus B

<u>T. 22 S., R. 4 W., Fairbanks Meridian</u>

Locus A: Sec. 13, NE¼SW¼SE¼

Locus B: Sec. 13, SW¼NE¼SE¼

Site Map: Figure 98

<u>Setting</u>: The site consists of two loci (A,B) located at an elevation of ca. 968 m asl (3175 feet) on two low kame knolls at the eastern end of Deadman Lake, approximately 500 m southeast of the point Deadman Creek enters the lake (Figures 165, 308). Located in kettle and kame topography, the site is in a glacially scoured region of poorly drained muskeg and tundra lowlands donimated by steep valley walls of exposed bedrock and talus slopes. The site lies between two large lakes in ice stagnation terrain at the intersection of two major glacial valleys.

<u>Locus A</u>: is situated on top of a 10 m high rounded kame knoll approximately 200 m south of the easternmost margin of Deadman Lake. This east-west oriented, 30 m long knoll is discontinuous with other knolls in the area and is the highest point of topographic relief in the immediate vicinity of the lake inlet of Deadman Creek. Deadman Creek lies ca. 100 m south of Locus A at its closest point but is only slightly more distant to the east where it follows a southerly course before turning sharply to the northwest and entering Deadman Lake.

Locus B: is approximately 200 m to the northeast of Locus A, at the top of a 150 m long east-west oriented knoll of approximately the same elevation as locus A. The intervening terrain is low and marshy with areas of standing water. Both loci are located at or near the highest elevations of their respective knolls, where erratic boulders are present and wind deflation has created blowouts.

The view from both loci is panoramic encompassing the eastern end of Deadman Lake, the Deadman Creek inlet and the surrounding low relief terrain for 2-3 km in all directions except to the southwest where higher terrain limits the view to less than 1 km. Big Lake lies ca. 700 m to the southeast and is in view from both loci.

The site is well above the present tree line and site specific vegetation consists of tundra and low shrubs including cranberry, low bush cranberry and dwarf birch. The ground surface is hummocky with numerous drift exposures. Surrounding terrain is very poorly drained with numerous kettle ponds between low ridges. Alder and willow, along with higher dwarf birch are present along the margins of Deadman Creek.

Reconnaissance Testing: The site consists of surface and subsurface lithic material at Locus A and surface material at Locus B. One basalt, one rhyolite and three chert flakes were surface collected at Locus A during a brief 1980 reconnaissance survey. Twenty-four additional flakes were observed on the surface at Locus A and three flakes were noted on the surface at Locus B during more intensive reconnaissance in 1981.

Locus A: This locus, covering an area of approximately 15 m north-south by 20 m east-west, consists of two principle clusters of surface flakes exposed in blowouts (Figure 98). Cluster 1, located 15 m northwest of the Locus A datum contained 5 rhyolite, 2 basalt and 4 chert flakes. One gray rhyolite, one gray chert and one black chert flake were surface collected from this cluster. Cluster 2, located 11 m northeast of the locus A datum contained 12 gray chert flakes and one white chert flake (Figure 98). The white chert flake and three gray chert flakes were surface collected from Cluster 2. One isolated gray rhyolite flake was surface collected from the backdirt of a rodent burrow 16.9 m southwest (255°) from the Locus A datum. A single fragment of possible fire cracked rock was also observed in the backdirt of this burrow but was not collected.

Test pit 1, was excavated 16 m southwest of the Locus A datum in an undisturbed area north of the rodent burrow (Figure 98). Test pit 1 produced a single red chert flake 18 cmbs from within a gray tephra below an oxidized tephra and directly overlying glacial drift. Some small flecks of charcoal were present associated with a darker gray tephra within this unit but not enough charcoal was present for a radiometric date.

Locus B: Locus B is located 200 m northeast (20°) from the locus A datum and consists of only isolated surface flakes exposed in blowouts. All observed artifacts at Locus B were surface collected. These consisted of a clear chalcedony flake and two basalt flakes. No subsurface testing was done at Locus B. Intensive surface reconnaissance of the deflated areas at Locus B failed to produce any additional artifacts at this location.

Collected Artifact Inventory

Locus A:

Cluster 1:

1 gray rhyolite flake
1 gray chert flake
1 black chert flake

Cluster 2:

3 gray chert flakes

1 white chert flake

1 red chert flake

Locus B:

1 clear chalcedony flake

2 black basalt flakes

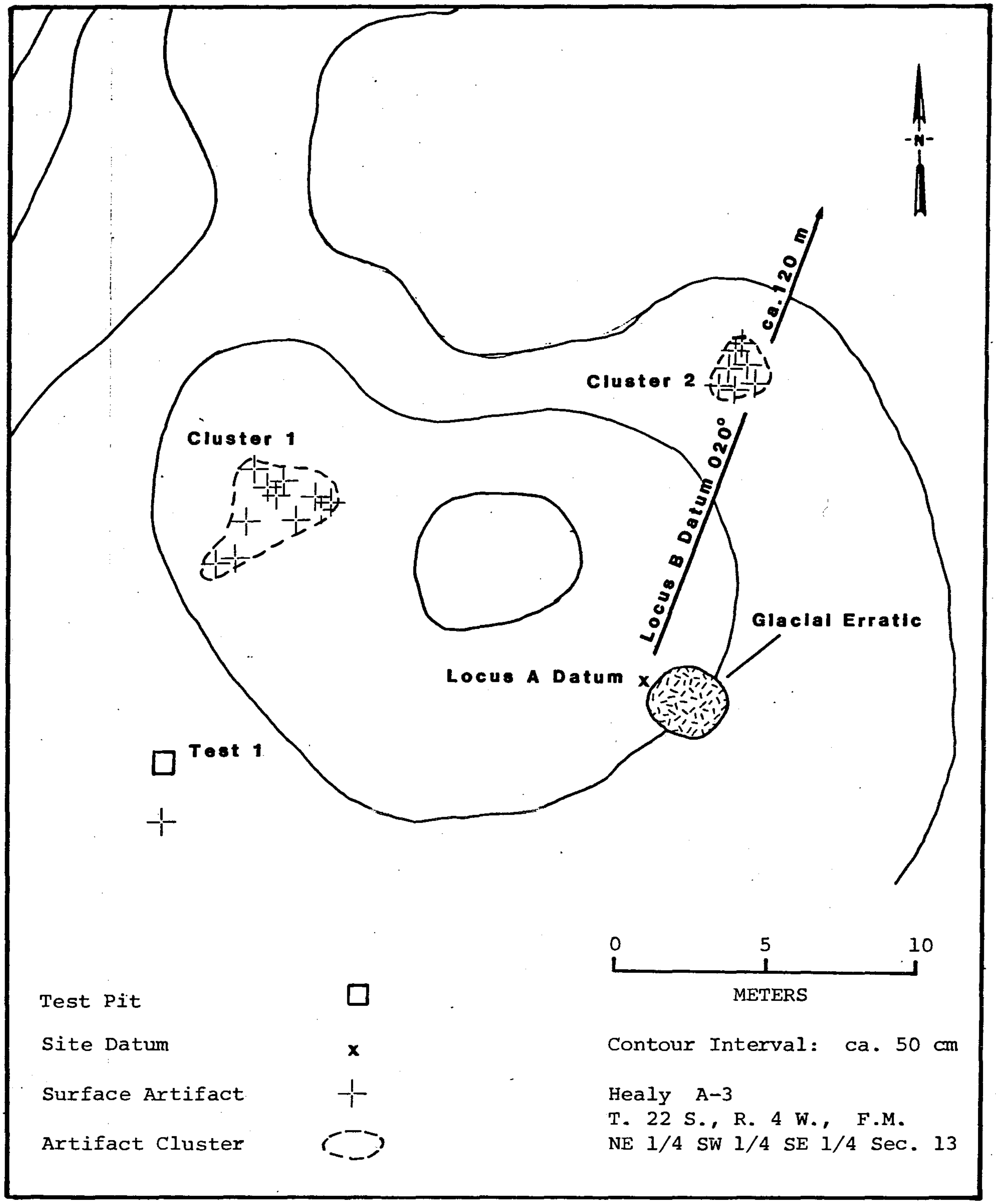


Figure 98. Site Map HEA 176.

(liii) AHRS Number HEA 180, Accession Number UA81-257

Area: ca. 1.6 km Southwest of Deadman Lake Outlet
Area Map: Figure 165; Location Map: Figure 302
USGS Map: Healy A-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 434000 Northing 6986350

Latitude 63°00'07" N., Longitude 148°18'15" W.

T. 22 S., R. 4 W., Fairbanks Meridian
Sec. 15, SE¼SW¼SW¼

Site Map: Figure 99

Setting: The site is situated on top of a knoll of 975 m asl (3200 feet), 1.6 km southwest of Deadman Lake Outlet and 2 km north of the confluence of Deadman Creek and a northern tributary (Figures 165, 302). The knoll is approximately 45 m above the tributary of Deadman Creek as it flows southward 300 m west. A low saddle and a small knoll connected with it extend from the southwest slope of knoll containing the site. The knoll on which the site was found is the dominant high landform for the region between Deadman Creek and its tributary. The panoramic view from the fairly level surface of the 50 m north-south by 75 m east-west knoll includes the rolling terrain which borders the tributary, a large body of water where the meandering tributary levels out to the north, and the 1524 m asl (5000 feet) high mountains which comprise the valley walls of the tributary. The southwest portion of Deadman Lake is visible to the east. The southwestward course of Deadman Creek is obstructed from view by the series of knolls to the south which are 30-40 m lower in elevation. Four other sites are visible from the knoll: HEA 181, 1.25 km to north at the outlet of broad body of water in the course of the tributary; TLM 098 and 099, 1 km south on the knolls overlooking the confluence of Deadman Creek and the tributary; and TLM 117, on the west side of the tributary stream across from TLM 098. Vegetation in the region consists of mosses, lichen, several species of berries, and shrub birch. On the surface of the site, exposed angular pebbles predominate with sporadic occurrences of lichen, moss, and some clumps of grass. The higher portions of the surrounding terrain contain exposed surfaces which enhance the lookout potential of the region as well as aid in the finding of surface lithic scatters.

Reconnaissance Testing: HEA 180 consists of two surface lithic scatters on the southwest and northern portions of the knolltop (Figure 99). Scatter 1 is a diffuse collection of 14 flakes encompassing an area of 33 m north-south by 17 m east-west on the southwest edge of the knoll overlooking the tributary stream. Scatter 2 on the north side of the knoll is smaller (10 m north-south by 13 m east-west) in extent but more heavily concentrated assemblage of over 50 flakes and tools. Scatter 2 is located approximately 40 m northeast of scatter 1. Test pit 1 near scatter 2 datum revealed only a thin organic mat of 6 cm overlying sand and rock. Two gray chalcedony flakes were found in the organic mat during excavation of test pit 1. The site is notable for the diffuse lithologies present consisting of jasper, chert, basalt, rhyolite, obsidian, and quartz crystal. Artifacts include microblades of jasper (UA81-257-13; Artifact Photo S-a) and chert (UA81-257-28 and 30; Artifact Photo S-e, f), a brown obsidian burin spall (UA81-257-31; Artifact Photo S-g), a gray biface fragment (UA81-257-11; Artifact Photo S-b), and a red-brown jasper sidescraper (UA81-257-17; Artifact Photo S-d). Seven surface flakes were left in scatter 1 and 27 in scatter 2.

Collected Artifact Inventory

Scatter 1:

1 Gray, brown speckled, chert flake
1 White chert flake
1 Black basalt flake

1 Gray speckled, white chert flake
2 Light gray chalcedony flakes
1 Black-gray chert flake
2 Gray chalcedony flakes

Scatter 2:

1 Jasper microblade
1 Chert microblade
1 Dark gray chert microblade fragment
1 Brown obsidian burin spall
1 White-gray chert flake
1 Brown jasper flake
1 Red-brown jasper flake
1 White speckled, gray chert flake
1 White-pale red chert flake (retouched)
1 Light red brown chert flake
1 Red streaked, gray chert flake
2 Dark gray, retouched chert flakes
1 Black speckled, white chert flake
1 Purple rhyolite flake
1 White-pink rhyolite flake
1 Gray streaked, white rhyolite flake
1 Black flecked, gray chalcedony flake
2 Brown chalcedony flakes
1 White-brown chalcedony flake
1 White-gray chalcedony flake
1 Clear quartz flake
1 Black basalt flake
1 Light brown siltstone flake

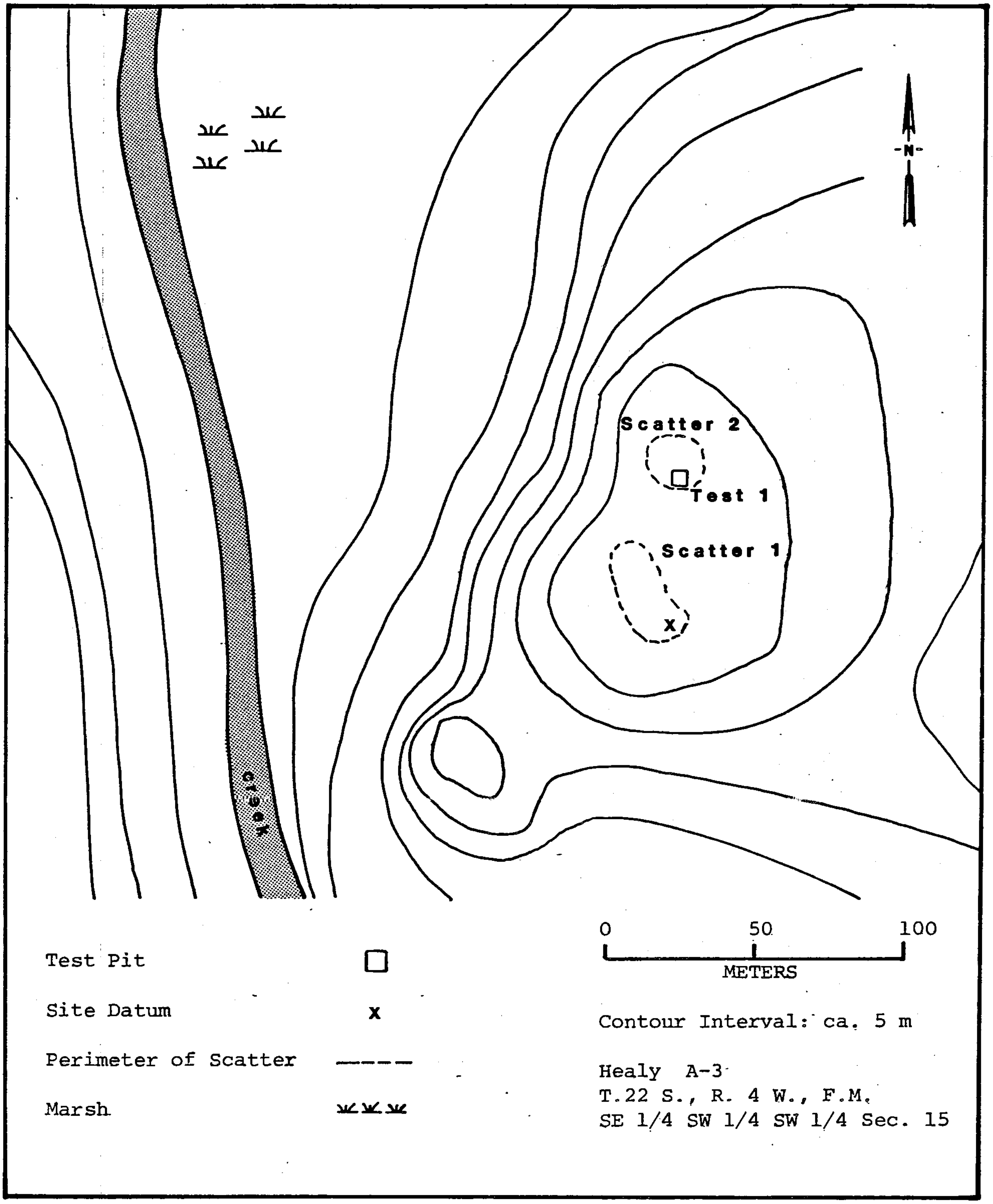


Figure 99. Site Map HEA 180.

(liv) AHRS Number HEA 181, Accession Number UA81-258

Area: ca. 2 km northwest of Deadman Lake Outlet
Area Map: Figure 165; Location Map: Figure 302
USGS Map: Healy A-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 433900 Northing 6987450

Latitude 63°00'50" N., Longitude 148°18'22" W.

T. 22 S., R. 4 W., Fairbanks Meridian
Sec. 15, SW¼NW¼NW¼

Site Map: Figure 100

Setting: The site is located 2 km northwest of Deadman Lake Outlet at the outlet of a small (25 hectare) lake at the southern end of a glacial valley (Figures 165, 302). The site is situated on the western end of a beaded esker around which on the north, west, and south sides of the site the outlet creek flows generally southwards. The section of the esker on which the site occurs rises ca. 2 m above the site to the east, and includes a lower ledge west of the site as well. The site is contained within a 20 m x 3 m ledge, approximately 8 m above the surrounding high brush plain, at ca. 914 m asl (3000 feet). Visibility is most extensive to the north, encompassing the small lake and the valley walls. The surrounding terrain comprises a series of morainal hills, the closest of which are visible from the site. The valley wall to the west is in view as a uniformly steep slope. Vegetation at the site consists of low heath, lichen and dwarf birch. Large boulders and gravel exposures interrupt the surface vegetation around the site. High brush, including birch, willow, and alder, and muskeg characterize the surrounding vegetation. The site is above timberline.

Reconnaissance Testing: The site consists of a scatter of basalt waste flakes within a 6 m^2 gravel exposure on the relatively flat surface of the site (Figure 100). Seven flakes were counted, three of which were collected. No further surface material was noted. Test pit 1, placed 3 m west of the scatter, yielded one chert flake at 15 cmbs in a coarse red-brown silt. This may constitute a tephra horizon, although the matrix appeared to be highly mixed with sand and gravel. No charcoal was present in the test. Three shovel tests were dug within 30 m east of the site, which yielded no cultural material.

Collected Artifact Inventory

3 Basalt waste flakes
1 Chert flake

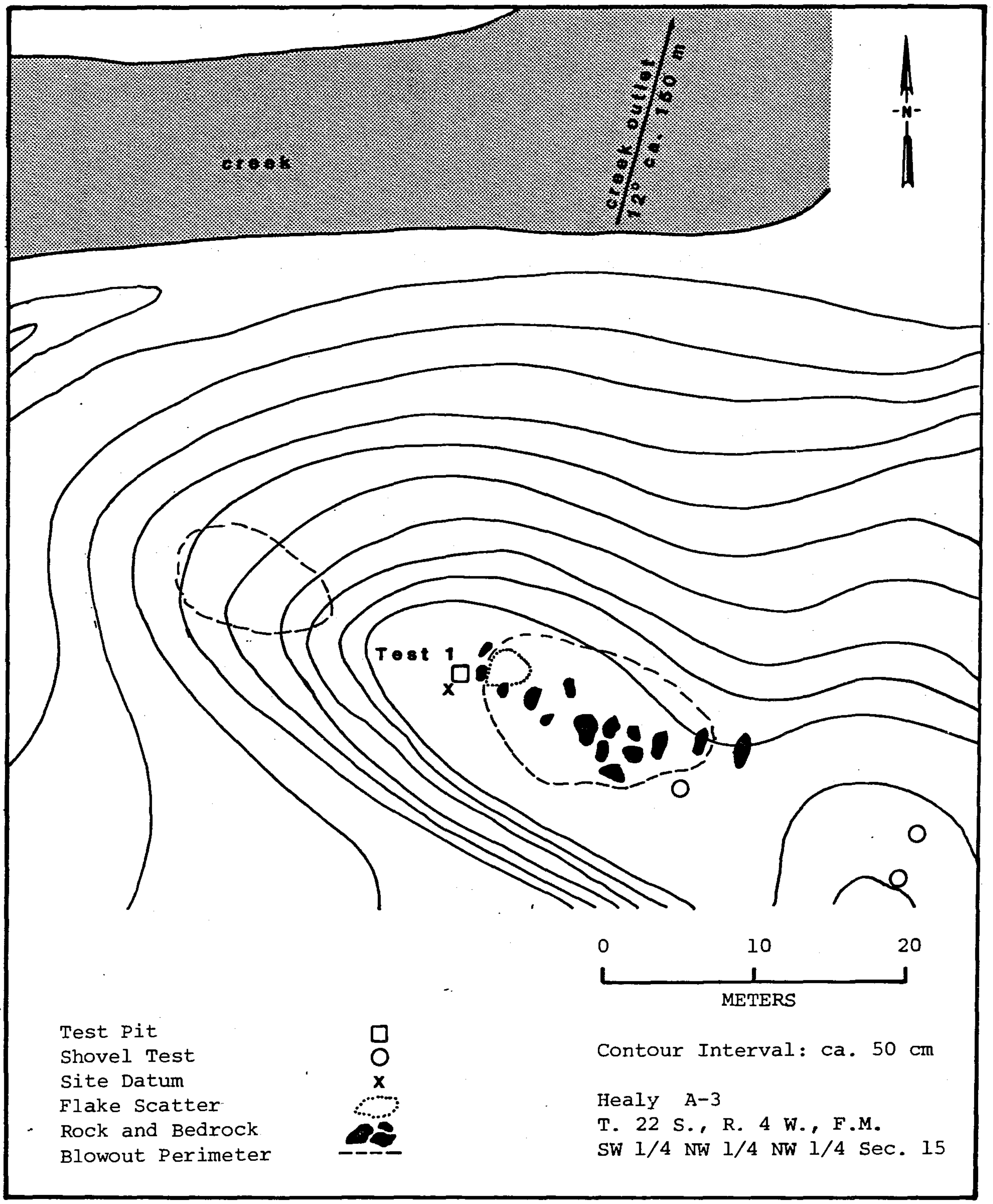


Figure 100. Site Map HEA 181.

(lv) AHRS Number HEA 182, Accession Number UA81-259

Area: ca. 4 km Northwest of Deadman Lake Outlet
Area Map: Figure 165; Location Map: Figure 312
USGS Map: Healy A-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 433900 Northing 6990100

Latitude 63°02'10" N., Longitude 148°18'25" W.

T. 22 S., R. 4 W., Fairbanks Meridian
Sec. 3, SW¼NW¼SW¼

Site Map: Figure 101

Setting: The site is located 3 km northwest of Deadman Lake, on the western tip of a glacially formed knoll approximately 150 m east of a wide meandering south-flowing creek (Figures 165, 312. This creek drains a glacial valley west of Deadman Mountain. A small tributary to the creek drains the mountains to the east, and runs past the site on the north and west. The site is situated on a gravel deflation which extends north-south for approximately 35 m along the western edge of the knoll. Slopes to the south, west, and north of the site slope uniformly about 20° to the marshy plain about 8 m below. To the east the terrain ascends gradually for about 200 m to the steeper slopes of Deadman and other mountains. Visibility is equally good in all directions, though of greatest distance to the south. The knoll constitutes the highest relief within sight on the valley floor.

In addition to the gravel deflation of the site, the surface of the knoll is covered with lichens, low heath, and dwarf birch, and interrupted by partially exposed boulders. In the marshy plain surrounding the site and along drainage channels the vegetation is high brush, comprising dwarf birch, willow, and alder. The site location is above timberline.

Reconnaissance Testing: The site constitutes a surface lithic scatter on the gravel deflated area at the west end of the knoll (Figure 101). A rhyolite side-notched point fragment (UA81-259-1; Artifact Photo S-h), two basalt flakes, and a quartz oriface fragment (UA81-259-4) were collected from the surface. They were located within 28 m (north-south) of each other. No further surface material was observed. Test pit 1 was dug approximately midway along the deflation, on a flat, vegetated spot of the knoll. No cultural material was recovered.

Collected Artifact Inventory

1 Rhyolite side-notched point fragment
2 Basalt flakes
1 Quartz biface fragment

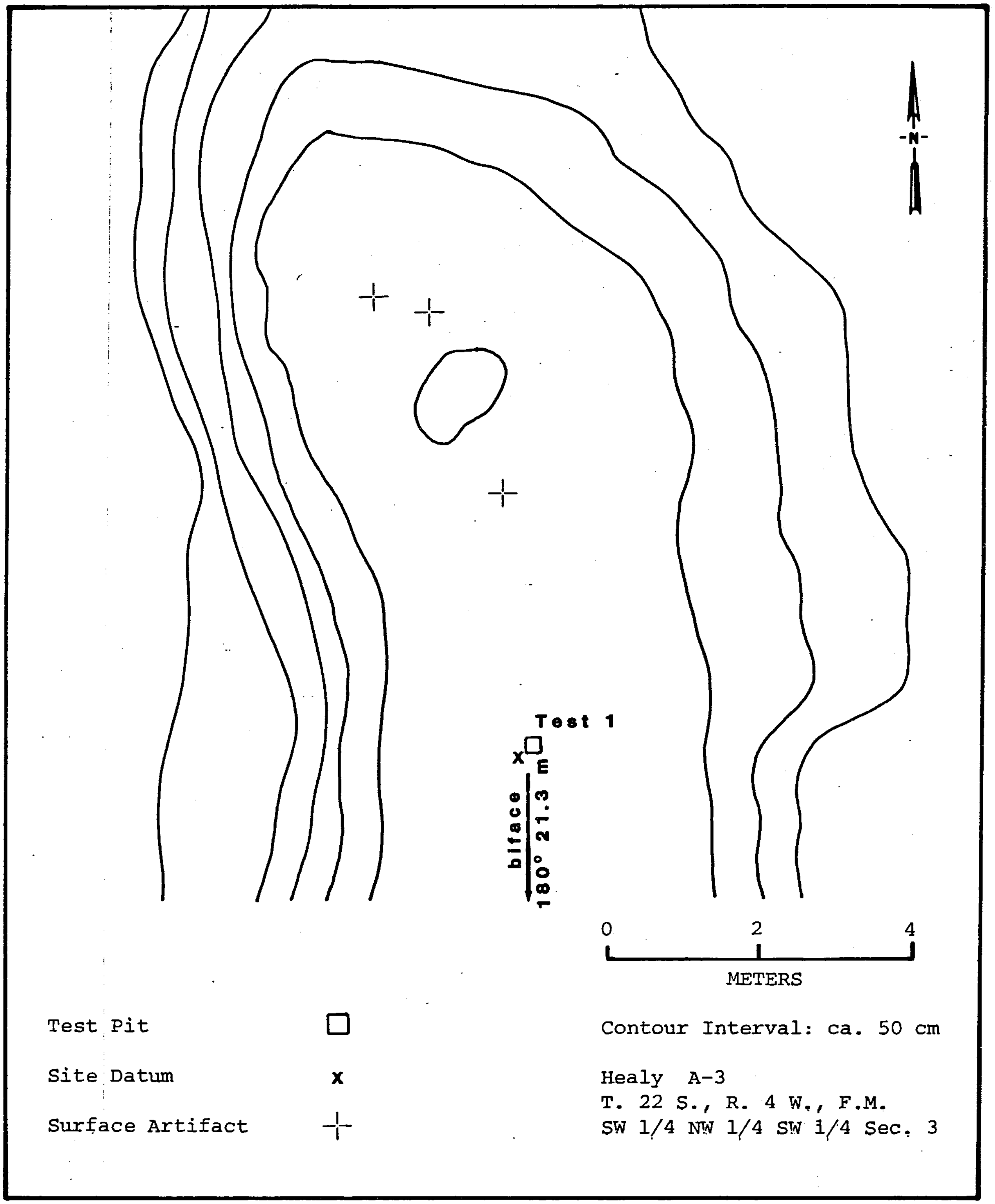


Figure 101. Site Map HEA 182.

(lvi) AHRS Number HEA 183, Accession Number UA81-281

Area: ca. 200 m West of Deadman Lake Outlet
Area Map: Figure 165; Location Map: Figure 302
USGS Map: Healy A-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 435450 Northing 6986800

Latitude 63°00'25" N., Longitude 148°16'25" W.

T. 22 S., R. 4 W., Fairbanks Meridian
Sec. 14, SE¼NW¼SW¼

Site Map: Figure 102

Setting: The site is located ca. 200 m from the outlet stream which drains Deadman Lake on a small 15 m x 20 m low knoll (Figures 165, 302). The lower slopes of Deadman Mountain begin ca. 1 km north of the deflated portion of the knoll that contains the site. Three hundred meters to the west a small lake is present at the base of a north-south ridge system which reaches an elevation of 1076 m asl (3530 feet). Two smaller lakes are located on top of this ridge system. The site itself is approximately 30 m above Deadman Lake in an area of undulating terrain which extends from the base of Deadman Mountain to the unnamed creek which drains into Deadman Creek from the west, ca. 3 km away. Big Lake is located within 5 km of the site. The hills to the east of the site run to an elevation of 1057 m asl (3467 feet). Due to the site's elevation above the lake, most of Deadman Lake, as well as the outlet stream, are clearly visible from the site. Also in view are parts of the valley to the north which forms a pass between Monahan Flat (north of the Denali Highway) and the Susitna River Valley and the southern portion of that valley towards the Susitna River. Vegetation on the site consists of dwarf birch, berries, lichen and moss. However, portions of the knoll are deflated, windblown areas with little or no vegetation.

Reconnaissance Testing: The only artifact found at the site was one gray chert flake located and collected on the surface (Figure 102). Due to the rocky terrain, no subsurface tests were placed on the site. Visual reconnaissance of the entire windblown area did not produce any additional cultural material.

Collected Artifact Inventory

1 Gray chert flake

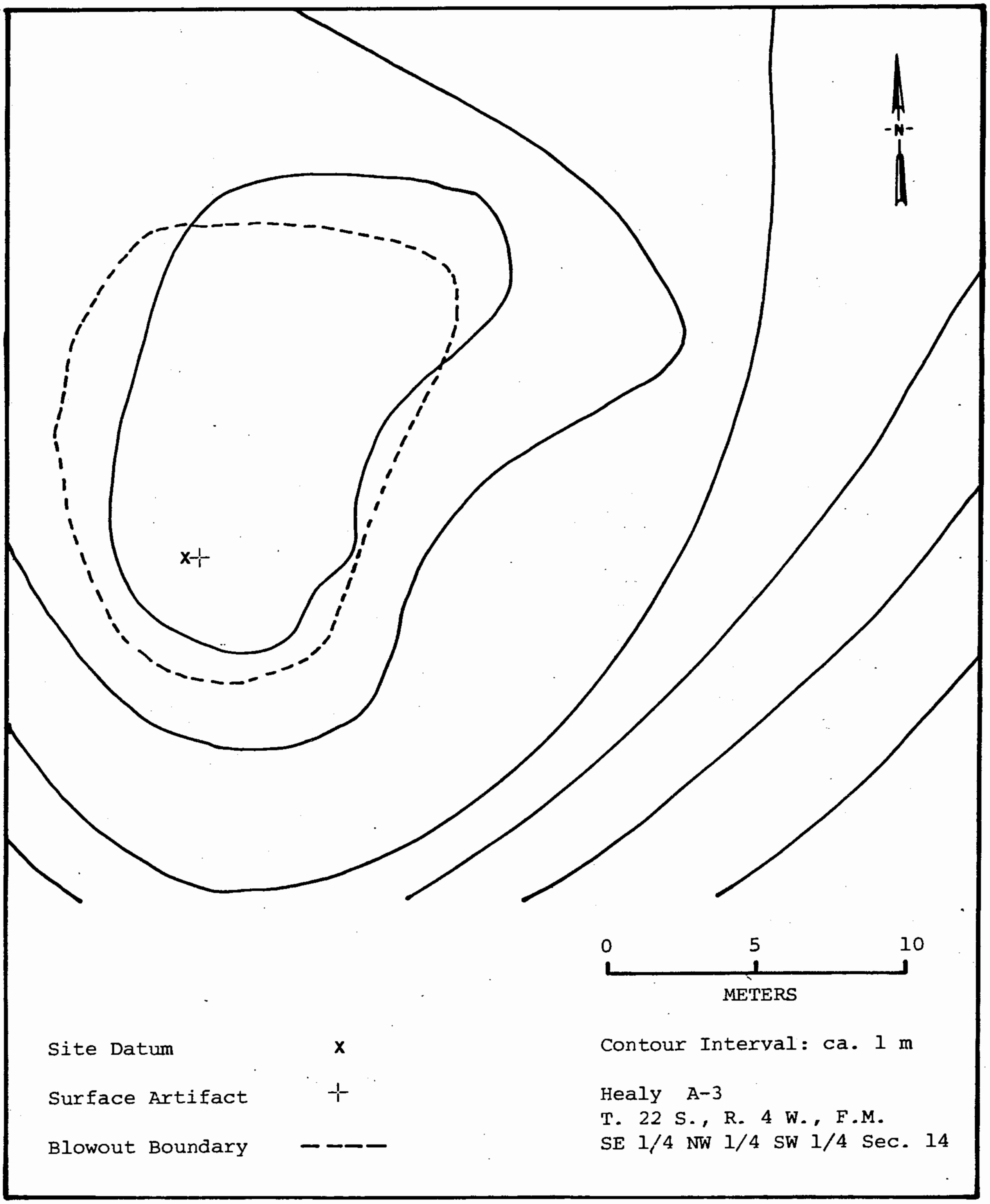


Figure 102. Site Map HEA 183.

(lvii) AHRS Number HEA 184, Accession Number UA81-280

Area: ca. 600 m Northwest of Deadman Lake Outlet
Area Map: Figure 165; Location Map: Figure 302
USGS Map: Healy A-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 435300 Northing 6986800

Latitude 63°00'21" N., Longitude 148°16'40" W.

T. 22 S., R. 4 W., Fairbanks Meridian
Sec. 14, SW¼NW¼SW¼

Site Map: Figure 103

Setting: The site is located on a blowout 600 m northwest of the outlet stream which drains Deadman Lake at an elevation of ca. 930 m asl (3100 feet) on the eastern shore of a small lake 500 m west of Deadman Lake (Figures 165, 302). The blowout is ca. 30 m x 40 m. The site is located on a large deflated area 12 m east of the small lake and ca. 2 m higher in elevation on a well drained 2° slope which slopes towards the lake. The lake itself is at the base of a north-south trending ridge system which rises steeply to an elevation 1059 m asl (3530 feet). Several areas around the lake are several meters higher in elevation than the area containing the site. The terrain unit appears to be continuous from the site north to the foothills of Deadman Mountain and south to the unnamed creek which flows into Deadman Creek from the west. Northeast of the site two large lakes, Deadman (500 m) and Big Lake (5 km) are present. East of the site the terrain drops ca. 50 m to Deadman Lake and its outlet stream. The view from the site includes all of the small lake to the west, two-thirds of Deadman Lake and a portion of its outlet stream to the south. Also visible is a portion of the pass to the north which connects Monahan Flats with the Susitna River Valley to the south. A portion of the pass to the south is also visible for ca. 6 km. Vegetation directly on the site (blowout) is sparse. However, within 1 m of the site dwarf birch, berry species and lichen and moss are present. Grass species are found in the shallows of the lake.

Reconnaissance Testing: A visual reconnaissance of the defalted area produced two chert flakes which articulate to produce a 9 cm long retouch flake. A 40 cm x 40 cm x 35 cm test (test pit 1) was excavated 1 m southwest of where the flakes were found (Figure 103). No cultural material was recovered from this test; nor were any tephras recognizable.

Collected Artifact Inventory

2 Yellow-brown chert flakes (with retouch)

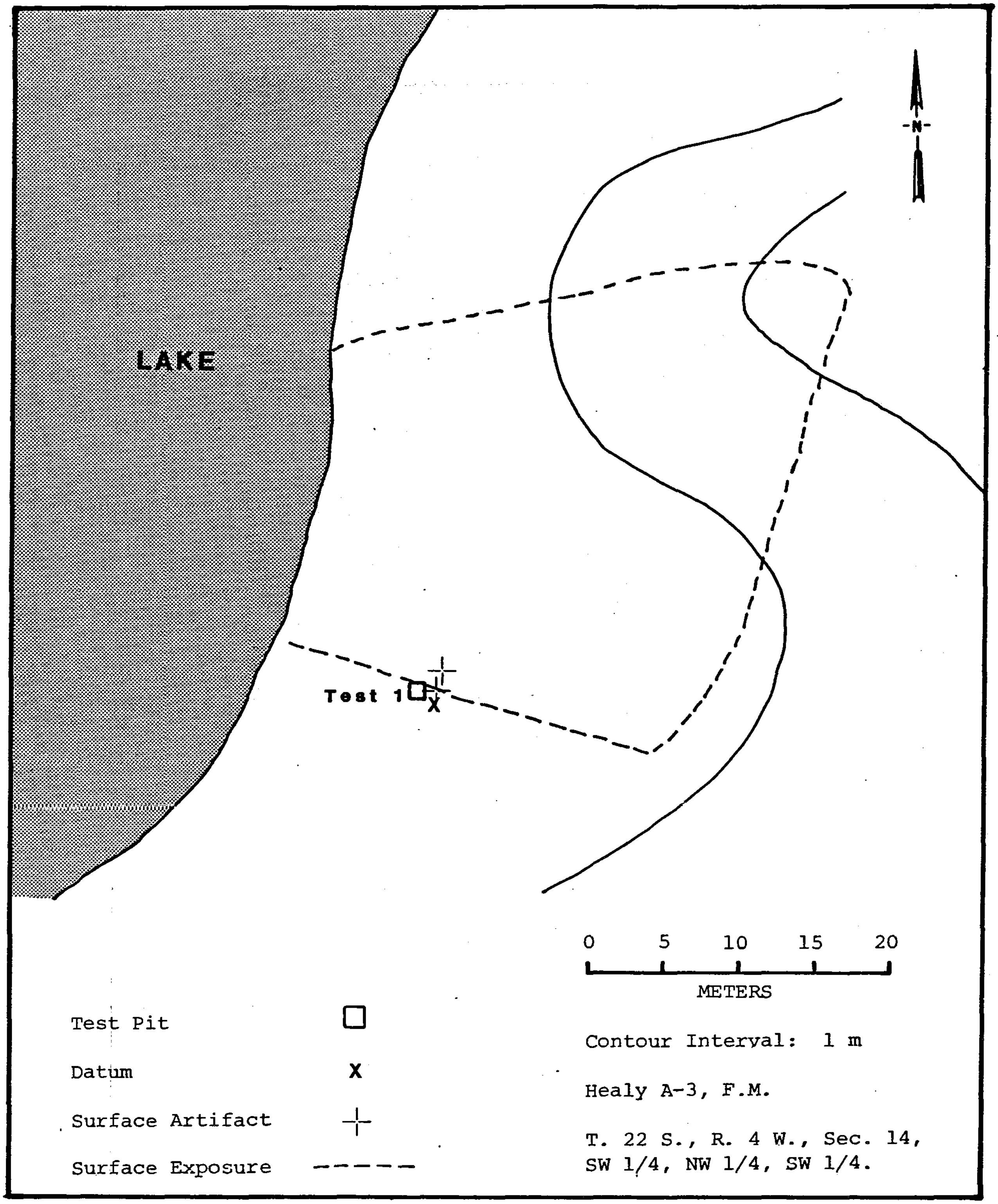


Figure 103. Site Map HEA 184.

(lviii) AHRS Number HEA 185, Accession Number UA81-282

Area: ca. 1.5 km North of Deadman Lake Outlet
Area Map: Figure 165; Location Map: Figure 302
USGS Map: Healy A-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 435950 Northing 6987800

Latitude 63°01'00" N., Longitude 148°16'00" W.

T. 22 S., R. 3 W., Fairbanks Meridian
Sec. 14, NE¼NE¼NW¼

Site Map: Figure 104

Setting: The site is located on an east-west trending ridge on the west side of Deadman Lake ca. 70 m (200 feet) above the lake (Figures 165, 302). The ridge is the first and lowest of a series of ridges on the south side of Deadman Mountain. The site is located on the eastern one-third of the ridge. To the south the ridge slopes (>30°) to a flat marsh which extends for several hundred meters before rising to a low rolling terrain. To the north the ridge dips several meters before rising to the next ridge which is ca. 50 m higher. The terrain continues to rise to the north to the crest of Deadman Mountain ca. 1524 m asl (5000 feet). Hills within 5 km of the site to the east, west and south do not exceed 1066 m asl (3500 feet). In addition to Deadman Lake directly below and east of the site, three smaller lakes (two on top of the ridge southwest of the site and one directly south of the site ca. 1 km) and Big Lake, as well as an unnamed stream draing into Deadman Creek ca. 5 km south of the site, are visible from the site. Also, a portion of the valley which connects Monahan Flats to the north, with Deadman Lake and the Susitna Valley to the south, is more extensive. The ridge top consists mainly of fractured and decomposing bedrock. Little or no vegetation exists on top of the ridge, however, north of the ridge and on the slopes dwarf birch, mosses and lichen form the ground cover.

Reconnaissance Testing: Surface reconnaissance of the entire exposed portion of the ridge top located two areas containing lithic material, locus A and locus B (Figure 104). Due to the rocky nature of the ridge top, no subsurface tests were excavated. Locus A consisted of one gray chert flake. Datum was established at this point. Locus B, approximately 27 m southeast of the site, consisted of four basalt flakes, one gray chert flake with retouch (UA81-282-1; Artifact Photo S-i), one rock which may be a preform for a large scraper and one brown chert "thumbnail" size scraper (UA81-282-3; Artifact Photo S-j).

Collected Artifact Inventory

Locus A:

1 Gray chert flake

Locus B:

4 Basalt flakes
1 Gray chert flake
1 Possible scraper preform
1 "Thumb-nail" size scraper, brown chert

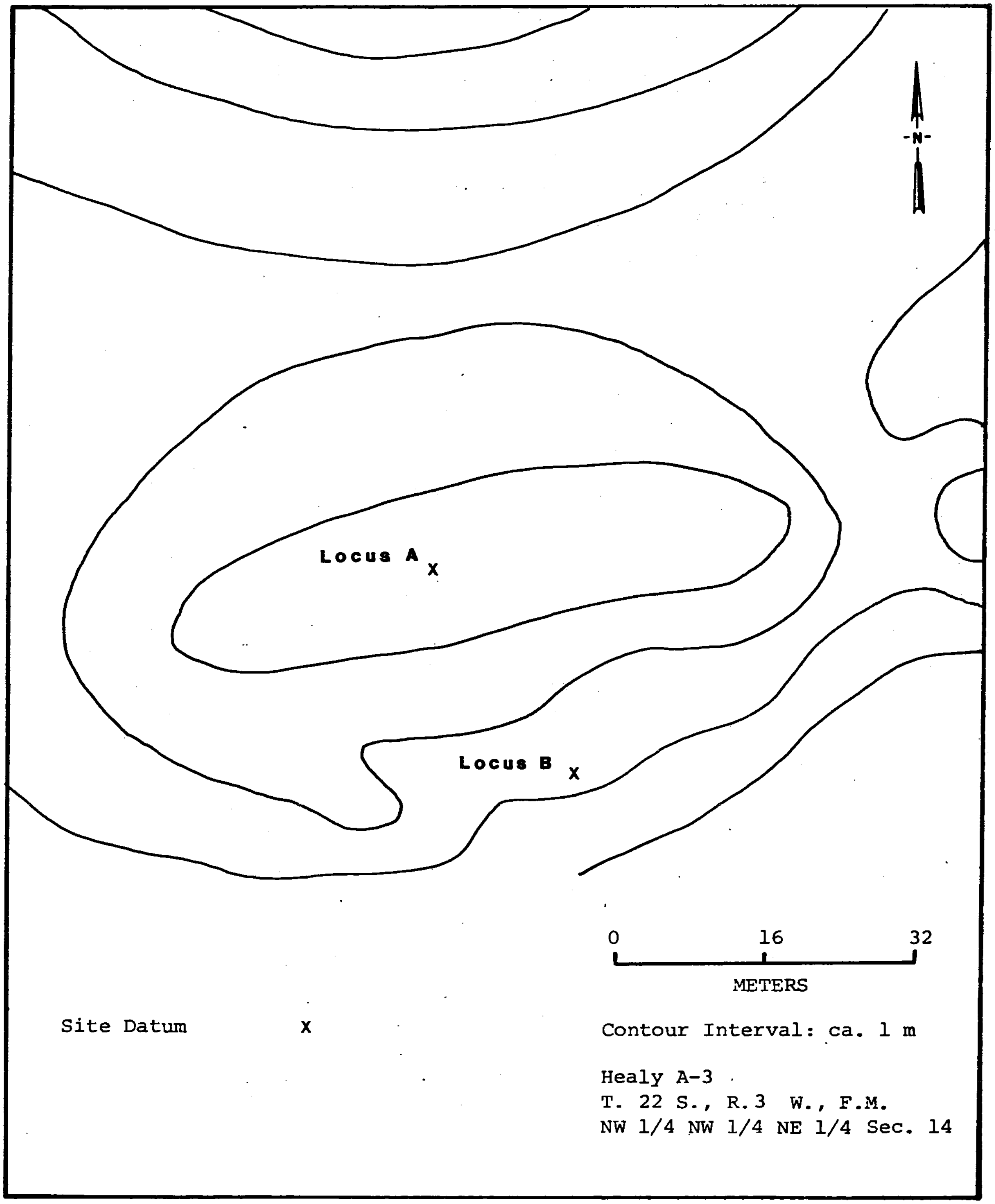


Figure 104. Site Map HEA 185.

(lvix) AHRS Number HEA 186, Accession Number UA81-279

Area: ca. 9 km East of Deadman Lake
Area Map: Figure 165; Location Map: Figure 313
USGS Map: Healy A-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 442900 Northing 6994650

Latitude 63°04'45" N., Longitude 148°07'45" W.

T. 21 S., R. 3 W., Fairbanks Meridian
Sec. 21, SE¼NW¼SE¼

Site Map: Figure 105

Setting: HEA 186 is situated on a knoll at an elevation of 1050 m asl (3445 feet) 500 m east of Deadman Creek in the broad valley of the creek 9 km northeast of Deadman Lake (Figures 165, 313). The knoll is the highest point within a 1 km wide area consisting of treeless undulating lowlands. The site is located primarily on the eastern half of the east-west oriented knoll with dimensions of 125 m east-west by 40 m north-south for the relatively level upper surface. The view to the north-northwest includes the braided section of Deadman Creek upstream flowing through rolling lowlands in a broad valley. To the east are several small lakes in a narrow valley. Southward 500 m distant are other lower east-west oriented ridges. West of the site is Deadman Creek flowing southward opposite a wide canyon on the east side of Deadman Mountain. The region surrounding the knoll with the site is greater than 50 m lower, thereby enhancing the lookout capabilities of the site. The site is above treeline, and the surrounding terrain is covered with shrub birch, grasses and berries. Only a 5 m square on the top of the knoll is thickly vegetated with grasses with the remainder covered with sporadic occurrences of bearberry amidst the dominant exposed gravel surface.

Reconnaissance Testing: A large surface lithic scatter occupying a 30 m wide area was found during a brief reconnaissance of the site (Figure 105). Thirty artifacts, predominantly chert and basalt waste flakes, were found, 18 of which were collected. Two patinated gray chert biface fragments (UA81-279-4 and 11; Artifact Photo T-b, d) were found amidst an 8 x 10 m concentration (north-south, east-west) of surface artifacts. This concentration lies between 20 and 30 m east of the site datum and has yielded in addition to the two biface fragments, a gray chert projectile point midsection (UA81-279-17; Artifact Photo T-g) and two gray chert blade fragments (UA81-279-12 & 15; Artifact Photo T-e, f). The single subsurface test (test pit 1) revealed two surface flakes and a black basalt "awl" (UA81-279-3; Artifact Photo T-a) at 1-2 cmbs. No soil development was visible in test 1 and the single subsurface flake may be the result of frost churning of the exposed glacial drift.

Collected Artifact Inventory

1 Patinated gray chert biface (2 pieces)
1 Gray chert projectile point midsection
2 Gray chert blade fragments
1 Gray chert biface fragment
9 Gray chert flakes
1 White chert blade fragment
1 Black chert flake
3 Black basalt flakes

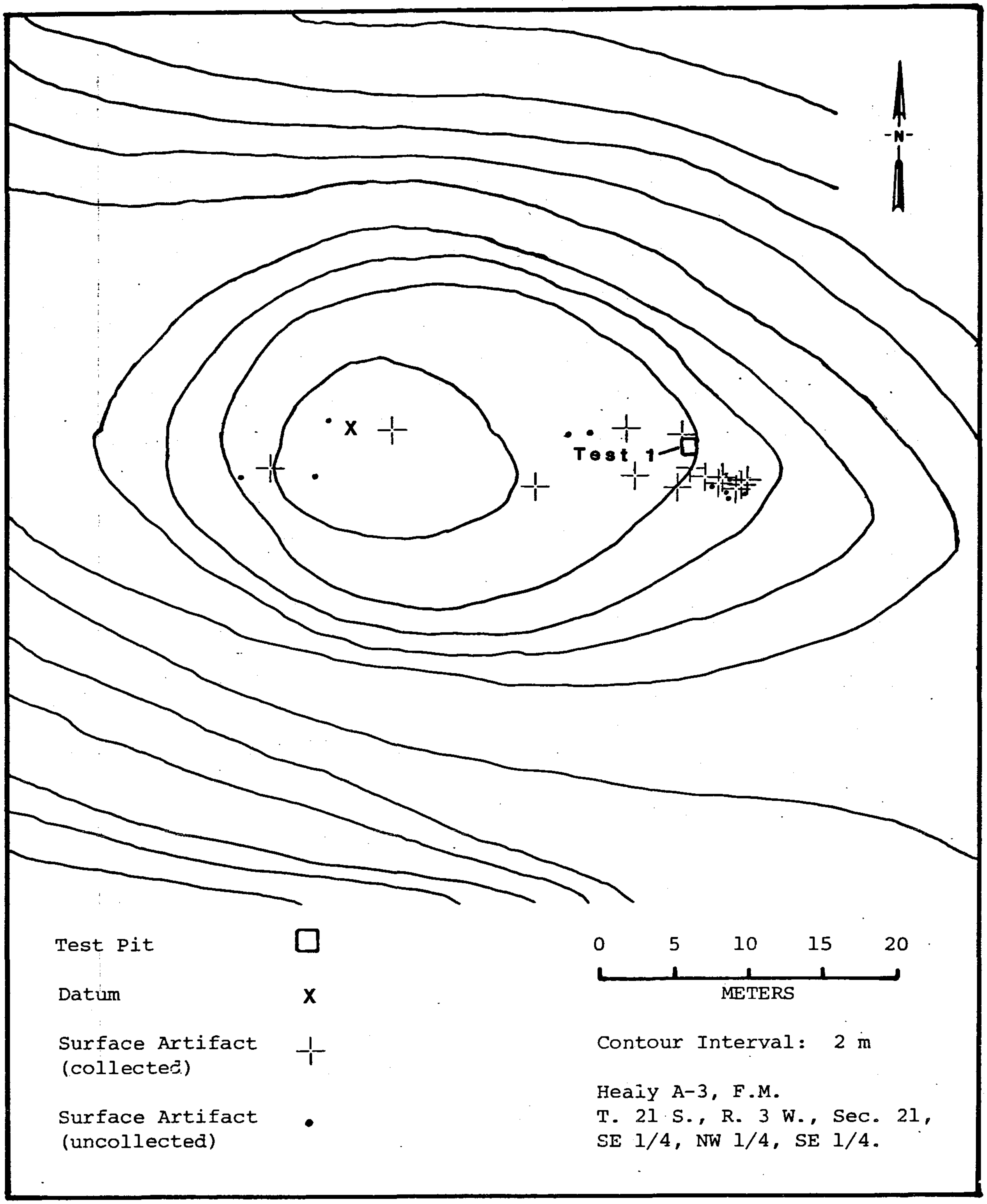


Figure 105. Site Map HEA 186.

(b) Historic Sites - Results and Discussion

(i) <u>AHRS Number TLM 056</u>

Area: ca. 200 m West of Tsusena Butte, Proposed Borrow C
Area Map: Figure 157; Location Map: Figure 277
USGS Map: Talkeetna Mts. D4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 421130 Northing 6979900

Latitude 62°56'38" N., Longitude 148°33'18" W.

<u>T. 33 N., R. 5 E., Seward Meridian</u>
Sec. 20, NE¼NE¼NW¼

Site Map: Figure 106

<u>Setting</u>: The site is a cabin located at the southern boundary of Borrow C, 20 m west of Tsusena Creek (Figures 157, 277). The confluence of Tsusena Creek and the Susitna River is 13.5 km to the south. The base of Tsusena Butte is directly east across the creek. The cabin is situated on a gently sloping terrace 4 m above Tsusena Creek at an elevation of 713 m asl (2375 ft), 13 m south of a 3 m high knoll. To the west of the site the slope is gentle but rolling to the base of the steep valley wall 800 m away.

Vegetation in the area consists of occasional white and black spruce trees with an understory of grasses, moss, bearberry, labrador tea and dwarf birch. Thick stands of low willow border the creek.

<u>Reconnaissance Documentation</u>: The site consists of a dirt floored, one room 10½ foot by 7½ foot (internal dimensions) log cabin constructed of unstripped spruce logs with moss chinking. The corner joints are saddle notched (Figure 106). The roof originally sloped toward the west and was supported by a center beam and the top wall logs upon which rested one layer of split logs with a sod covering. Due to the collapse of the

west wall and roof, the exact slope angle could not be determined. The east wall was approximately 7½ feet high. Both the north and south walls were constructed with the wider end of the logs (tree base) to the east, causing the top of the walls to slant toward the west.

Openings in the cabin include a small vent hole covered with sheet metal with punched holes at the top of the north and south walls. The south wall has a 22" x 4' door opening. The door is missing but hinge holes indicate that the door was hung on the east side and swung out.

Few interior furnishings were noted, however only a third of the cabin interior is visible due to the collapsed sod covered roof. A crushed sheet metal stove is in the southwest section of the cabin. Along the south end of the east wall is a built-in table with lower shelf. It appears that the rear (north) of the cabin contained some sort of raised platform now buried under the sod. One metal frying pan was noted on the floor.

General condition of the cabin is poor. The majority of the log members are extensively rotted. Although the cabin may not be salvageable, additional work could provide information on construction techniques and contents. There was no collection of cultural material at the site.

No associated outbuildings were noted. A rectangular 1.3 m (east-west) by 1.8 m (north-south) depression is located southwest of the cabin. A number of recent tools were found 2 m east of the cabin under a stand of spruce trees. These included a draw knife, a double headed axe, a coil of rope and a section of stove pipe with damper. There is a sparse scatter of metal cans near the cabin, however, no garbage dump was noted. A recent number 1 spring trap with a ground squirrel victim was found approximately 50 m south of the cabin.

Non-collected Artifact Inventory

Sheet metal frying pan

Double headed axe

Draw knife

Coil of rope

Stove pipe with damper

Sheet metal cans

Number 1 spring trap

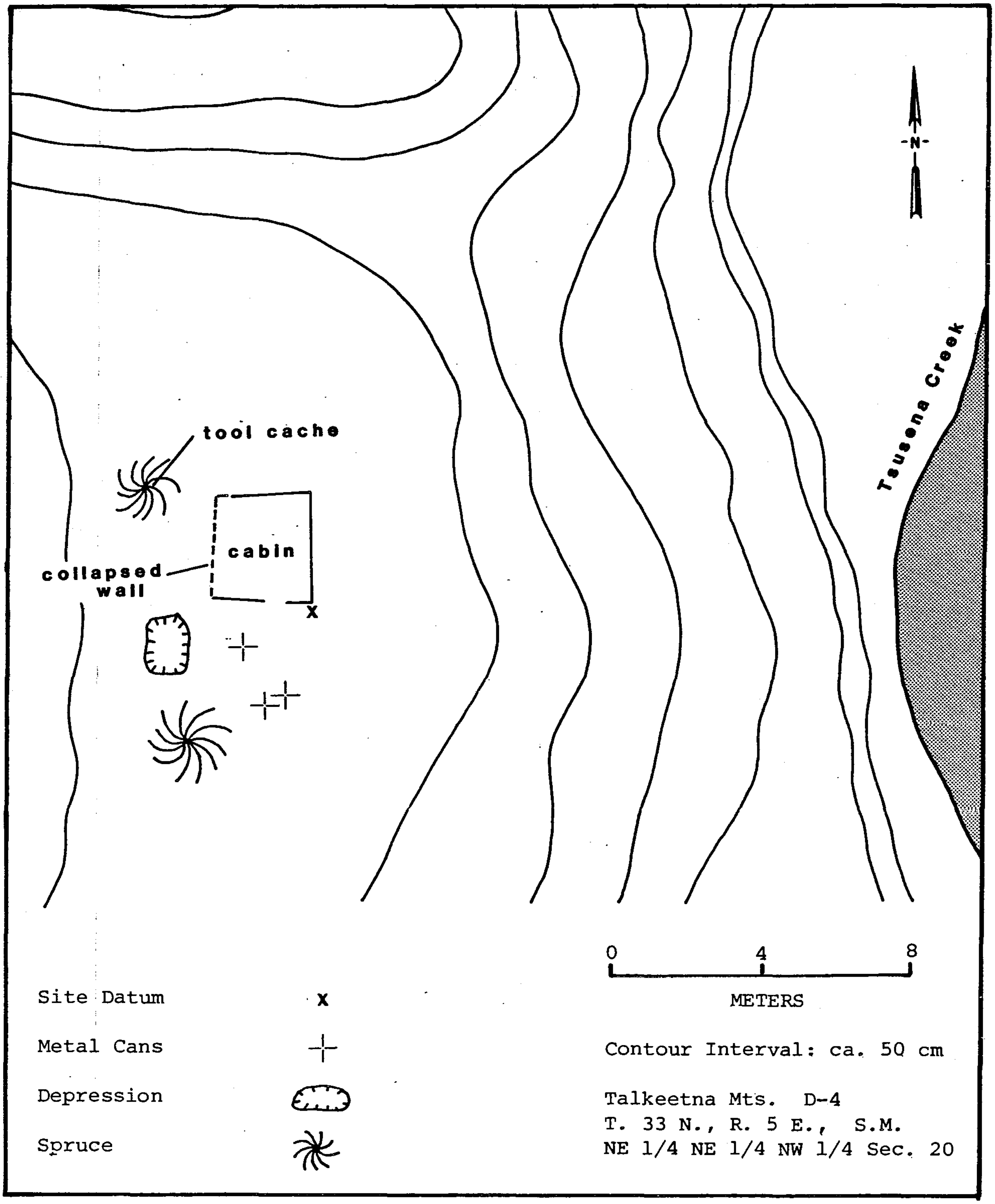


Figure 106. Site Map TLM 056.

(ii) AHRS Number TLM 071

Area: ca. 100 m North of the Confluence of Gilbert and Kosina Creeks
Area Map: Figure 161; Location Map: Figure 299
USGS Map: Talkeetna Mts. C2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 450320 Northing 6952900

Latitude 62°42'20" N., Longitude 147°58'20" W.

T. 30 N., R. 8 E., Seward Meridian
Sec. 9, SW¼SE¼NW¼

Site Map: Figure 107

Setting: The site is the trapping headquarters of Elmer Simco built in the early 1930's. The site complex is located approximately 25 m east at Gilbert Creek, a small tributary of Kosina Creek (Figures 161, 299). The confluence of Gilbert and Kosina Creeks is approximately 100 m to the north. The cabin is situated on a low, gently sloping shoreline terrace less than 5 m above the creek at an elevation of 724 m asl (2375 feet). The front of the cabin faces the creek, which is clean and fast moving with many boulders.

Vegetation in the area surrounding the cabin consists of grasses, moss, low shrubs, dwarf birch, spruce and aspen trees.

Reconnaissance Documentation: Documentation involved the examination of the headquarters cabin, associated outbuildings and historic debris scattered at the site (Figure 107). An inventory was conducted of the items found in the cabin, which included many of the original furnishings and supplies.

The cabin structure consists of a one room, dirt floored, 12 foot by 15 foot (internal dimensions) log cabin. The walls are constructed of horizontal, stripped spruce logs with the average diameter being

11 inches. The corner joints are square notched with the logs extending past their point of intersection. The cracks between the logs are chinked with moss and dirt. Portions of the interior walls are covered with brown paper and canvas for additional weatherizing. Wall openings consist of a small 14" x 26" glazed window in the south wall, a 2'7" x 5'5" door with a 17" x 13" glazed window (window has been removed and is lying on the work table) in the west wall and a small 12" x 10" screened opening in the gable above the door. The roof is peaked and is constructed of sawn boards supported by seven horizontal log beams (two being the top wall logs on either side) running the length of the structure and extending 2'8" past the front wall to form an overhang providing a dry area for firewood and other storage. The roof boards are covered with canvas, flattened cans and sheet metal. A large (1 m x 2 m) section of the southwest corner of the roof is missing along with a small (0.25 m x 1 m) section midway along the north wall. The sheet metal roof has blown off in other areas, exposing the fragile, rapidly deteriorating canvas underlayer. Many of the cabin's wall logs exhibit advanced stages of dry rot. General condition of the cabin structure is fair to poor.

The cabin still contains many of the original furnishings and supplies present when used as a trapping headquarters cabin in the 1930-1950's. Inside the cabin is a wooden plaque stating "Oct 1930, This is the Headquarters Cabin of Elmer Simco and all property. To whom it may concern. Make yourself at home while here. I'm here nearly every 2 days. Elmer Simco." This plaque also lists his seven other trapping camps and has a tally of dates when he was at the cabin. Other dates and names are written on the cabin walls. Interior cabin furnishings include a loft at either end (east and west), shelves and a work table along the north half of the west wall and additional shelves and a bunk complete with springs on the north wall. The east wall has a radio cabinet minus chassis and a screened storage cabinet containing flour and wool clothing. A sheet metal wood stove and oven is in the southwest section of the cabin. Clothing items are hanging along the south wall and scattered about the cabin along with numerous magazines including: Redbook, Saturday Evening Post and Master Detective. The shelves contain a wide variety of foodstuffs, medical supplies and cooking utensils. Piled on the bunk are straw ticks, blankets, and a wooden handmade chair with a caribou skin covering. A wooden dogsled hangs from the ceiling and a harness from the west wall. Leakage from the roof is causing destruction of many of the interior items.

Outbuilding number 1 consists of a small 6 foot by 5 foot (internal dimensions) shed with attached 4'4" x 5' (internal dimensions) outhouse. The shed is constructed of a pole frame with vertically affixed sawn scrap board sides and a split board covered peaked roof having a slight amount of sod covering still present. A 2 foot wide door is in the east wall. Hanging on the inside walls are pieces of dog harness and a pick. The rear west wall of the shed is the east wall of the adjoining outhouse. This structure is also of pole frame construction with affixed vertical boards. The roof originally was sloped toward the north but is currently collapsed. It was apparently sod covered also. The inside of the walls was originally canvas lined.

Outbuilding number 2 consists of a low, 2 foot high, three bay, 5' x 9'6" (outside dimensions) dog kennel constructed of horizontal stripped spruce logs. Each bay has an 11 inch square opening cut into the logs with an adjacent metal staple. One opening has a dog chain leading into it. The roof is collapsed but appears to have been sloped toward the rear of the structure and sod covered.

Outbuilding number 3 is a grass covered and badly decomposed low structure approximately 13 feet by 6 feet (outside dimensions) with 3 bays. One opening was noted on the south side. Although larger, its construction appears to be similar to outbuilding number 2 kennel.

Other associated features at the site include an apparent garbage dump north of the cabin containing enamalware pots and a general scatter of historic debris around the complex, indicating other possible refuse piles. A dogsled is parked adjacent to the northeast corner of the cabin. Wood lying in front of the cabin may represent the remains of an additional feature in this area.

No cultural material was collected at this site.

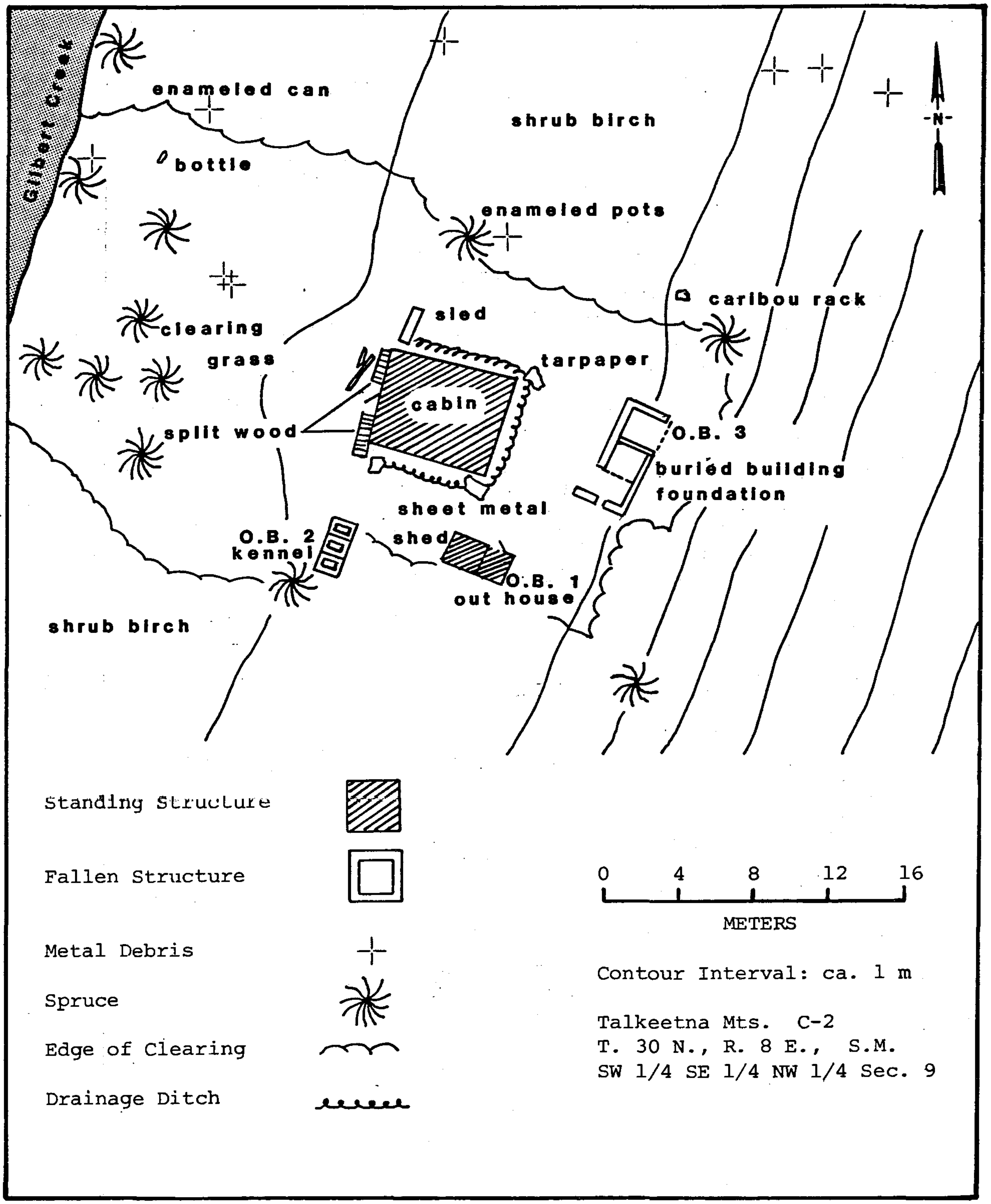


Figure 107. Site Map TLM 071.

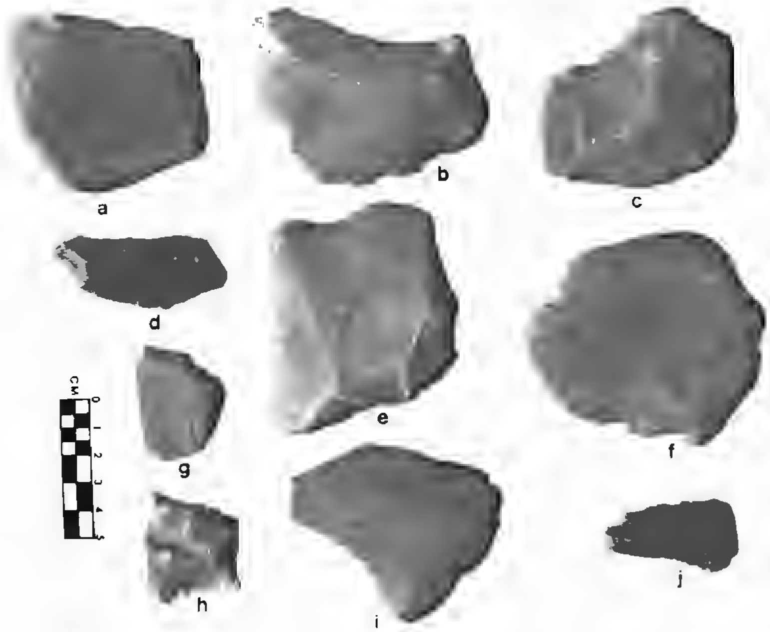


Figure A. Site TLM 027.

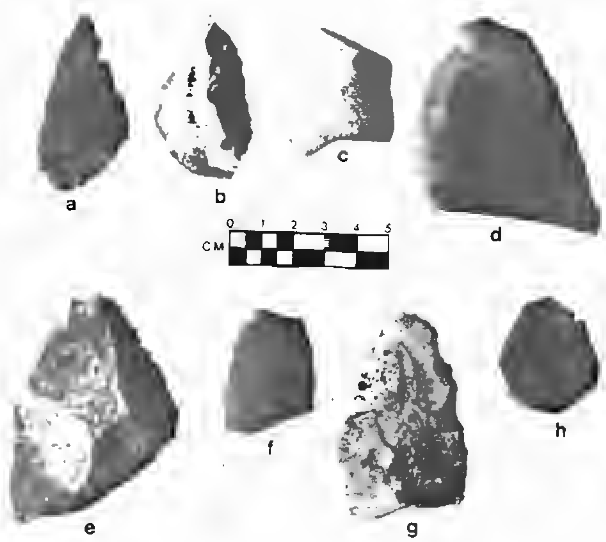


Figure B. Sites TLM 026, TLM 021, TLM 025.

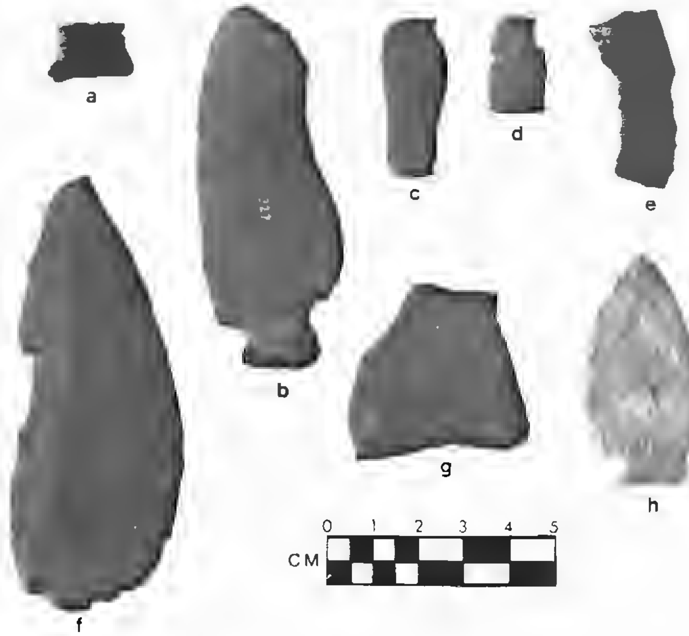


Figure C. Site TLM 030.

Figure D. Sites TLM 031, TLM 032, TLM 033, TLM 036.

Figure E. Site TLM 032.

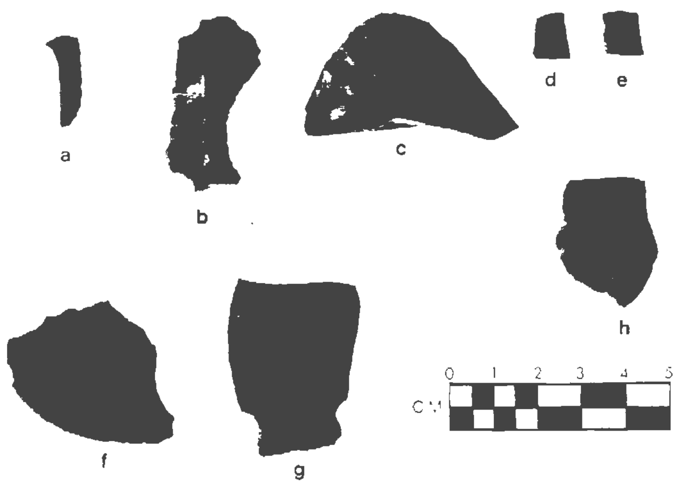


Figure F. Sites TLM 039, TLM 040, TLM 042.

Figure G. Sites TLM 044, TLM 045

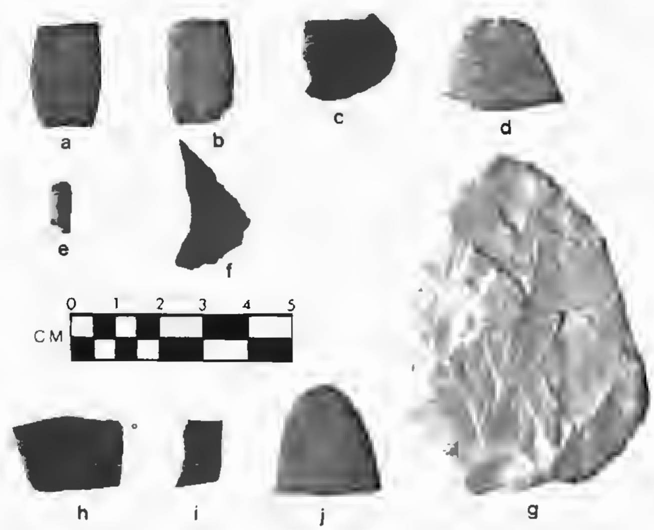


Figure H. Sites TLM 046, TLM 047, TLM 048, TLM 052.

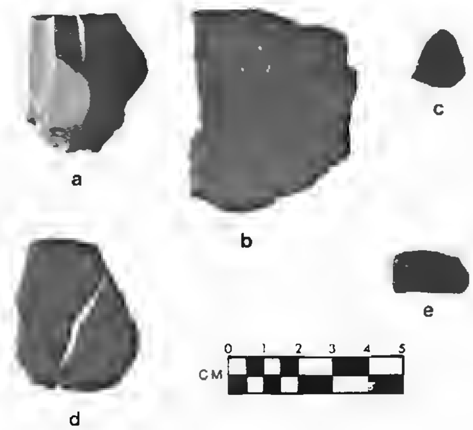


Figure I. Sites TLM 055, TLM 060, TLM 058, TLM 062, TLM 064.

Figure J. Site TLM 066

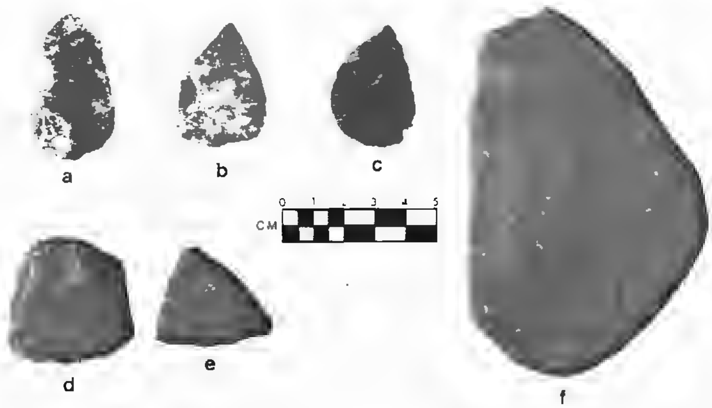


Figure K. Site TLM 067.

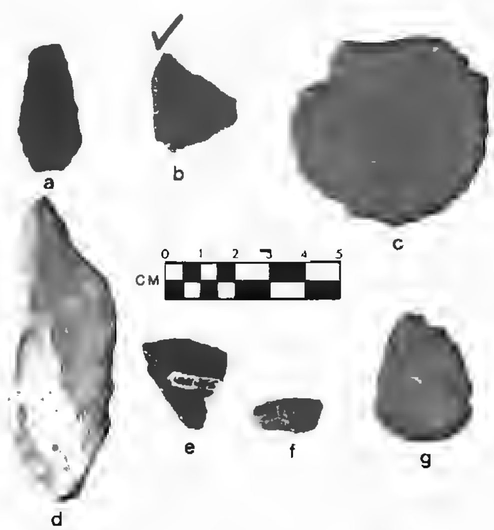


Figure L. Sites TLM 068, TLM 069, TLM 070.

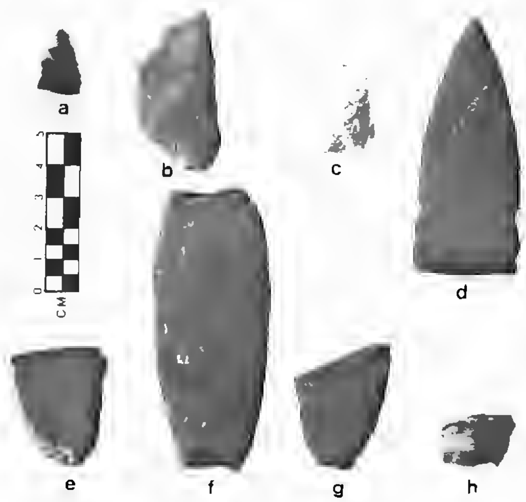


Figure M. Sites TLM 076, TLM 082, TLM 089, TLM 091, TLM 093, TLM 097, TLM 103, TLM 106.

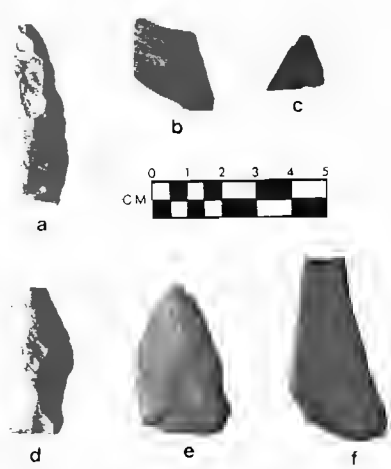


Figure N. Sites TLM 107, TLM 113.

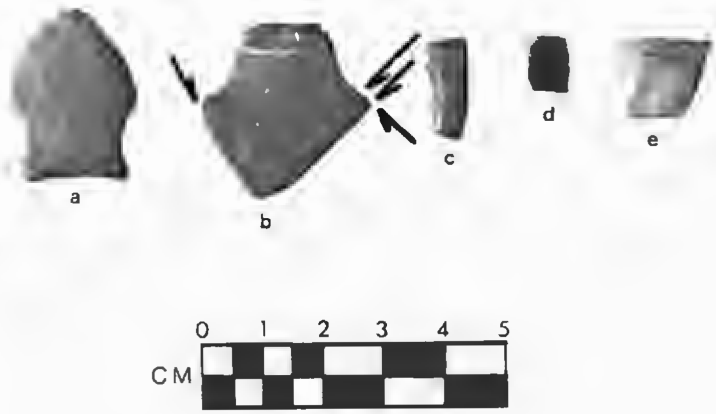


Figure O. Site HEA 174.

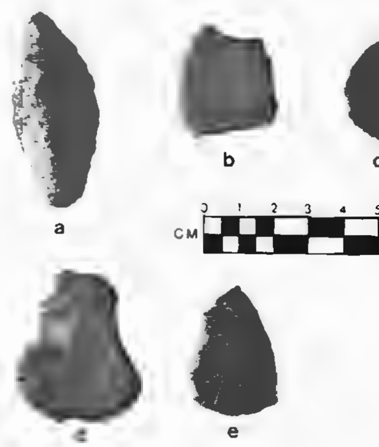


Figure P. Site HEA 175.

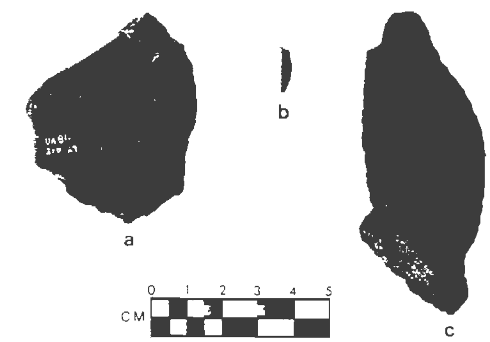


Figure Q. Sites HEA 177, HEA 178.

Figure R. Site HEA 178.

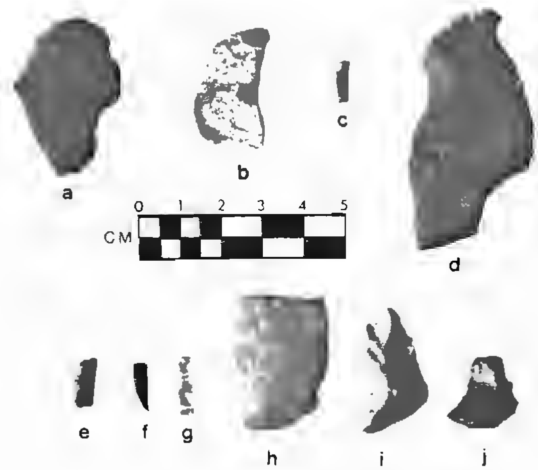


Figure S. Sites HEA 180, HEA 182, HEA 185.

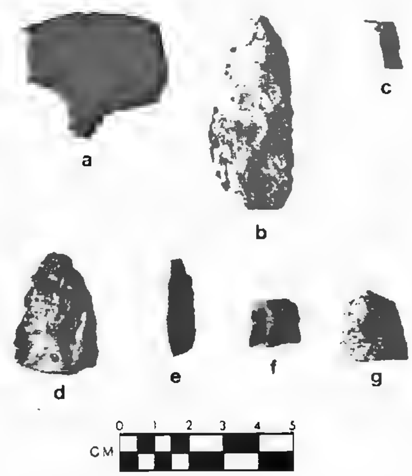


Figure T. Site HEA 186.

TABLE 1

ACCESSION NUMBERS, AHRS NUMBERS, TESTING LEVEL, AND SITE LOCATIONS FOR SITES DISCUSSED

Museum Accession Number	AHRS Number	Reconnaissance Testing	Systematic Testing	Locale	Map Reference
UA78-65	TLM 015	X		OS*	Tal. D-4
UA78-66	TLM 016	X		OS	Tal. D-3
UA78-67	TLM 017	X		OS	Tal. D-4
UA80-164					
UA78-60	TLM 018		X	OS	Tal. D-4
UA81-283					
UA80-165					
UA80-68	TLM 021	X		OS	Tal. C-2
UA80-69	TLM 022	X	X	OS	Tal. D-4
UA81-238					
UA80-70	TLM 023	X		Borrow E	Tal. D-4
UA80-71	TLM 024	X		Borrow E	Tal. D-4
UA80-72	TLM 025	X		OS	Tal. D-3
UA81-225					
UA80-73	TLM 026	X		45	Tal. C-1
UA81-218					
UA80-74	TLM 027	X	X	14	Tal. D-4
UA81-243					
UA80-75	TLM 028	X		OS	Tal. C-1
UA80-76	TLM 029	X		14	Tal. D-4
UA80-77	TLM 030	X		13	Tal. D-4
UA81-217					
UA80-78	TLM 031	X		30	Tal. D-3
UA80-79	TLM 032	X		30	Tal. D-3
UA80-80	TLM 033	X	X	31	Tal. D-3
UA81-223					
UA80-141	TLM 034	X		11	Tal. D-4
UA80-142	TLM 035	X		Borrow E	Tal. D-4
UA80-143	TLM 036	X		30	Tal. D-2
UA80-144	TLM 037	X		30	Tal. D-3
UA80-145	TLM 038	X	X	26	Tal. D-3
UA81-224					
UA80-146	TLM 039	X	X	27	Tal. D-3
UA81-277					
UA80-147	TLM 040	X	X	29	Tal. D-3
UA81-226					
UA80-148	TLM 041	X		OS	Tal. D-4
UA80-149	TLM 042	X	X	45	Tal. C-1
UA81-230					
UA80-150	TLM 043	X	X	21	Tal. D-3
UA81-221					
UA80-151	TLM 044	X		30	Tal. D-2
UA80-152	TLM 045	X		30	Tal. D-2

TABLE 1 (Continued)

Museum Accession Number	AHRS Number	Reconnaissance Testing	Systematic Testing	Locale	Map Reference
UA80-153	TLM 046	X	X	30	Tal. D-2
UA81-263					
UA80-154	TLM 047	X		34	Tal. C-2
UA80-155	TLM 048	X	X	27	Tal. D-3
UA81-278					
UA80-156	TLM 049	X		8	Tal. C-1
UA80-157	TLM 050	X	X	29a	Tal. D-3
UA81-229					
UA80-158	TLM 051	X		Borrow F	Tal. D-4
UA80-159	TLM 052	X		51	Tal. D-2
UA80-160	TLM 053	X		51	Tal. D-2
UA81-200	HEA 175	X	X	#B**	Hea. A-2
UA80-253					
UA81-201	HEA 174	X		#B	Hea. A-3
UA80-252					
UA81-202	HEA 176	X		#B	Hea. A-3
UA80-254					
UA81-203	TLM 057	X		#B	Tal. D-3
UA80-255					
UA81-204	TLM 058	X		70	Tal. D-3
UA81-205	TLM 059	X	X	69	Tal. D-3
UA81-206	TLM 060	X		68	Tal. D-3
UA81-207	TLM 061	X		68	Tal. D-3
UA81-208	TLM 062	X	X	78	Tal. D-3
UA81-209	TLM 063	X		55	Tal. D-3
UA81-210	HEA 177	X		OS	Hea. A-2
UA81-211	HEA 178	X		OS	Hea. A-2
UA81-212	TLM 066	X			Tal. D-3
UA81-213	TLM 067	X		OS	Tal. B-1
UA81-214	TLM 068	X		OS	Tal. C-4
UA81-215	TLM 069	X	X	91	Tal. D-2
UA81-216	TLM 070	X			Tal. C-4
UA81-217	(See UA80-77)			13	Tal. D-4
UA81-218	(See UA80-73)			45	Tal. C-1
UA81-219	HEA 179	X		OS	Hea. A-2
UA81-220	TLM 064	X		72	Tal. D-3
UA81-221	(See UA80-150)			21	Tal. D-3
UA81-222	TLM 065	X	X	85	Tal. D-2
UA81-223	(See UA80-80)			31	Tal. D-3
UA81-224	(See UA80-145)			26	Tal. D-3
UA81-225	(See UA80-72)			OS	Tal. D-3
UA81-226	(See UA80-147)			29	Tal. D-3
UA81-227	TLM 073	X		103	Tal. C-1
UA81-228	TLM 074	X		107	Tal. C-1
UA81-229	(See UA80-57)			29a	Tal. D-3

TABLE 1 (Continued)

Museum Accession Number	AHRS Number	Reconnaissance Testing	Systematic Testing	Locale	Map Reference
UA81-230	(See UA80-149)			45	Tal. C-1
UA81-231	TLM 075	X		89	Tal. D-2
UA81-232	TLM 076	X		107	Tal. C-1
UA81-233	TLM 072	X		88	Tal. D-2
UA81-234	TLM 077	X		84	Tal. D-2
UA81-235	TLM 078	X		Borrow C[+]	Tal. D-4
UA81-236	TLM 084	X		Borrow C	Tal. D-4
UA81-237	TLM 083	X		Borrow C	Tal. D-4
UA81-238	(See UA80-69)			15	Tal. D-4
UA81-239	TLM 082	X		OS	Tal. B-2
UA81-240	TLM 085	X		Borrow C	Tal. D-4
UA81-241	TLM 086	X		Borrow C	Tal. D-4
UA81-242	TLM 087	X		Borrow C	Tal. D-4
UA81-243	(See UA80-74)			14	Tal. D-4
UA81-244	TLM 081	X		Borrow C	Tal. D-4
UA81-245	TLM 054	X		Borrow C	Tal. D-4
UA81-246	TLM 055	X		Borrow C	Tal. D-4
UA81-247	TLM 089	X		Borrow C	Tal. D-4
UA81-248	TLM 088	X		Borrow C	Tal. D-4
UA81-249	TLM 095	X		Borrow C	Tal. D-4
UA81-250	TLM 096	X		Borrow C	Tal. D-4
UA81-251	TLM 094	X		Borrow C	Tal. D-4
UA81-252	TLM 097	X	X	Borrow C	Tal. D-4
UA81-253	TLM 090	X		OS	Tal. D-4
UA81-254	TLM 091	X		OS	Tal. D-4
UA81-255	TLM 092	X		OS	Tal. D-4
UA81-256	TLM 093	X		OS	Tal. D-4
UA81-257	HEA 180	X		#B	Hea. A-3
UA81-258	HEA 181	X		#B	Hea. A-3
UA81-259	HEA 182	X		#B	Hea. A-3
UA81-260	TLM 102	X		77	Tal. D-3
UA81-261	TLM 098	X		#B	Tal. D-3
UA81-263	(See UA80-153)			30	Tal. D-2
UA81-264	TLM 099	X		#B	Tal. D-3
UA81-265	TLM 106	X		#A	Tal. D-4
UA81-266	TLM 107	X		#A	Tal. D-4
UA81-267	TLM 108	X		#A	Tal. D-4
UA81-268	TLM 109	X		#A	Tal. D-4
UA81-269	TLM 110	X		#A	Tal. D-4
UA81-270	TLM 101	X		#A	Tal. D-4
UA81-271	TLM 103	X		#A	Tal. D-4
UA81-272	TLM 113	X		#A	Tal. D-5
UA81-273	TLM 114	X		#A	Tal. D-5
UA81-274	TLM 104	X		22	Tal. D-3
UA81-275	TLM 117	X		#B	Tal. D-3

TABLE 1 (Continued)

Museum Accession Number	AHRS Number	Reconnaissance Testing	Systematic Testing	Locale	Map Reference
UA81-276	TLM 105	X		OS	Tal. C-2
UA81-277	(See UA80-146)			27	Tal. D-3
UA81-278	(See UA80-155)			27	Tal. D-3
UA81-279	HEA 186	X		#B	Hea. A-3
UA81-280	HEA 184	X		#B	Hea. A-3
UA81-281	HEA 183	X		#B	Hea. A-3
UA81-283	HEA 185	X		#B	Hea. A-3
UA81-283	(See UA78-60)			OS	Tal. D-4
1981 Sites without accession numbers (no cultural material collected):					
	TLM 007	Recorded in State Files		OS	Tal. C-4
	TLM 020	X		OS	Tal. D-5
	TLM 071	X		OS	Tal. C-2
	TLM 079	X		33	Tal. D-2
	TLM 080	X		55	Tal. D-3
	TLM 056	X		Borrow C	Tal. D-4
	TLM 100	X		OS	Tal. C-2
	TLM 111	X		#A	Tal. D-4
	TLM 112	X		#A	Tal. D-4
	TLM 116	X		OS	Tal. D-3

*OS - Outside preselected survey locale, but within study area.
**#A & #B - Proposed access routes; #A is the proposed route north of the Susitna River from the Watana Dam site to the Parks Highway; #B is the proposed route from the Watana Dam site north to the Denali Highway. Portions of access corridors C, which runs from Devil Canyon to the Parks Highway on the south side of the Susitna River, & A have been selected for further study.
+Proposed Borrow Area C has been eliminated from consideration.

TABLE 2

SURVEY LOCALE MASTER SITE LIST

Locale Number	1980	1981	Site(s)
1	X		
2	X		
3	0*		
4	X		
4a	X		
5	X		
6	X		
7	0		
8	X		
9	X		
10	X		
11	X		TLM 034 (UA80-141)
12	X		
13	X		TLM 030 (UA80-77, UA81-217)
14	X		TLM 027 (UA80-74, UA81-243) TLM 029 (UA80-76)
15	X		TLM 022 (UA80-69)
16	X		
17	X		
18	X		
19	X		
20	X		
20a	X		
21	X		TLM 043 (UA80-150)
22	X		
23	X		
24	X		
25	X		
26	X		TLM 038 (UA80-145, UA81-224)
27	X		TLM 039 (UA80-146, UA81-277) TLM 048 (UA80-155, UA81-278)
28	X		
29	X		TLM 040 (UA80-147, UA81-226)
29a	X		TLM 050 (UA80-157, UA81-229)
30	X		TLM 031 (UA80-78) TLM 032 (UA80-79) TLM 036 (UA80-143) TLM 037 (UA80-144) TLM 044 (UA80-151) TLM 045 (UA80-152) TLM 046 (UA80-153, UA81-263)
31	X		TLM 033 (UA80-80, UA81-223)

TABLE 2 (Continued)

Locale Number	1980	1981	Site(s)
31a	X		
32	X		
33	X		TLM 072 (UA81-233) TLM 079
34	X		TLM 047 (UA80-154)
35	X		
36	X		
37	X		
38	X		
39	X		
40	X		
41	X		
41a	X		
42	0		
43	X		
44	X		
45	X		TLM 026 (UA80-73, UA81-218) TLM 042 (UA80-149, UA81-230)
46	X		
47	X		
48	X		TLM 049 (UA80-156)
49	X		
50	X		
51	X		TLM 052 (UA80-159) TLM 053 (UA80-160)
52	X		
53	X		
54	X		
55	X		TLM 063 (UA81-209)
56		0	
57		X	
58		0	
59		X	
60		X	
61		X	
62		0	
63		X	
64		X	
65		X	
66		X	
66a		X	
66b		X	
66c		X	

TABLE 2 (Continued)

Locale Number	1980	1981	Site(s)
66d		X	
67		X	
68		X	TLM 060 (UA81-206) TLM 061 (UA81-207)
69		X	TLM 059 (UA81-205)
70		X	
71		X	
72		X	
73		X	
74		X	
75		X	
76		X	
77		X	TLM 102 (UA81-260)
78		X	TLM 062 (UA81-208)
79		X	
80		X	
81		X	
82		X	
83		X	
84		X	TLM 077 (UA81-234)
85		X	TLM 065 (UA81-222)
86		X	
87		X	
88		X	TLM 072 (UA81-233)
89		X	TLM 075 (UA81-231)
90		X	
91		X	TLM 069 (UA81-215)
92		X	
93		X	
94		X	
95		X	
96		X	
97		X	
97a		X	
98		0	
99		X	
100		X	
101		X	
102		X	
103		X	TLM 073 (UA81-227)
104		X	
105		0	
106		X	

TABLE 2 (Continued)

Locale Number	1980	1981	Site(s)
107		X	TLM 074 (UA81-228) TLM 076 (UA81-232)
108		X	
109		X	

*0 - Not surveyed due to either inaccessibility or the fact that it was selected by the Chichaloon Native Association. All project personnel were instructed to avoid Native selections in the project area until the matter was settled.

TABLE 3

PROPOSED BORROW AREAS MASTER SITE LIST

Proposed Borrow Area	1980	1981	Site(s)
A	X		None
B	X		None
C*		X	TLM 054 (UA81-245)
			TLM 055 (UA81-246)
			TLM 078 (UA81-235)
			TLM 081 (UA81-244)
			TLM 083 (UA81-237)
			TLM 084 (UA81-236)
			TLM 085 (UA81-240)
			TLM 086 (UA81-241)
			TLM 087 (UA81-242)
			TLM 088 (UA81-248)
			TLM 094 (UA81-251)
			TLM 095 (UA81-249)
			TLM 096 (UA81-250)
			TLM 097 (UA81-252)
D	X		None
E	X		TLM 022 (UA80-69, UA81-238)
			TLM 023 (UA80-70)
			TLM 024 (UA80-71)
F	X		TLM 051 (UA80-158)
G	X		None
H		X	None

*Eliminated from consideration as a potential borrow source.

TABLE 4

LAND STATUS OF ARCHEOLOGICAL AND HISTORIC SITES LOCATED IN PROJECT AREA AS OF AUGUST 31, 1981

AHRS #	State Selected	State Selection Suspended	State Patented or TA'd	Village Selection	Village Selected	Federal D-1	Federal D-2	Private
-TLM 007								X(?)
-TLM 020					Kn			
+TLM 015	x							
+TLM 016	x							
+TLM 017	x							
+TLM 018					Kn			
-TLM 021			x					
=TLM 022					Ty			
=TLM 023					Ty			
=TLM 024					Ty			
-TLM 025				x				
+TLM 026		x						
=TLM 027					Kn			
-TLM 028						x		
=TLM 029					Kn			
=TLM 030					Kn			
-TLM 031				x				
-TLM 032				x				
+TLM 033				x				
=TLM 034					Kn			
°TLM 035				x				
-TLM 036		x						
-TLM 037				x				
-TLM 038	x							
+TLM 039	x							
+TLM 040				x				
-TLM 041				x				

TABLE 4 (Continued)

AHRS #	State Selected	State Selection Suspended	State Patented or TA'd	Village Selection	Village Selected	Federal D-1	Federal D-2	Private
+TLM 042		x						
+TLM 043				x				
-TLM 044		x						
-TLM 045			x					
-TLM 046			x					
-TLM 047		x						
+TLM 048	x							
-TLM 049		x						
+TLM 050				x				
°TLM 051	x							
-TLM 052		x						
-TLM 053		x						
-TLM 054	x							
-TLM 055	x							
-TLM 056	x							
-TLM 057	x							
+TLM 058				x				
+TLM 059	x							
+TLM 060	x							
+TLM 061	x							
+TLM 062				x				
+TLM 063				x				
+TLM 064				x				
+TLM 065		x						
-TLM 066	x							
-TLM 067				x				

TABLE 4 (Continued)

AHRS #	State Selected	State Selection Suspended	State Patented or TA'd	Village Selection	Village Selected	Federal D-1	Federal D-2	Private
°TLM 068	x							
-TLM 069		x						
°TLM 070	x							
-TLM 071		x						
+TLM 072		x						
+TLM 073		x						
-TLM 074		x						
+TLM 075		x						
-TLM 076		x						
+TLM 077		x						
-TLM 078			x					
+TLM 079		x						
+TLM 080				x				
-TLM 081	x							
°TLM 082	x							
-TLM 083			x					
-TLM 084			x					
-TLM 085			x					
-TLM 086	x							
-TLM 087			x					
-TLM 088	x							
-TLM 089	x							
-TLM 090	x							
-TLM 091	x							
-TLM 092	x							
-TLM 093	x(?)							x(?)

TABLE 4 (Continued)

AHRS #	State Selected	State Selection Suspended	State Patented or TA'd	Village Selection	Village Selected	Federal D-1	Federal D-2	Private
-TLM 094	x							
-TLM 095	x							
-TLM 096	x							
-TLM 097	x							
-TLM 098			x					
-TLM 099			x					
-TLM 100		x						
.TLM 101	x							
+TLM 102				x				
.TLM 103	x							
+TLM 104				x				
-TLM 105	x							
.TLM 106	x							
.TLM 107	x							
.TLM 108	x							
.TLM 109	x							
.TLM 110	x							
.TLM 111	x							
.TLM 112	x							
.TLM 113	x							
.TLM 114	x							
(Site # TLM 115 not used)								
-TLM 116	x							
-TLM 117			x					

TABLE 4 (Continued)

AHRS #	State Selected	State Selection Suspended	State Patented or TA'd	Village Selection	Village Selected	Federal D-1	Federal D-2	Private
-HEA 174						X		
-HEA 175							X	
-HEA 176						X		
°HEA 177							X	
°HEA 178							X	
°HEA 179							X	
-HEA 180						X		
-HEA 181						X		
-HEA 182						X		
-HEA 183						X		
-HEA 184						X		
-HEA 185						X		
-HEA 186						X		

=Devil Canyon Dam and Impoundment (7)
+Watana Dam and Impoundment (28)
°Borrow Areas, etc. (8)*
.Access Route Selected (11)
-Other Areas (61)

Vilage Selections: Ch - Chickaloon
Kn - Knik
Ty Tyonek

*Proposed Borrow Area C has been eliminated from consideration as a borrow source.

3.8 - Proposed Watana Runway - Archeological Survey

Proposed borrow areas, parking apron, and runway for the Watana airstrip were surveyed during the 1980 field season. Surface reconnaissance and subsurface testing were conducted along the entire length (6000 feet) and width (500 feet) of the airstrip. Five transects, one directly on the centerline and two on each side and paralleling the centerline, were examined (Figure 108). Subsurface tests were placed every 200 feet along each transect. Prior to archeological investigation survey markers were placed along the centerline as well as along the outer perimeter clearly delineating the airstrip. A total of 155 subsurface tests were excavated to a depth of 50 cm where possible. However, in most cases water or gravel was encountered before reaching 50 cm. In addition to the transect tests, 11 tests were placed in areas that provided some topographic relief from the surrounding low marshy terrain. Five other tests were made on the proposed runway in connection with transect testing in Borrow Area D which crosses the airstrip.

No cultural material was observed on the surface or in any of the subsurface tests. Therefore, archeological clearance is recommended. However, in the event that cultural resources, missed by the above sampling method, are uncovered during construction or use of the airstrip, TES and the project archeologist should be contacted so that the necessary action can be taken in a timely manner and unnecessary delays avoided.

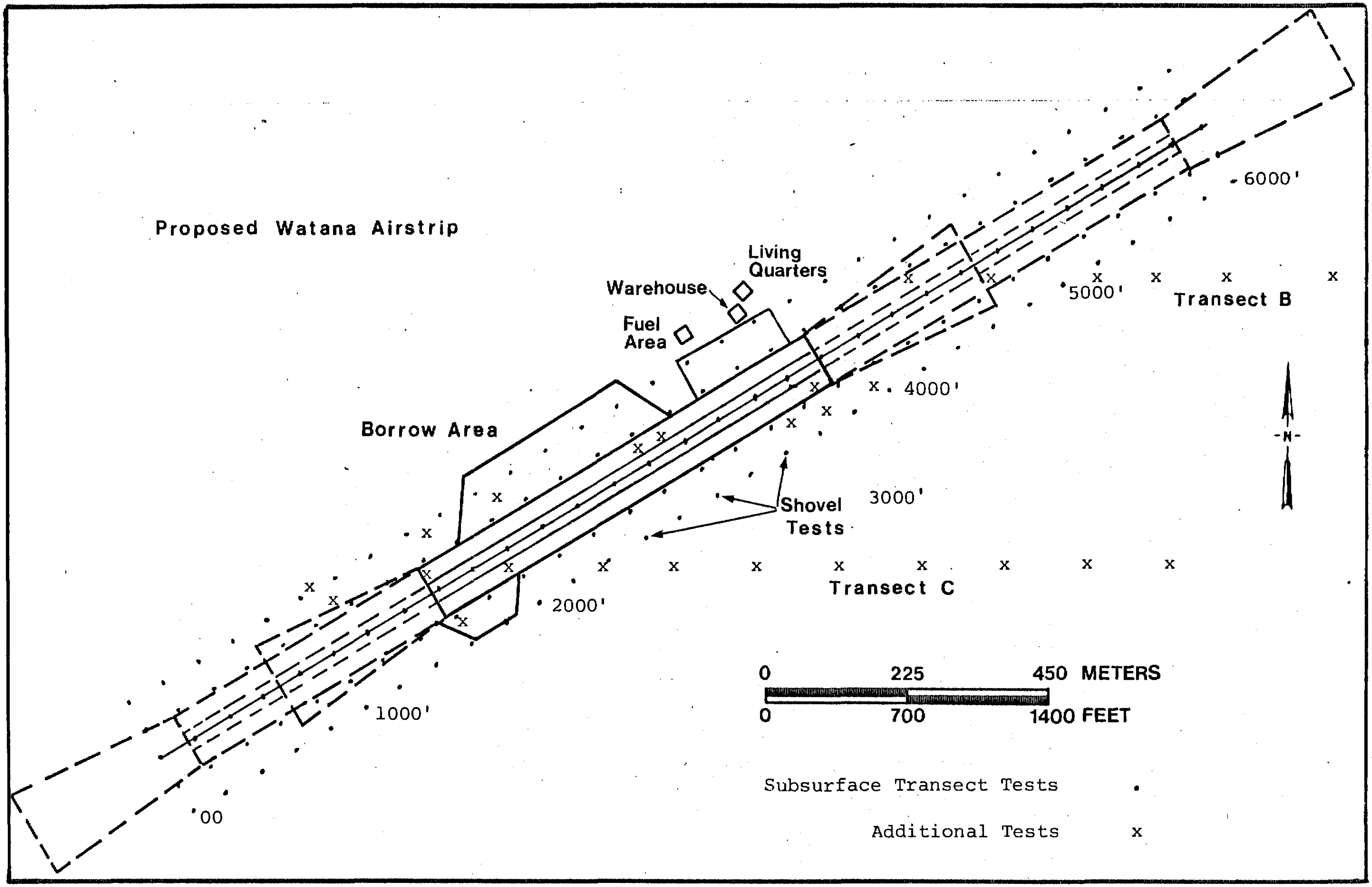


Figure 108. Surface reconnaissance and subsurface testing at the proposed Watana airstrip.

4 - SYSTEMATIC TESTING DISCUSSION AND EVALUATION

4.1 - Introduction

In addition to reconnaissance level testing, systematic testing was implemented as part of the cultural resource studies program in order to collect sufficient data to address site significance and impact in order to develop mitigation measures and a general mitigation plan. In addition to this function, systematic testing was important in terms of generating information that is essential to estimating the cost of mitigating adverse effect to sites, should this become necessary. Without systematic testing it would be difficult, based on reconnaissance level data only, to evaluate the significance of most sites or estimate the cost of mitigation.

(a) Selection of Sites for Systematic Testing

Due to the large project area, number of sites located (115), available field time, and fiscal constraints, it was possible to systematically test only 18 of the 115 sites investigated. Because of the poor knowledge regarding the culture history of south central Alaska and the Susitna River region in particular, the primary objective of systematic testing was to define the cultural chronological sequence for this portion of Alaska and establish time stratigraphic markers for the project. Not only is this the first essential objective of archeology, but it efficiently and cost effectively provides a broad data base applicable to evaluating sites not subject to systematic testing. This is essential for assessing significance and formulating management recommendations within the temporal and fiscal limitations of the project.

The data obtained from reconnaissance survey and testing enabled the delineation of archeological sites which best held potential for delineating the cultural chronological sequence for the Upper Susitna

River area. The recognition and subsequent definition of three distinct tephra during field studies provided objective criteria by which the relative age of archeological components could be ordered. Although approximately half of the 115 sites failed to yield evidence of tephra during reconnaissance testing (four were historic cabins and the rest were surface sites), the remaining half contained tephra and held potential for defining a relative cultural chronology. The objective was to optimize field resources to produce the most data from the sites that could be tested.

Multicomponent sites (those containing more than one period of occupation) yield more data per excavation unit relevant to defining cultural chronology than do single component sites. Additionally, through recognition of cultural components in relation to the tephra, it was possible to develop a matrix for the sites depicting the location of cultural components in relation to the tephra. While the criteria for selecting sites for systematic testing are basic, the actual implementation was somewhat complex. For example, many sites did not contain all three tephra and consequently the only stratigraphic criterion which could be implemented was that of a maximum or minimum limiting age, i.e., older than or younger than the specific tephra. The relative chronological placement of a cultural component from a site of this nature is not as precise as that of a cultural component "sandwiched" between two tephra. Although the stratigraphic relationship of cultural components to the three tephra was used to select sites for systematic testing, several other factors were also incorporated into the selection process. These were: 1) preference was given to sites anticipated to be directly or indirectly impacted by the project, 2) preference was sometimes given to sites with preserved faunal remains, 3) the potential of a particular site to yield organics suitable for radiometric dating, and 4) ecological settings which might provide a broad array of information pertinent to understanding prehistoric subsistance patterns. The sites were prioritized based on the above criteria, and during the 1981 field season it was possible to systematically test 18 sites. The sites systematically tested are discussed in section 4.2.

(b) Mapping and Gridding Systematically Tested Sites

Prior to systematic testing, a mapping crew established horizontal and vertical site datums, topographically mapped each site and superimposed a horizontal grid on each site. To facilitate recording data, the datum was located, when possible, so that the entire site area would fall north and east of the datum point. A 12-inch spike was placed at the datum location with an aluminum tag containing site information including the state AHRS number, the date and "University of Alaska Museum". Two methods were used to establish a site datum elevation. Where it was possible to tie the datum into the elevation of the Susitna River, the datum elevation was determined by its elevation above the Susitna at the closest point of the river to the site. If this was not practical due to the distance from, or elevation above, the river, half the elevation between the contour line above and below the site was added to the lower contour elevation and this elevation used to establish elevation.

A Sokkisha BT 20 transit, 50 m tape and metric stadia rod were used to establish a base line oriented to conform to local site topography in an effort to facilitate excavation. The northern end of this baseline was established as "Grid North"; all subsequent horizontal measurements referenced to grid north. A survey notebook was kept by the mapping crew with all mapping information which included magnetic declination, angles between grid north and true north, and triangulation data necessary to relocate datums in the event of disturbance. Wherever topographic considerations allowed, True North was used as Grid North, however in most cases this was not possible.

Working from the baseline, the mapping crew used the transit and tape to establish a site grid, placing wooden stakes at 5 m or 10 m intervals. An east west project baseline was established along a line at right angles to the baseline at the datum location. At larger sites additional east west placed lines at right angles to the baseline were established. All stakes were placed directly at intersecting points of the grid system with the exception of a stake to insure relocation of site datum which was offset 10 cm from the datum spike. Grid coordinates north and east of datum were written on all wooden stakes and elevations in relation to datum recorded for the top of the stake and the ground elevation at the stake location. Additional elevation measurements off the grid were recorded using a stadia rod so that a topographic map with 50 cm or 1 m contour intervals could be drawn.

The mapping crew provided the systematic testing crew with a topographic map of the site vicinity, a grid layout diagram and elevation of all stakes prior to testing of the site. Placement of test squares was determined by the crew leader in charge in consultation with the project supervisor and principal investigator and was based on the results of preliminary reconnaissance testing, site topography, surface cultural and noncultural features, and additional shovel testing. Coordinates of test squares located off the initial grid system were determined by triangulation from the nearest two grid stakes. Individual test square elevations were established from the closest grid stake elevation by use of a string and line level. After completion of systematic testing, all reconnaissance level test pits, systematic test squares, and shovel test locations were recorded on the site map.

(c) Systematic Testing

After the site was mapped and gridded a three-person crew began systematic testing. Frequently systematic testing was initiated adjacent to the test which produced cultural material during reconnaissance level testing. Subsequent 1 m squares were laid out to assist in determining the spacial extent of the site and to collect information for evaluating and dating the site. Systematic testing was designed to efficiently collect enough data with which to address site significance. Weighted against this consideration was the question of how much testing is necessary to adequately address this problem. An attempt was made to excavate the minimum number of tests needed to address this problem.

The average number of tests placed on a site was four. However, in a few cases, additional tests were necessary because of the low frequency, or in some cases the lack of, cultural material in the initial tests.

Excavation of 1 m squares was conducted by natural stratigraphic levels when possible. However, in a few cases soil stratigraphy was not conducive to this method and excavation by arbitrary levels was employed. Careful attention was paid to the identification of tephras in relation to cultural remains because their relationship provided relative dating and intersite correlation. Test squares were excavated with trowels and all dirt was screened through ¼-inch screen unless the soil was too wet, in which case it was examined by hand. Artifacts were measured from the south and east walls of each test and vertical measurements were made with string and line level tied to the square datum. When possible, tephra samples and organic material for C14 dating were collected. C14 samples were wrapped in two layers of aluminum foil, placed in plastic bags, and oven dried at the University Museum's archeology lab as soon as possible.

Soil profiles for test squares, that produced cultural material were drawn. Soil colors were determined using a Munsell color chart on dry samples. Composite soil profiles were also drawn summarizing soil stratigraphy at the site. Composite soil profiles are included with each individual systematic test report. All artifacts collected were cataloged and accessioned into the University of Alaska Museum. All test squares were backfilled upon completion of testing, and each site was restored as much as possible to the condition in which it was originally found.

(d) Soil Profiles

During systematic testing, soil profiles were drawn to scale for all four walls of 1 m test squares which produced cultural material. These profiles are on file at the University of Alaska Museum. For the purpose of this report, however, only a single composite soil profile is included for each site, or site locus, systematically tested. The composite soil profile is schematic and does not necessarily represent any individual test square at the site. Its intent is to graphically represent the sequence of all soil/sediment units which occur at the site because individual tests often do not contain the full range of soil units at a given site.

No standard technique for drawing a composite soil profile was used because test pit placement and soil deposition at each site varied considerably. The method most often utilized to abstract individual test square soil profiles into a composite site profile was to draw a diagram correlating profiles from all individual test squares. This was usually done by selecting the profile from each test square which revealed the greatest number of distinct soil units, which were drawn to scale with similar sections from profiles of all other test squares. Correlations of soil units between test squares were then matched and a composite site profile drawn by determining the average thickness of each soil unit which occurred at the site and drawing all soil units in their correct stratigraphic sequence.

The thickness of soil units sometimes varies greatly even between adjacent squares, as does occasionally the presence or absence of specific soil units. The composite soil profile is a generalized profile. Elevation above or below datum and provenience of artifacts from individual test squares cannot be directly correlated with the composite site profiles. However, in a broad sense, associated soil unit and contact between soil units are accurate for each site.

(e) Tephra Units

Three distinct tephra have been identified in the study area. These units were given regional names for purposes of field identification and nomenclature. The names given the tephra in order of increasing age are as follows: Devil (1800-2300 B.P., A.D. 150-350 B.C.), Watana (2300-3200 B.P., 350 B.C.-1250 B.C.) and Oshetna (greater than 4700 B.P., 2750 B.C. and possibly as old as 5000-7000 B.P., 3050 B.C.-5050 B.C.). These ash falls have not yet been correlated to tephra from other regions known to date to the last 7000 years. Munsell color designations were used to describe tephra color. Whenever possible color matching was done using dry samples. For a more detailed discussion of tephra see Chapter 5.

The relationship of cultural components to the tephra are indicated in Chapter 7. The relationship of cultural components to tephra at sites receiving only reconnaissance level testing is preliminary while correlations at systematically tested sites are more precise. Approximately one-half of the sites found have cultural components that can be stratigraphically correlated to one or more tephra. This relative dating method provides a unique opportunity to formulate the first cultural chronology in this region of Alaska; a region which is critical to interpreting the prehistory of the adjacent regions of interior Alaska and Cook Inlet.

4.2 - Systematic Testing 1981

(a) Systematic Testing TLM 018--Corps Trailer Site

Location: See section 3.2 (a-iv).

Testing: Three 1 m test squares were excavated at the site. In addition, surface material was systematically collected in 1 m square units (Figure 109).

Discussion:

The surface of the site can be categorized into two types: vegetated and non-vegetated. The distribution of the surface artifacts tends to correspond to the non-vegetated actively deflating portion of the knoll (Figure 109). This distribution of surface specimens may be somewhat spurious because in certain squares (e.g., N100/E97) it was found that the surface material extended into shallow subsurface areas immediately below the lichen cover.

Three tephra units were present at the site, but only the most recent tephra (Devil) was well defined. The middle (Watana) and lower (Oshetna) tephras were discontinuous with the drift (Figure 110, Table 6). Erosional surfaces in test square N98/E104 indicate that the O-A horizons and most recent tephra (Devil) lie unconformably on drift in the eastern parts of the site indicating erosion during pre-Devil times. In test square N95/E94 the upper three soil units were intact but the lower stratigraphy consisted of drift intermixed with tephra (units 4 and 5, Figure 110). The preservation of the three tephra near the modern erosional area may be the result of stabalizing vegetation and conversely, this suggests that the northern area was vegetated and consequently more stable in the past, which may explain the better preservation of tephra units in this portion of the site.

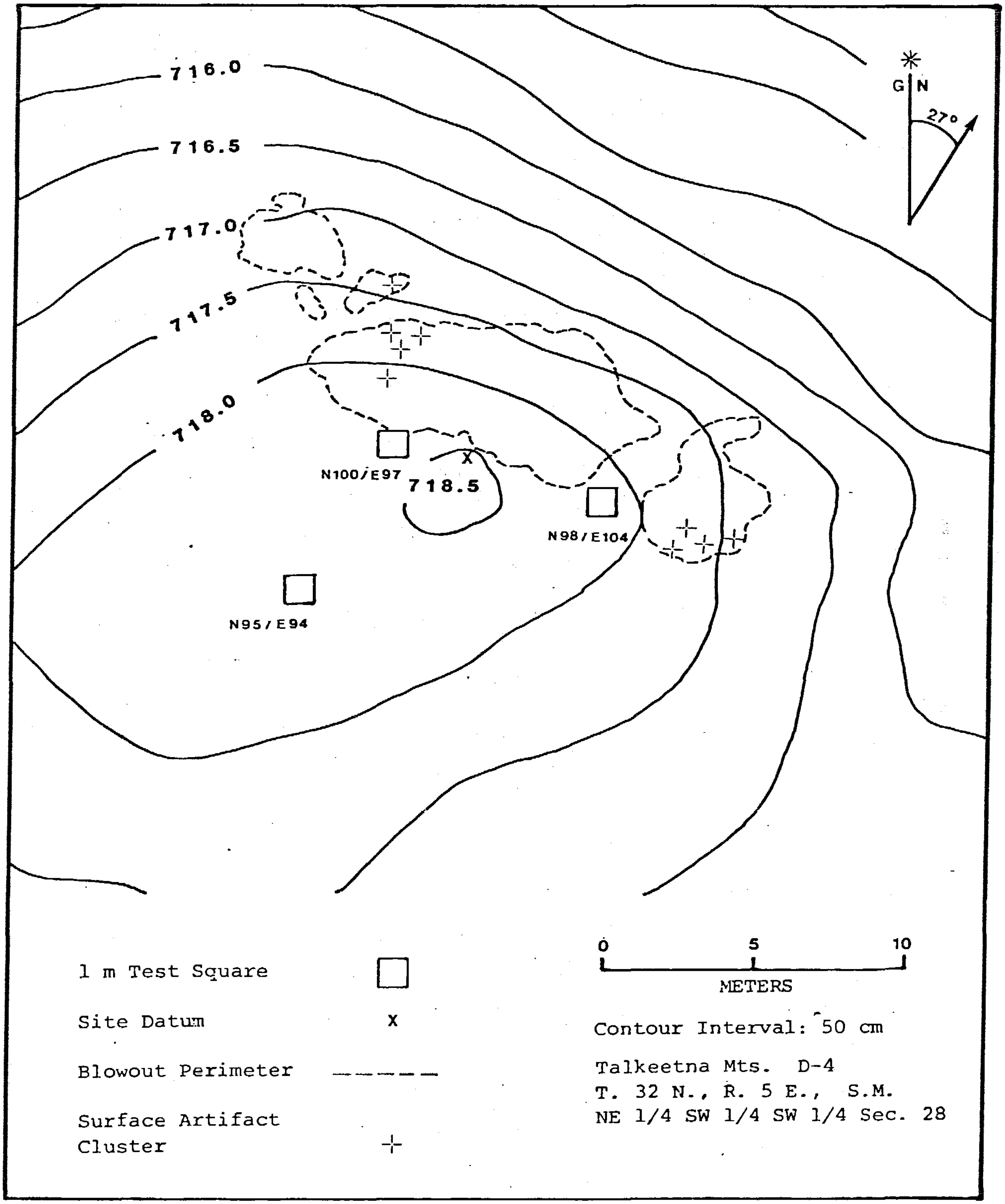


Figure 109. Site Map TLM 018.

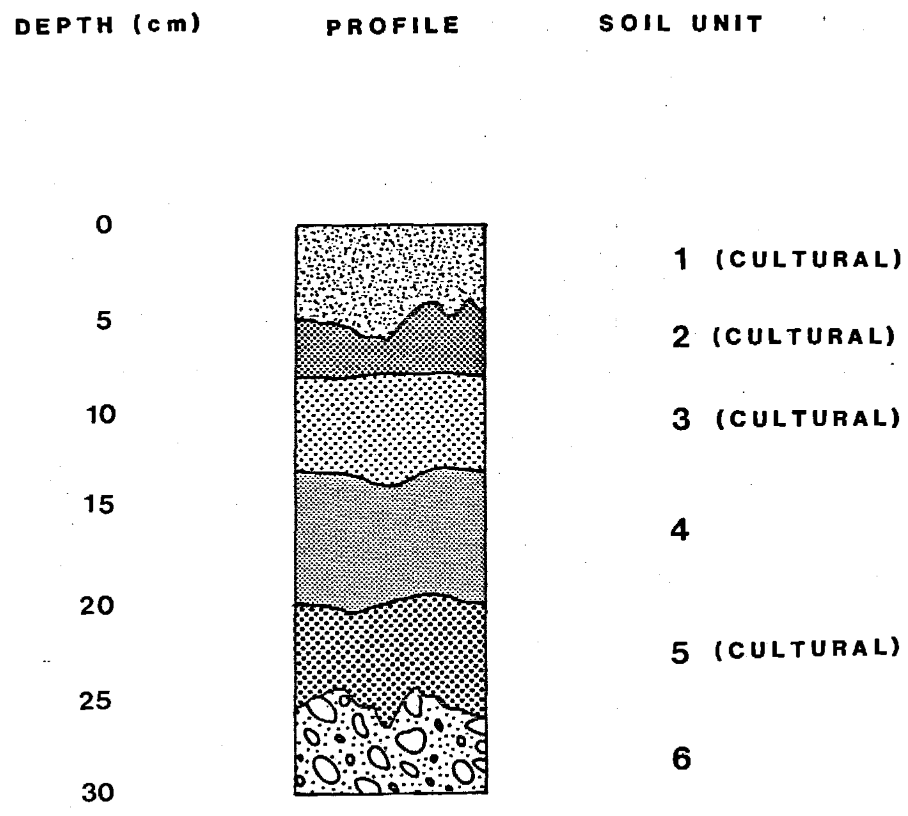


Figure 110. Composite Soil Profile TLM 018.

TABLE 6

SOIL DESCRIPTIONS FOR COMPOSITE SOIL PROFILE, TLM 018

Soil Unit	Description
1	Organic zone, mat of variable thickness moss, lichen, heaths
2	Finely sorted organics with many rootlets, lower contact clear and irregular, upper contact gradational
3	Tephra (Devil); discontinuous across site (eroded out to east), generally sharp and irregular upper and lower contacts
4	Tephra (Watana); discontinuous in east part of site, variable in thickness, well sorted, oxidized layer not found exclusively in upper part of unit but rather are random oxidized zones throughout giving a patchy appearance, lower contact sharp to gradational, upper contact sharp
5	Mixed tephra (Oshetna) and draft; poorly sorted with tephra, silt and sand and pebbles; irregular and discontinuous unit, undulating contacts that vary from clear to gradational
6	Oxidized sand pebbles and granules, poorly sorted, oxidized, maximum pebble size c 12 cm

A cautionary note must be interjected concerning the distribution of surface artifacts. The vegetational cover at the site varies from a thin layer of lichen--decomposed organic material (found in and surrounding the blowout area) to a thick, more well developed, O-A horizon (in the shrub area south and west of the blowout). The patchy distribution of this lichen cover appears to obscure some of the surface artifacts. For example, in surface collection unit N100/E97 the surface material extended under the lichen--organic cover. It is possible that this vegetation mat is covering what have been recorded as surface artifacts in other areas, especially in the eastern portion of the site.

Although the soil units present what appears to be the common stratigraphy for this area (i.e., O-A, Devil, Watana, Oshetna, Drift) this knoll has undergone a more complicated depositional-erosional history than the single composite soil profile (Figure 110) would indicate. Because of this, it is difficult to discuss the number and location of archeological components in the site and the stratigraphic relationship of surface to subsurface artifacts. It is likely, however, that a broad differentiation can be made between an upper "component" (soil units 1-3, Figure 110) post Devil tephra and a lower "component" (soil units 4-6, Figure 110) pre-Devil tephra. The two "components" are separated by the Devil tephra which is dated to between 2300 and 1800 years B.P. (unit 3, Figure 110).

Although approximately 2000 artifacts were collected during systematic testing, the interpretation of the archeological material and nature of the site remains questionable. Cultural material can be summarized, however, because of the dominance of a single artifact type (flake) and two distinct lithologies (basalt and chert) (Table 7).

The nature of the stratigraphy at the site makes it difficult to discuss in any great detail or with any certainty the delineation of specific surface artifactual deposition, i.e., number and nature of archeological components, the stratigraphic relationship of subsurface to surface artifacts, and the relationship of the various artifacts to time.

TABLE 7

ARTIFACT SUMMARY, TLM 018

Artifact	Subsurface	Surface	Site Total
Flakes, chert	12	1061	1073
Flakes, basalt	503	330	833
Flakes, red-brown chert	43	0	43
Flakes, other chert	7	16	23
Flakes, rhyolite	0	2	2
Flakes, unknown material	0	1	1
Blade-like flake, chert	1	0	1
Flakes, obsidian	3	0	3
Core fragment (?), obsidian	1	0	1
Flake core, chert	0	1	1
Tci-tho	0	1	1
Biface fragments, basalt	2	0	2
TOTAL	570	1414	1984

Artifacts were found in association with both upper and lower contacts of soil unit 5 (Figure 110). Given the degree of turbation in the lower stratigraphy at this site, it is premature to discuss or define an upper and lower "component" associated with the lowermost tephra (Oshetna). A simalar argument can be made for artifacts found in association with soil units 1 through 3 (Figure 110). Although stratigraphic control is better in these units, the differentiation of two "components" may also be premature, based on current data, although it is suggested.

The northwest quadrant of the site contained the greatest amount of surface material. Basalt and chert were the dominant lithologic types present in the surface collection. Basalt artifacts were found primarily in the southeastern quadrant of the site, while weathered chert was primarily limited to the northwestern quadrant of the site. The surface collection, with the exception of one boulder-chip scraper and one flake core, was comprised totally of flakes.

The subsurface artifacts, found in two of the three test squares (N98/E104 and N100/E97) consisted almost exclusively of flakes made from basalt, weathered chert, and obsidian. A single blade-like flake and a possible fragment of an obsidian flake core are the only subsurface artifacts that have not been categorized as flakes.

Surface material from an area of approximately 100 m^2 was collected in 1 m x 1 m units. Initial observations made by Bacon (1978) concerning a differential surface distribution of chert and basalt artifacts were varified by distributional maps made from the 1981 collection. A total of 1414 specimens were recorded with the greatest number being located in the northwest quadrant of the site. Basalt flakes were found primarily in the southwestern quadrant of the site, while weathered chert flakes were recovered primarily from surface units in the northwestern site quadrant. The surface collection, with the exception of a boulder-chip scraper and a flake core of weathered chert, is composed totally of flakes.

A total of 570 subsurface artifacts were found in two of the three 1 m test squares (N98/E104 and N100/E97) excavated at the site (Table 8). No diagnostic artifacts were found, and, like the surface collection, the subsurface materials were predominantly flakes. A single piece of obsidian found in test square N100/E97, may be part of a core fragment and represents the only non-flake artifact collected during systematic testing.

Evaluation:

The site is situated on a glacial kame which has a panoramic view to the north. The environmental position of the site suggests that it may have served as a lookout from which hunters waited for the appearance of large mammals to the north. The northern view may suggest human use of the site during the fall when migrating caribou are most likely to be approaching the site from that direction. Preliminary testing strongly suggests that this site may have served this function during at least two times during the past; sometime prior to and after the interval of Devil tephra deposition (probably sometime about ca. 1800-2300 B.P.). The lithologic composition of the debëtage tends to support this hypothesis because weathered chert dominates the surface collection while basalt is the major rock type associated with the subsurface assemblage. Obsidian also occurs only in a subsurface context.

The collection consists almost entirely of waste flakes which suggests that hunters were actively engaged in the manufacture of tools and weapons, possibly in anticipation of the fall caribou migration. The boulder spall scraper found in the subsurface test may suggest that the locale may have served as a brief camp, and the sheer quantity of detrital material may also support this hypothesis. While the results of the systematic testing are not conclusive, they do imply: 1) the site was occupied on at least two occasions, once prior to and once after the Devil ash fall, (2) that the site may have been occupied during the fall, and 3) that the duration of the occupation(s) may have been for several days. Further systematic testing is warranted at this

TABLE 8

ARTIFACT SUMMARY BY SOIL UNIT AND TEST SQUARE, TLM 018

Soil Unit	Test Square N98/E104	N100/E97	N95/E94
1 and 2		3 flakes, chert	
Total	0	3	0
2 and 3 contact	437 flakes, basalt 1 flake, chert 1 flake, gray chert		
Total	439	0	0
5 (either within or contacts with 4 or 6)	19 flakes, basalt 3 flakes, obsidian 1 flake, brown chert 1 flake, gray chert	47 flakes, basalt 1 core fragment (?), obsidian 3 flakes, dark chert 1 flake, dark chert 8 flakes, chert 1 blade-like flake, chert 43 flakes, red-brown chert	
Total	24	107	0

site in an effort to address these problems and assess placement of this site in the larger framework of the cultural chronology and prehistoric human use of the Upper Susitna River region.

(b) Systematic Testing TLM 022 - Tsusena Creek Site

Location: See section 3.3 (a-i).

Testing: Five 1 m test squares and five shovel tests were excavated during systematic testing (Figure 111).

Discussion:

Testing at TLM 022 produced fire cracked rock and faunal material. No lithic material other than fire cracked rock was recovered in the 1 m test squares or in the shovel tests. Testing suggests that the site contains two, and possibly three, components, all of which are represented by hearth features and/or faunal material found in association with soil units 1, 4 and 6 (Figure 112, Table 9). No cultural material was recovered from any of the shovel tests.

Test 1 and shovel test 4, excavated in 1980 (Figure 111), revealed faunal remains and fire cracked rock in two areas of the site. During systematic testing in 1981, two 1 m test squares were placed near the 1980 test 1, and shovel test 4 (N101/E94 and N103/E93 respectively) in order to define the site. A slight depression located approximately 8 m north of the Susitna River was proposed in 1980 as a potential house pit. Test square N104/E99 was excavated in the center of the "depression" with negative results. It appears that the depression is natural in origin. When N101/E94 uncovered a hearth feature, test square N100/E96 and N104/E95 were excavated to determine the extent of the cultural material (faunal material and fire cracked rock) noted in N101/E94.

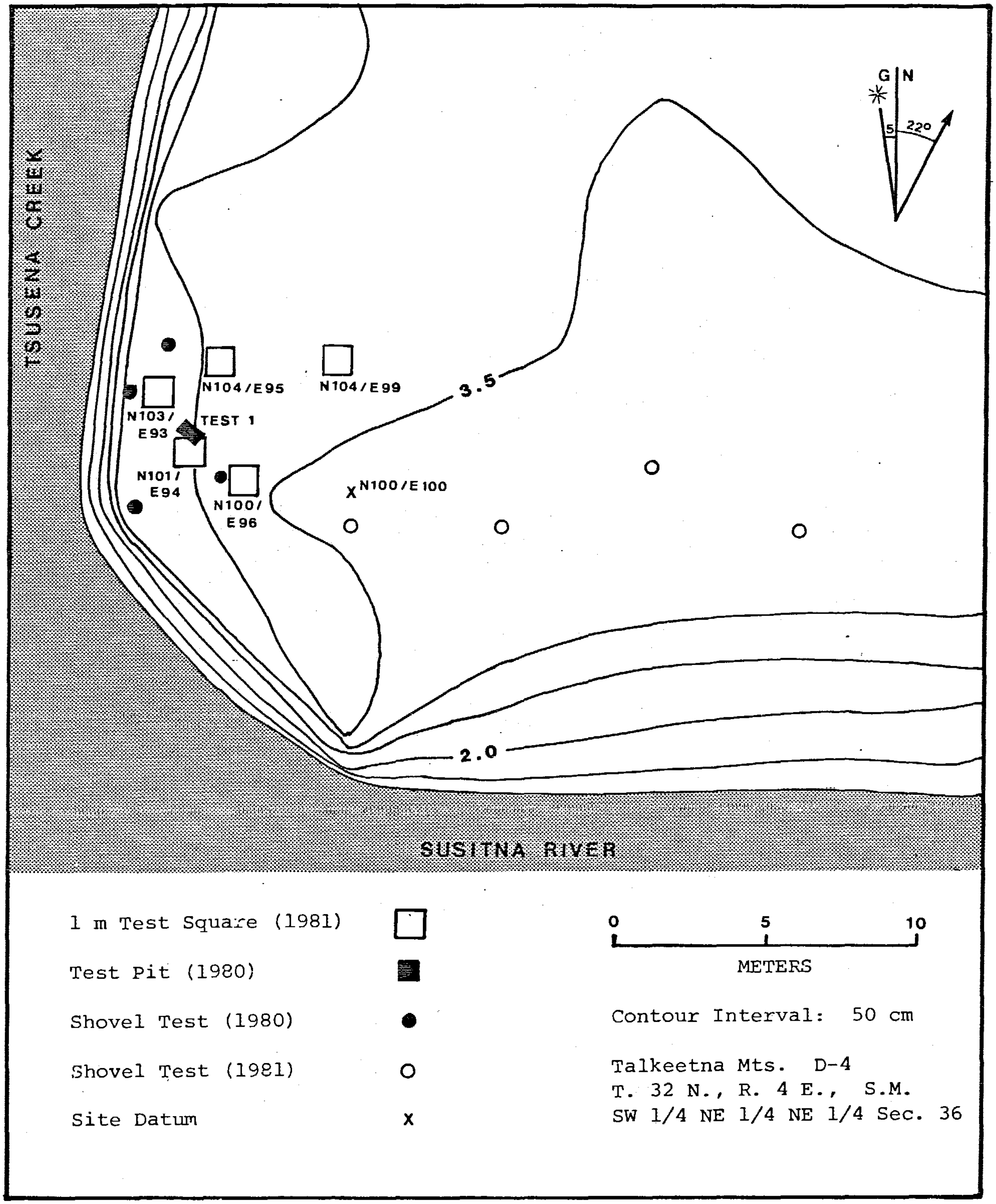
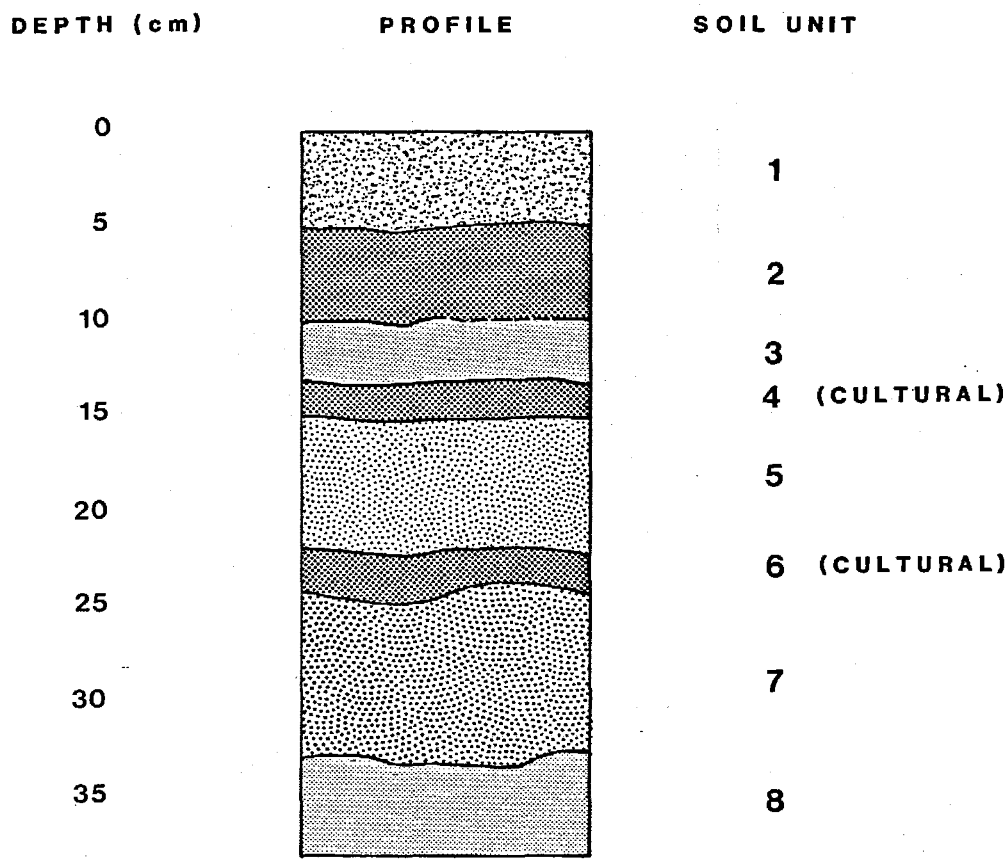


Figure 111. Site Map TLM 022.



UNIT 4

Charcoal sample UA80-69-1a: 300±70, A.D. 1650

Figure 112. Composite Soil Profile TLM 022.

TABLE 9

SOIL DESCRIPTIONS FOR COMPOSITE SOIL PROFILE, TLM 022

Soil Unit	Description
1	Duff; variable in thickness, O horizon (cultural material)
2	Finely divided organic matter (10 YR 2/2 very dark brown); sharp upper contact, at times with gradational lower boundary; A horizon
3	Silt to sandy silt (10 YR 4/2 to 2.5 Y 6/Z dark grayish brown to light brownish gray); generally sharp contacts but variable in thickness; leached zone E horizon
4	Finely divided organic matter (7.5 YR 3/Z dark brown); thin layer with greasy feel; continuous across site with clear upper and lower boundaries; A horizon (cultural material)
5	Intermixed sand and silt (10 YR 5/6 to 7.5 YR 4/4 yellowish brown to brown); horizon that is generally found as mixed sand/silt stratum, however at times the two sediment types appear as distinct lens; continuous across site; fluvial deposit
6	Finely divided organic matter (10 YR 2/1 very dark brown); thin layer with greasy feel; generally sharp contacts; continuous across site; A horizon (cultural material)

TABLE 9 (Continued)

Soil Unit	Description
7	Sand (10 YR 6/4 yellowish brown); medium grain size; well sorted; sharp contacts; continuous deposit except where truncated by cultural features; fluvial deposit
8	Silt (10 YR 5/3 brown); well sorted to moderately well sorted with inclusion of medium grained sand; sharp contacts; continuous across site; fluvial deposit

Note: 11 more soil units were defined in test square N103/E92. These represent 5 larger units of sandy silt capped by a buried A horizon. These units are not described here for two reasons: no cultural material was associated with these soil units and only 1 test square was excavated to this depth.

A single test square (N103/E93) was excavated down to the cobble level as an extended test to delineate the stratigraphy for the site area and to see if there was any cultural material associated with the buried A horizons noted in other test squares.

Stratigraphy at the site is characterized by alternating sequences of sand-silt-organic horizons. A total of 21 soil units were defined, however, only eight are of interest in terms of the cultural material (Figure 112). The bulk of the stratigraphic section is fluvial in origin (sand and silt) with buried A horizons interspersed between the fluvial sediments (Table 9), a situation not unexpected given the location of the site at the confluence of Tsusena Creek and the Susitna River. The general sequence of soil and sediment units was fairly uniform from test square to test square. Variability did exist, however, in the thickness of each unit and the coloration of some of the units. The cultural material is associated with three A horizons (soil units 3, 4, and 6), horizons that are stratigraphically separated from each other by sand or silt. Features 1A and 1B are associated with the contact between soil units 3 and 4, as is feature 2. Features 3, 4, and 5 are associated with soil unit 6 (Figure 112).

Fire cracked rock (62 pieces) and faunal material (487 fragments) were the only cultural material recovered (Table 10). Two components, both probably recent, are suggested by a modern radiocarbon date on charcoal collected during reconnaissance testing in 1980 (DIC 1878) and another radiocarbon date of 300 ± 70 years: A.D. 1650 (DIC 2252) on charcoal collected during systematic testing in 1981. Both components are represented by hearth features and/or faunal material found in soil units 4 and 5 (Figure 112). A possible third component, associated with soil unit 1, may be present but further testing is needed to confirm its existence.

Faunal material was recovered in three of the five 1 m test squares--N101/E94, N100/E96 and N103/E93 (Table 11) and fire cracked rock was

TABLE 10

ARTIFACT SUMMARY BY TEST SQUARE AND SOIL UNIT, TLM 022

Test Square	Maximum Depth Excavation*	Cultural Material	Comments
N101/E94	50	404 unidentifiable bone fragments 2 phalanges 36 fire cracked rocks	All cultural material in N100/E94 was associated with either Feature 1A or 1B (soil units 4 and 6 respectively).
N103/E92	70	9 unidentifiable bone fragments 10 fire cracked rocks 8 fractured rocks	The bone fragments and fire cracked rocks were associated with Feature 2 (soil unit 3 and 4). The fractured rock, arranged in a semicircle, was not collected. It was unclear whether the fracturing was frost cracking or fire cracking. These rocks (Feature 3) were associated with soil unit 6.
N100/E96	55	1 mandible fragment 1 rib 3 phalanges 7 unidentifiable bone fragments 8 fire cracked rocks	The faunal material was found in soil units 1 and 2 while the fire cracked rock was associated with Feature 4, soil unit 6.
N104/E95	40	3 fire cracked rocks	The fire cracked rocks were associated with soil unit 6. They did not appear to be part of a hearth.
N104/E99	20	Sterile	

*cm below square datum

recovered from four of the five tests--N101/E94, N100/E96, N103/E93 and N104/E95 (Figure 111). Species identified from the faunal material include caribou (Rangifer tarandus), Arctic ground squirrel (Citellus parryi) and possibly moose (Alces alces) (Table 11). Test square N104/E99 was the only square that did not contain cultural material. This, however, may be a function of the limited excavation in this square. Heavy rains and thawed frost flooded the square and prevented excavation beyond soil unit 3.

Features 1A and 1B, consisted of 36 thermally altered rocks and pebbles which were scattered through test square N101/E94. It became apparent that two hearths were present when the southern and western walls were seen in cross section. Because of the closeness of the two hearths, it is difficult to distinguish which rocks belong to which hearth. However, it is clear that the two hearths are superimposed but stratigraphically distinct as indicated in the south wall of the test.

The combined hearth area extends beyond the N101/E94 in all directions. The hearth depression from feature 1A is approximately 12 cm at its deepest point while feature 1B is approximately 10 cm deep at its deepest point. Both hearths seem to be linear, i.e., longer than wide, but more complete excavation is needed to define their exact configuration. As previously mentioned, both hearths are associated with the contact of units 3 and 4 (Figure 112). A radiocarbon date on charcoal from hearth 1B produced a date of 300 ± 70 years: A.D. 1650 (DIC 2252). Feature 1A, being stratigraphically above 1B, would therefore be more recent.

Feature 2 contained seven fire cracked rocks ringing a slight depression that intersected the western wall of N103/E93. This feature is associated with soil unit 4 (Figure 112). It extends approximately 60 cm from north to south and approximately 25 cm out from the western wall. No bones or artifacts were found in direct association with this feature. It is possible that three bone fragments found between soil

TABLE 11

FAUNAL MATERIAL, TLM 022

Soil Unit	Description
	N101/E94
Contact 3 and 4 associated with hearth features 1A and 1B	574 long bone fragments, calcined, medium-large mammal 1 mandible fragment, calcined, Arctic ground squirrel (*Citellus parryi*) 1 tooth fragment, unburned, large mammal 3 phalanx fragments, 3rd, calcined, moose (*Alces alces*) or caribou (*Rangifer tarandus*)
	N100/E96
Contact 1 and 2	1 mandible fragment, unburned, caribou (*Rangifer tarandus*) 2 long bone fragments, unburned, medium-large mammal
	N103/E92
Contact 3 and 4	7 long bone fragments, unburned, medium-large mammal 4 long bone fragments, heavily burned, medium-large mammal
	N104/E96
1	1 phalanx fragment, 3rd, unburned, large mammal 2 phalanx fragments, 3rd, unburned, moose (*Alces alces*) or caribou (*Rangifer tarandus*) 1 phalanx fragment, unburned, moose (*Alces alces*) or caribou (*Rangifer tarandus*) 1 flat bone fragment, unburned, medium-large mammal

units 3 and 4 are part of the cultural horizon. Two additional fire cracked rocks were uncovered at the bottom of feature 2.

Feature 3 is located in soil unit 6 and contained a group of rounded cobbles in the southwest quadrant of test square N103/E93. These rocks did not appear to be altered by thermal processes and no cultural material was found in association with the feature. It is possible that this rock configuration is the result of natural and not cultural processes.

Feature 4 is a hearth-like feature and was found in soil unit 6 of test square N100/E96 stratigraphically below a charred log. A total of eight pieces of fire cracked rock or burned rock were found in the square and were located primarily in the northwest quadrant. A large depression (ca. 70 cm deep) covers the eastern section of the square. It intersects the north, south, and east walls so that the full extent of this feature is unknown.

Although no bone or artifactual material was found in this stratigraphic level, it appears that this large depression is cultural in origin. The strata are truncated, as seen in the soil profile, and the sand unit that the rocks intersect is absent from both the large depression and also from a smaller depression located in the southwest quadrant. The soil profile of the east wall shows a sharp boundary between the depression and a disturbed sand/silt area. A charcoal lens and a wood-rich stratum parallel the lines of this boundary. These strata are capped by a well developed, more recent soil. The smaller depression that intersects the south wall is less clearly of cultural origin.

Wood, both charred and rotten, commonly occurs through the test area. Test square N104/E99 and N100/E96 showed the greatest density of wood. It is difficult, with the limited testing of the site, to differentiate between natural deadfall and wood that may have been utilized in construction, hearths, etc. In test square N104/E99, for example, it seems likely that the wood represents natural deadfall. Recent deadfall and deadfall in various states of decomposition are clearly visible over most of the site.

In test square N100/E96, almost the entire square was covered by charred logs. Feature 4 was found immediately below these logs. Associated with feature 4 was another log (rotten, not charred) that lay in an east-west direction at an angle to the other logs which were oriented northeast-southwest. Unlike the wood in N104/E99, no branches were apparent on these charred logs.

A possible third component is represented at the site by faunal debris found in soil units 1 and 2 of test square N100/E96 (Table 11). This material was more complete and better preserved than other bones found at the site. Its major association is with rotten wood found in the O horizon. Some pieces were found at the O-A contact (Table 11).

Evaluation:

Two, and possibly three, periods of cultural occupation have been documented at this site, and several loci and possible cultural features have been noted. The Devil tephra was not encountered in the test excavations and this further supports the radiocarbon determinations which suggest the site was occupied several times, possibly slightly before and after ca. 1500 A.D. The lack of trade goods may suggest that the occupations of the site occurred during pre-contact times, either before trade goods had been introduced or before they were very abundant. This could however, be a spurious result of the small sample.

The site is situated in the sheltered forested valley bottom at the junction of the Susitna River and Tsusena Creek. Based on its physical setting and the occurrance of hearths and possibly other features, this site appears to represent a favored campsite which was reoccupied several times. The hearths appear to be linear features characterized by firecracked rock, probably used for stone boiling, and caribou bone. This type of feature is commonly associated with Athapaskan sites in the Alaskan interior, and this pattern suggests that the site documents late prehistoric Athapaskan occupation of the region, probably spanning the period between approximately 1500 A.D. and 1800 A.D.

The relatively rapid rate of soil deposition and the preservation of organic remains indicate that this site will prove to be a key site in defining the cultural chronology and elucidating the activities associated with this type of site spanning this interval in the Upper Susitna Valley. It is quite probable that additional periods of occupation will be discovered at this site and that it will provide tight chronological control for this period of cultural development. Additionally, the preservation of organic material at the site presents the possibility that tools made of bone and antler may be recovered. Any such discoveries would be significant because the organic component of the Athapaskan tool kit during this period is poorly documented and understood.

(c) Systematic Testing TLM 027--Tuff Creek North Site

Location: See section 3.3 (a-iii)

Testing: Three 1 m test squares were excavated at the site (Figure 113).

Discussion:

All three 1 m test squares produced cultural material and 6 soil units were identified (Figure 114, Table 12). A total of 482 artifacts were recovered during systematic testing. Three components associated with three tephra units are represented at the site. The upper component was found in only one test square and was represented by three artifacts.

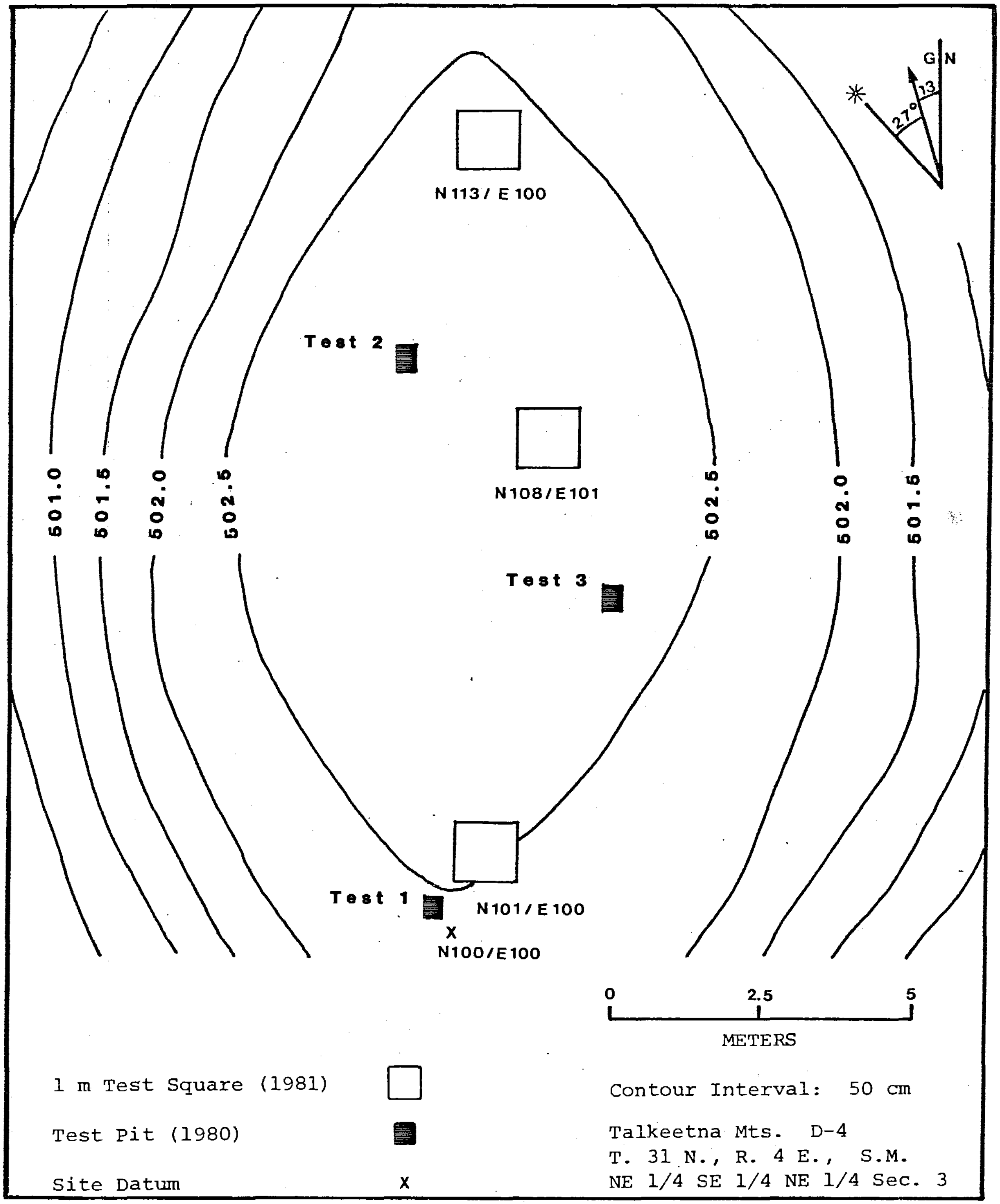
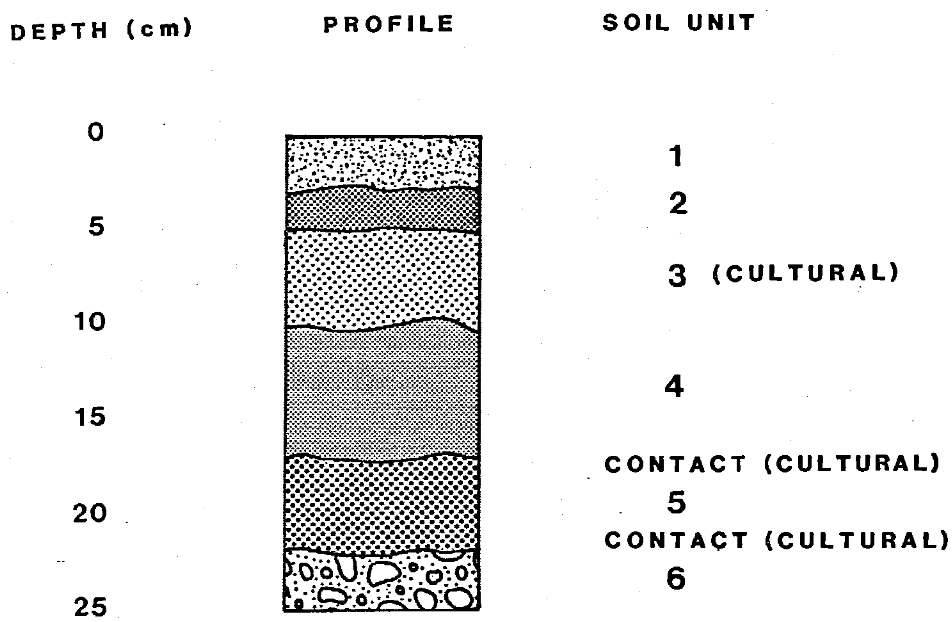


Figure 113. Site Map TLM 027.



UNIT 2/3 CONTACT

Charcoal sample UA81-243-2: 1800 ± 55, A.D. 150

Charcoal sample UA81-243-3: 140 ± 45, A.D. 1810

UNIT 4/5 CONTACT

Charcoal sample UA81-243-490: 3210 ± 80, 1260 B.C.

Figure 114. Composite Soil Profile TLM 027.

TABLE 12

SOIL DESCRIPTIONS FOR COMPOSITE SOIL PROFILE, TLM 027

Soil Unit	Description
1	Organic layer; roots, moss, lichen and decomposed plant fragments; continuous across site though variable in thickness.
2	Very finely divided organics mixed with silt (5YR 2.5/2 dark reddish brown); variable in thickness and continuity; both gradational and sharp contacts with unit 3.
3	A horizon/tephra (Devil); variable in color depending on degree of alteration (unaltered tephra 7.5 YR 7/2 pinkish gray; altered tephra 2.5 Y 6/2 light brownish gray); sharp lower boundary; thickness variable throughout site.
4	Tephra (Watana); variable in color depending on degree of oxidation; upper subzone (5 YR 3/4 dark reddish brown) highly oxidized with sand-sized concretions, forms sharp upper contact with unit 3; highly oxidized zone grades into less oxidized zone (7.5 YR 4/6 strong brown) that in turn grades into unaltered tephra (10 YR 6/6 brownish yellow). Unit 4 mixed with unit 5 in test squares N108/E101 and N113/E100 while in test square N101/E100 the contact between units 4 and 5 is sharp

TABLE 12 (Continued)

Soil Unit	Description
5	Tephra (Oshetna); variable in color upper portions are brownish gray (10 YR 5/3) that grade into a gray (10 YR 5/1) tephra; units 4 and 5 are separated by a thin charcoal layer in square N101/E100; unit 5 is continuous across site although in squares N108/E101 and N113/E100 is mixed with unit 4; pebbles and granules from unit 6 are mixed with unit 5 in these two test squares; in square N100/E101 the contact between 5 and 6 is sharp but wavy.
6	Intermixed sand, pebbles and granules (7.5 YR 5/8, strong brown, to 5 YR 4/6, yellowish red), in square N101/E100 sandy layer between unit 5 and underlying granules and pebbles.

Two lower components associated with two tephra units are also represented at the site. The two lower components can be distinguished by their characteristic lithologies (basalt and weathered chert) and apparent differences in lithic technology (bifacial vs. unifacial, respectively). The stratigraphic differentiation of these two components, both of which are located in the lowermost tephra unit, was clear only in test square N101/E100 where the soil units were minimally disturbed. The bifacial, basalt industry was discovered in association with an organic level located at the contact of soil units 4 and 5, while the weathered chert uniface industry was associated with the contact of units 5 and 6 (Figure 114).

The collection of artifacts from this site is summarized in Tables 13 and 14. Two features were delineated at the site, both of which contained weathered chert only and were characterized by large flakes, blades, and blade-like flakes. Because of the high degree of weathering on this material it is difficult to assess the extent of retouch or utilization of these artifacts.

Feature 1, located in the southeast corner of test square N101/E100 consisted of a flake scatter surrounding a rounded cobble. The largest flake was 10 cm long while the remaining flakes varied between 3-7 cm in length. Some retouch was apparent on four specimens (UA81-243-64, UA81-243-58, UA81-243-65, and UA81-243-63). A single blade (UA81-243-61), snapped at both ends, was associated with this flake scatter. These artifacts ringed a rounded cobble which appears to be the same, but unweathered, material as the flakes. There is little evidence of wear on the cobble or other indication of its use as a hammerstone or anvil. Its association with the cultural material and its presence in a soil unit devoid of other cobbles suggest its presence is a result of cultural and not natural activity.

Feature 2, located in the northeast quadrant of N108/E101, was comprised of 22 pieces of weathered chert (15 flakes, 5 blades, 1 core, and 1

TABLE 13

ARTIFACT SUMMARY BY TEST SQUARE AND BY SOIL UNIT, TLM 027

Soil Unit	Test Squares N101/E100	N113/E100	N108/E101
3 (Devil Tephra)	1 flake, chert 2 flakes, unknown material		
Total	3 artifacts	0	0
Contact of 4 and 5 (Watana and Oshetna tephra)	28 flakes, basalt 1 flake, basalt, with cortex	7 flakes, basalt	138 flakes, basalt 3 flakes, basalt, with cortex
Note: in test squares N113/E100 and N108/E101 this contact is not abrupt but mixed through solufluction	2 flakes, chert 1 biface, basalt 1 fragment, basalt 1 retouched flake, basalt	10 flakes, chert 12 flakes, weathered chert 11 flakes, unknown material	28 flakes, chert 1 biface, basalt 75 flakes, weathered chert

TABLE 13 (Continued)

Soil Unit	Test Squares N101/E100	N113/E100	N108/E101
			5 blade-like fragments, weathered chert 4 blade-like fragments (?), weathered chert 1 microblade, weathered chert 1 flake, obsidian
Total	34	49	256
5 (Oshetna) or contact of 5 and 6 (Oshetna-drift contact)	3 flakes, basalt 63 flakes weathered chert		23 flakes, basalt 1 flake, basalt with cortex 37 flakes, weathered chert 2 blade-like fragments, weathered chert 1 blade (?), weathered chert 4 microblades, weathered chert 2 uniface fragments, weathered chert

TABLE 13 (Continued)

Soil Unit	Test Squares N101/E100	N113/E100	N108/E101
			1 core, weathered chert 1 core tablet (?), weathered chert
	1 retouched flake, basalt 1 rounded cobble, unknown material		
Total	69	0	72

TABLE 14

ARTIFACT SUMMARY, TLM 027

199	basalt flakes
5	basalt flakes with cortex
2	bifaces, basalt
1	retouched flake, basalt
1	fragment, basalt
196	flakes, weathered chert
7	blades, weathered chert
5	blades ?, weathered chert
5	microblades, weathered chert
3	unifaces, weathered chert
1	core, weathered chert
1	core tablet (?), weathered chert
40	flakes, chert
1	flake, obsidian
12	flakes, unknown material
1	cobble

probable core tablet). Four of these artifacts (UA81-243-232, UA81-243-234, UA81-243-239 and UA81-243-231) showed questionable signs of use. Also present was a polyhedral blade core. The core is blocky in appearance with the platform preparation apparently limited to the immediate area of blade removal. Artifact UA81-243-230 is either part of a core tablet or a large rejuvenation flake struck off the faceted end of a core. If it is a core tablet, the distal end shows a retouched platform area similar to that seen in UA81-243-229. If it is a rejuvenation of the faceted edge (or an aborted attempt to remove a blade) it indicates that flakes and blades were removed from several directions.

The spacial distribution of the artifacts indicates that most of the knoll top probably contains both weathered chert and basalt artifacts while the most recent component is more sporadic in horizontal distribution. The stratigraphy appears more disturbed from grid north to grid south.

Three radiocarbon determinations on charcoal are available from this site. Sample UA81-243-3, collected from directly above the upper tephra (Devil) produced a date of 140 ± 45 years: A.D. 1850 (DIC-2244). Another sample from the contact of units 2 and 3 (Figure 114) yielded a date of 1800 ± 55 years: A.D. 150 (DIC-2284). These two dates suggest that the upper component at the site is older than 1800 years. A third radiocarbon date collected from the contact of the middle (Watana) and lower (Oshetna) tephras (units 4 and 5, Figure 114) produced a date of 3210 ± 80 years: 1260 B.C. (DIC-2286) suggesting that the component, which is actually below the lower tephra, which is actually older than 4700.

The fact that the artifacts are directly on the glacial drift and below the lower tephra (Oshetna) suggests that the site is much older than 3200 years. If the artifacts were actually deposited on the glacial drift and the valley floor was free of ice by 11,000 to 12,000 years ago (which appears to be the case) then the site could represent human occupation of the Upper Susitna River Valley shortly after the ice receded some 11,000-12,000 years ago. Another possibility is that the artifacts were deposited on a ground surface which was removed sometime prior to the deposition of the lowest tephra (which may be as old as 5,000-7,000 years), leaving the artifacts directly in contact with the glacial drift. The amount of weathering suggests that the artifacts were exposed for a long period of time, suggesting that the artifacts could be much older than the lower tephra which as previously mentioned could be as old as 5000-7000 years.

Evaluation:

The site commands a panoramic view to the south down and across the Susitna Valley. This may suggest that it was an overlook from which hunters manufactured tools while waiting for the appearance of large mammals below. The restricted nature of the topographic feature upon which the site is situated strongly implies that it did not serve as a large camp or village site. The site was occupied at least three times during the past, the last time sometime slightly prior to 200 A.D. The radiocarbon determinations which provide the minimum limiting dates for the Devil tephra are from the contact of units 2 and 3 of this site and may actually date the latest period of occupation at this site. The sparse nature of the artifactual material recovered from this occupation and lack of diagnostic specimens recovered from this occupation, make it difficult to further evaluate this site use during this time period. However, it is anticipated that future excavation will provide sufficient artifactual material to accomplish this goal.

The second occupation probably occurred about 1260 B.C. and is characterized primarily by basalt debetage. While a few waste flakes are somewhat "blade-like" in character, evidence of a pronounced blade and blade-core technology is lacking. A single, rather amorphous, biface was also recovered from this component.

The oldest component at the site did not yield charcoal or other organic material suitable for radiometric dating. However, its occurrence below the Oshetna tephra firmly establishes its age as greater than 4700 B.P., which is the minimum limiting date for the Oshetna ash. The lithics recovered from this component exhibit considerable weathering which suggests their exposure on the surface for a long period prior to the deposition of the Oshetna tephra. The assemblage is characterized by blades and blade cores which bear a strong resemblance to similar specimens of the Ugashik Narrows Phase, documented from the Alaska Penninsula (Dumond 1977).

Based on typological comparison of the assemblage with the Ugashik Narrows material, the pronounced degree of weathering on the specimens, and the occurrence of the component below the Oshetna tephra, it is not unreasonable to postulate an age of approximately 7000 B.P. for this component. Further work at this site is required to firmly document the age of this component by radiocarbon, or other chronometric dating techniques. Based on the foregoing discussion, this component appears to be the oldest archeological assemblage discovered during the course of the archeological reconnaissance for the Susitna Hydropower facility.

This site is potentially one of the most important sites in the project area and holds the key to defining the cultural chronology for three distinct periods. These are: 1) a cultural occupation which occurred approximately 200 A.D., 2) a period defined by radiocarbon dating at ca. 1260 B.C., and 3) what appears to be, based on stratigraphic and other evidence, the oldest occupation yet discovered in the project area, possibly dating to about 5000 B.C. It is anticipated that this site will play a major role in defining the cultural chronology and provide significant data regarding human behavior at this particular type of site for each of the above defined temporal periods.

(d) Systematic Testing TLM 033--Lake Outlet Site

Location: See section 3.2 (a-vi)

Testing: Six 1 m test squares and five shovel tests were excavated at the site (Figure 115).

Discussion:

Reconnaissance testing in 1980 uncovered a single brown chert retouched flake. The first three test squares excavated during systematic testing were placed such that one square (N500/E496) intersected the 1980 shovel test and two other squares were placed at 2 m distance, to test the areal extent of the proposed site. All three test squares were located on a northwest facing slope. No cultural material was found in any of these test squares, but soil stratigraphy in them indicated solufluction of surface material down slope.

Because no cultural material was recovered from the first three squares, three additional test squares were excavated. Due to the amount of solifluction towards the slope of the ridge, these test squares were placed in a flat area near the ridge top. Although a greater distance from the 1980 shovel test, it was felt that these squares provided a better opportunity to find relatively undisturbed cultural material. Test square N502/E501 was located on a small flat surface that overlooked the outlet creek. Square N487/E502 was located in a flat area bordering a draw and provided a view of the Susitna River. The last test square was placed near the high point of the ridge.

A depression located ca. 15 m to the east of the main excavation was also tested with three shovel tests. Two additional shovel tests were placed along the northern ridge paralleling the outlet creek. These shovel tests were excavated in an attempt to find other cultural

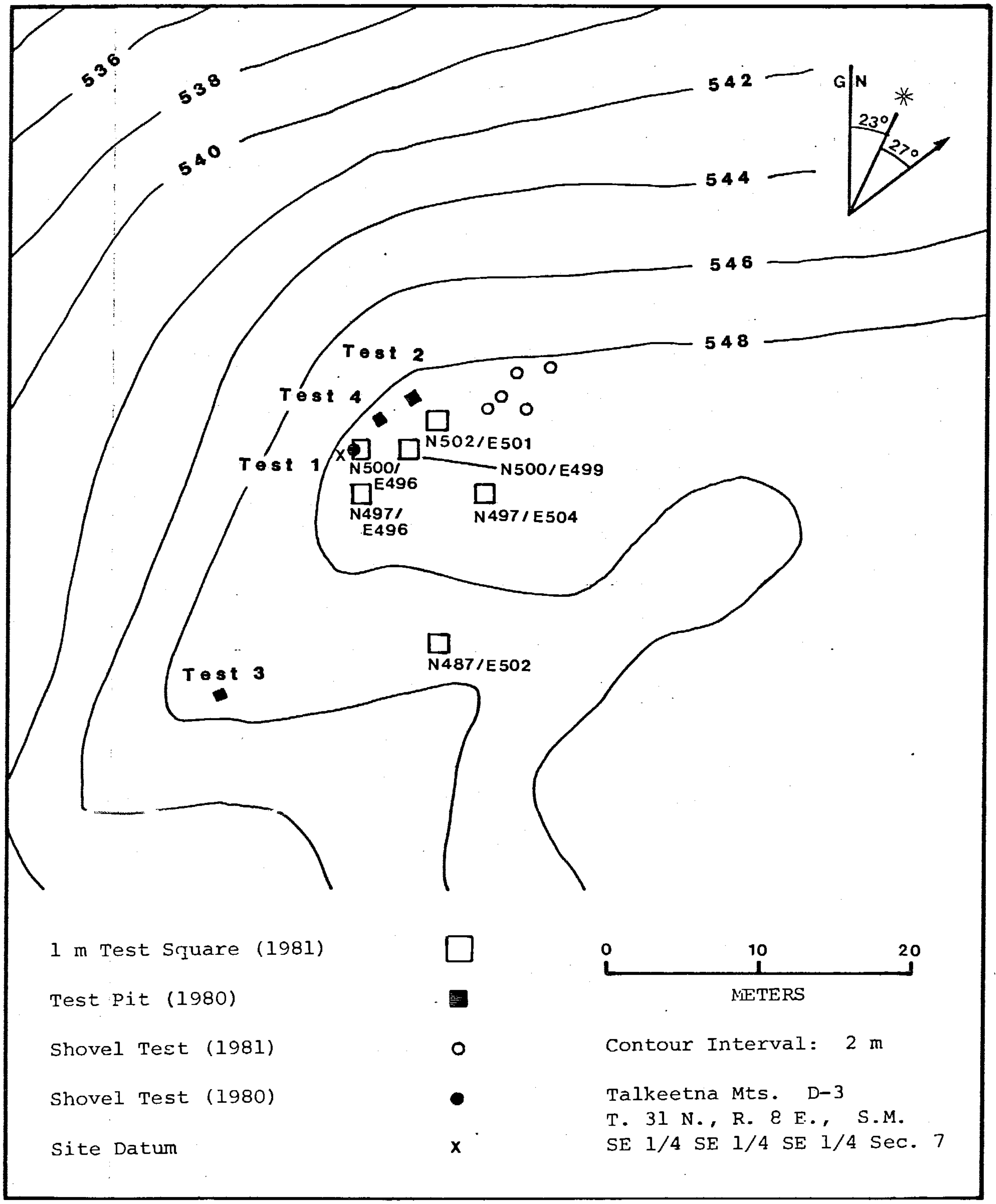


Figure 115. Site Map TLM 033.

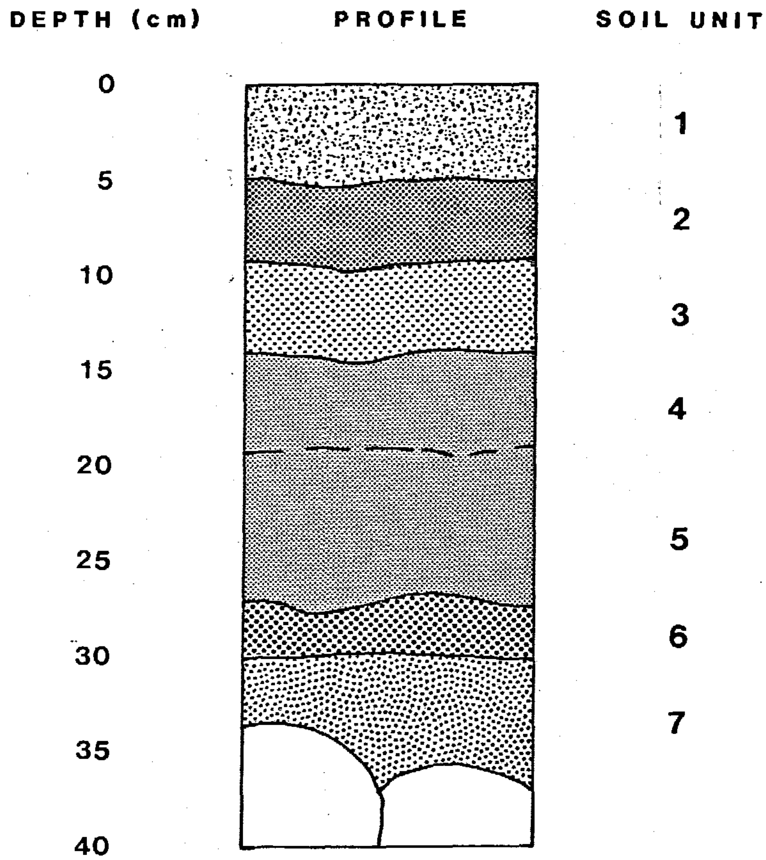


Figure 116. Composite Soil Profile TLM 033.

TABLE 15

SOIL DESCRIPTIONS FOR COMPOSITE SOIL PROFILE, TLM 033

Soil Unit	Description
1	Duff; 10 YR 2/2 (very dark brown). Sharp contact with unit 2.0 horizon.
2	Finely sorted organics with some charcoal flecks; 10 YR 2/1 (black). Sharp contact on lower boundary. A horizon.
3	Tephra (Devil), variable in color 10 YR 3/1 (very dark gray) and 10 YR 5/2 (grayish brown). Irregular and undulating contacts. Discontinuous in extent, often obscured by intermixed organic material. Very fine grain size. E horizon.
4	Tephra (Watana); 5 YR 2.5/2 (dark reddish brown). Well sorted. Continuous but variable in thickness. Gradational contact with unit 5. Well sorted B horizon.
5	Tephra (Oshetna); 10 YR 4/6 (dark yellowish brown). Similar to unit 4 except unoxidized. Lower contact tends to be sharp but at times is intermixed with sand C horizon.
6	Mixed sand-tephra; 10 YR 5/2 (grayish brown). Poorly sorted. Discontinuous across areas. Upper contact at times distinct but mostly seen as gradation. Mixing may be function of cryoturbation.

TABLE 15 (Continued)

Soil Unit	Description
7	Sand; 10 YR 3/4 (dark yellowish brown. Upward fining from coarse sand with pebbles to medium sand. There appears to be a thin oxidized zone in the upper portion of the sand zone.

material on the ridge top. Several bedrock outcrops, visible on the opposite side of the outlet creek, were also examined with negative results.

Eight soil units were delineated at the site (Figure 116, Table 15). These units are similar to the "type section" at TLM 040 with two exceptions: 1) greater mixing of soil units due to solifluction and 2) the presence in the south wall of test square N500/E496 of a thin lens of ash. The mixing of the soil units is particularly evident in soil unit 6 where the lower tephra (Oshetna) has been churned up and mixed with the basal sand unit. The lack of two separate A horizons suggests erosional episodes in the upper units or mixture of these units.

Only a single test square was profiled because no cultural material was discovered in any of the test squares of shovel tests.

Evaluation:

Because systematic testing failed to produce additional cultural material, this site appears to hold little potential to yield additional data pertinent to the prehistory of the project area. Additional work at this site does not appear to be warranted.

(e) Systematic Testing TLM 038--Upper Watana Creek Site

Location: See section 3.7 (a-x)

Testing: Five 1 m test squares and one shovel test were excavated at the site (Figure 117).

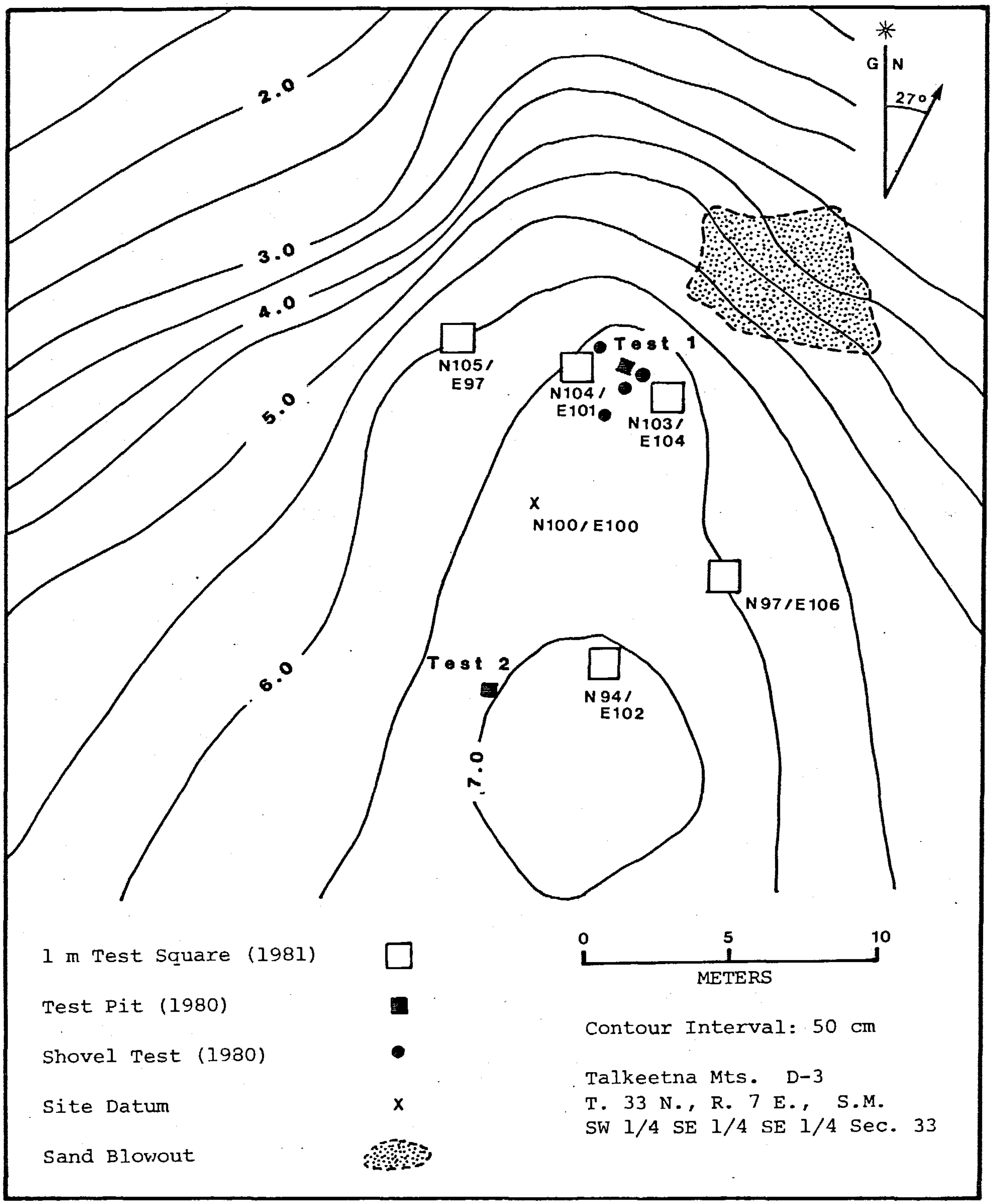


Figure 117. Site Map TLM 038.

Discussion:

No lithic debetage or tools were recovered at the site with the exception of fire cracked rock. All but one test square produced burned bone and/or fire cracked rock. All the faunal material from the test squares that produced faunal material (N104/E101, N103/E104 and N97/E106) appears to be associated with a buried A horizon directly above the middle tephra (Watana; Figure 118 unit 4a and Table 16) although some material was found in with the middle tephra (Figure 118 unit 4c). Species identified include caribou (Rangifer tarandus), vole (Microtus sp.) and a possible moose (Alces alces) (Table 17).

Test square N105/E97 was excavated to test the western extent of the cultural material. Cultural material was not observed in this test, but extensive cryoturbation was evident by the displacement of soil units. Test square N104/E101 was excavated 1 m west of the reconnaissance test which revealed cultural material in 1980 (Figure 117). The very fragmented bone recovered from the 1981 test square was far less concentrated than that noted in the 1980 test. Six fire cracked rocks were also recovered from this test (Table 18). Test square N103/E104 was excavated 1 m southwest of th 1980 test in order to further define the extent of cultural material at the site. An 8 cm thick, wind blown sand unit overlaid the cultural material in this test which consisted of one fire cracked rock and four burned bone fragments. Test N97/E106 also contained cultural material consisting of one fire cracked rock and one bone fragment. Test square N94/E102 was excavated in what appeared to be a more geographically stable zone of the site based on the character of the surface vegetation, thicker organic mat, and distance from the bluff edge. One fire cracked rock was recovered from this test. Test square N75/E100 was excavated to provide a look at soil deposition away from the bluff edge. No cultural material was located in the 40 cm x 40 cm test.

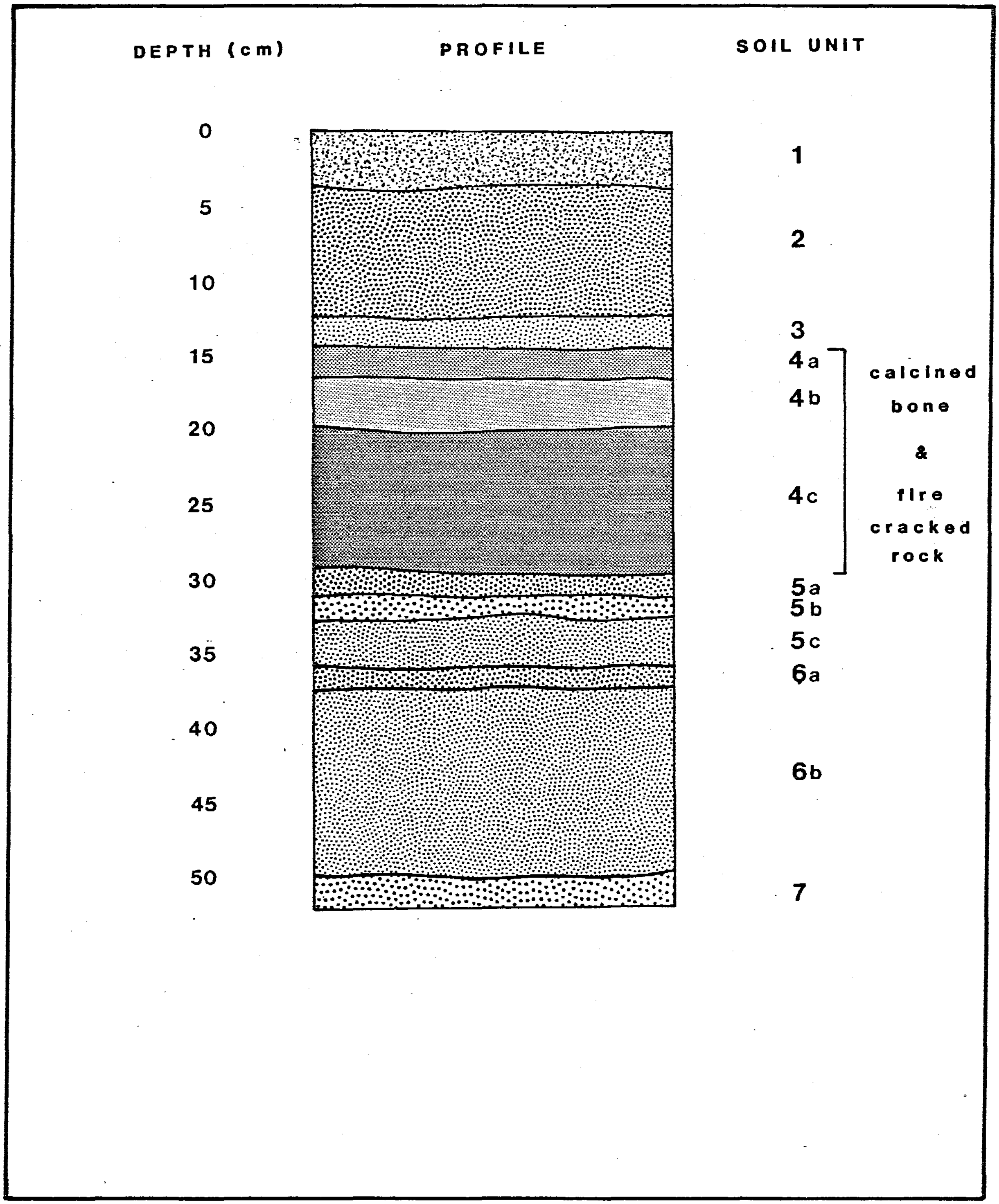


Figure 118. Composite Soil Profile TLM 038.

TABLE 16

SOIL DESCRIPTIONS FOR COMPOSITE SOIL PROFILE, TLM 038

Soil Unit	Description
1	Humus mixed with sand, organics not divided. 2-8 cm thick.
2	Poorly sorted unaltered wind blown sand. Some non-divided organics present, grayish brown (2.54 5/2). Lower boundary sharp.
3	Light gray (10 YR 6/1) silty fine sand possibly mixed with tephra.
4	Silt (tephra or mixed with tephra), dries to a light powder, 5 to 25 cm thick, occurs in four subunits.
4a	Very dark gray (10 YR 2.5/1)
4b	Grayish brown (2.54 5/2)
4c	Dark reddish brown (5 YR 3/3) to dark yellowish brown (10 YR 4/4)
4c	Brownish yellow (10 YR 6/6)
5	Unsorted medium fine wind flown sand, occurs throughout site in a 3 to 15 cm thick unit, lower boundary sharp, consists of three subunits.
5a	Very dark grayish brown (10 YR 3/2)
5b	Grayish brown (7.5 YR 4/3) to dark yellowish brown (10 YR 3/4)

TABLE 16 (Continued)

Soil Unit	Description
6	Unsorted medium to fine wind blown sand, occurs throughout site, thickness up to 40 cm, lower boundary very abrupt, consists of three subunits.
6a	Very dark grayish brown, dark grayish brown (2.54 4/2)
6b	Dark yellowish brown (10 YR 3.5/4)
7	Well sorted medium sand, no soil development evident, olive (54 4/3) possible lacustrine deposit.

TABLE 17

FAUNAL MATERIAL, TLM 038

Soil Unit	Description
	N97/E106
4a	1 long bone fragment, unburned, medium-large mammal
	N103/E104
4a	2 long bone fragments, unburned, medium-large mammal
4a	5 long bone fragments, unburned, small mammal
4a	1 rib fragment, unburned, large mammal
	N104/E100
4a	1 phalanx fragment, 2nd, calcined, caribou (Rangifer tarandus)
4a	1 metapodial fragment, heavily burned, caribou (Rangifer tarandus)
4a	1 mandible fragment, right, vole (Microtus sp.)
4a	1 maxilla fragment, vole (Microtus sp.)
4a	1 vertabra, thoracic, calcined, caribou (Rangifer tarandus) or moose (Alces alces)
4a	58 long bone fragments, calcined, medium-large mammal
4a	2 long bone fragments, calcined, large mammal
4a	12 long bone fragments, heavily burned, medium-large mammal

TABLE 18

ARTIFACT SUMMARY BY TEST SQUARE, TLM 038

N105/E97		No cultural material
N104/E101	20-41 cm	17 Bone fragments
		6 Fire cracked rocks
N103/E104	10 cm	1 Rib
	26-39 cm	3 Bone fragments
		1 Fire cracked rock
N97/E106	39 cm	1 Bone fragment
		1 Fire cracked rock
N94/E102	48-53 cm	1 Fire cracked rock

Evaluation:

This site is situated on a high, well drained overlook adjacent to Watana Creek and was probably used briefly as a hunting camp. This tentative conclusion is supported by the presence of fire cracked rock and the bones of caribou and possibly moose. No large cultural features such as house depressions were noted and the site lacks major ecological features (such as convenient access to fresh water) suggests that it is not suitable for use as a more permanent type of camp.

Although no radiocarbon determinations are available from the site, the stratigraphic placement of the cultural material recovered indicates that the site was occupied after the deposition of the Devil tephra. Based on the results of systematic testing, the cultural occupation appears to be derived from a buried A horizon immediately below the Devil tephra and above the Watana tephra, although cryoturbation has resulted in some of the specimens intruding into the lower tephra. The cultural occupation is certainly older than 200 A.D. and quite probably postdates component 2 at Tuff Creek North, thus filling another critical gap in the cultural chronology of the Upper Susitna.

Additionally, the preservation of faunal material at this site not only provides the possibility of assessing this particular aspect of the subsistance cycle during this time period, but also the opportunity to recover tools made of bone or antler, which are unknown from archeological sites of this age in this region of Alaska. The above factors combine to make TLM 038 another key site which warrants further research in the project area.

(f) Systematic Testing TLM 039--Duck Embryo Lake, South

Location: See section 3.2 (a-vii)

Testing:

Systematic testing consisted of three 1 m test squares placed along the east-west trending summit of a kame (Figure 119). Test squares were placed in the immediate vicinity of reconnaissance shovel tests in order to further define the eastern and western extent of the site and to obtain additional cultural material and datable organics.

Discussion:

Lithic material was recovered from all three test squares. No faunal material was recovered at the site. Lithic material consisted of a single possible fire cracked rock, 43 waste flakes and two microblades.

Site stratigraphy consists of less than 10 cm of organic and humic horizons above approximately 10 cm of volcanic tephra deposits which overlay glacial drift (Figure 120, Table 19). Three distinct tephra have been identified at the site based on color, texture and weathering characteristics (Table 19). Stratigraphy at the site is clear but compressed into approximately 20 cm of vertical development. All test squares show essentially the same stratigraphy with the exception of N47/E49 in which a silty loam (unit 2) is present. This unit is not found in either of the other two tests and is interpreted as redeposited slope wash.

Artifacts were recovered from three of seven stratigraphic units identified at the site (Figure 120). Cultural material occurs within the Devil tephra (unit 4) and in all stratigraphic units and contacts between the Devil tephra and glacial drift (unit 7). Cryoturbation has probably been the cause of the mixing of artifacts and there is no clear

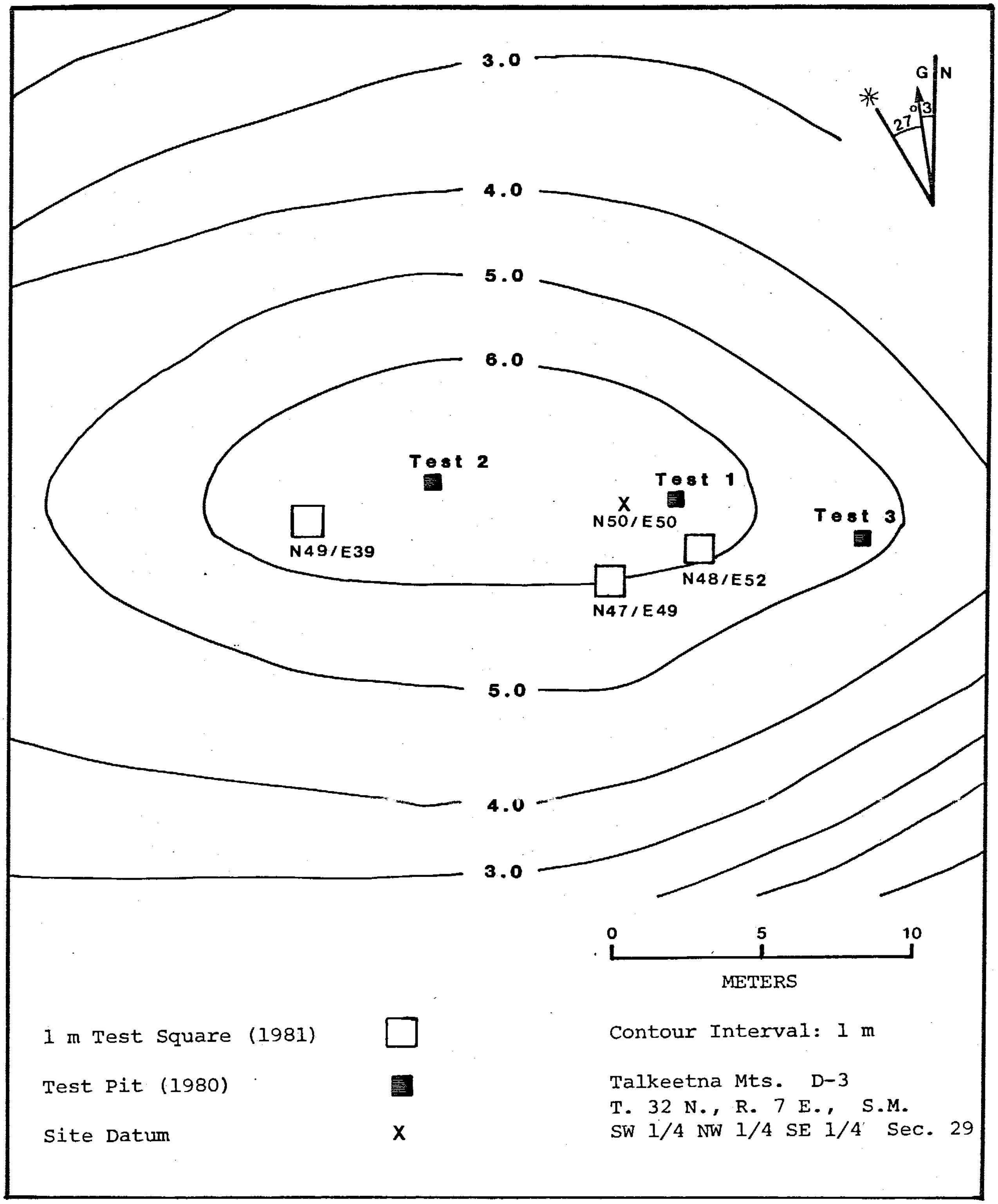


Figure 119. Site Map TLM 039.

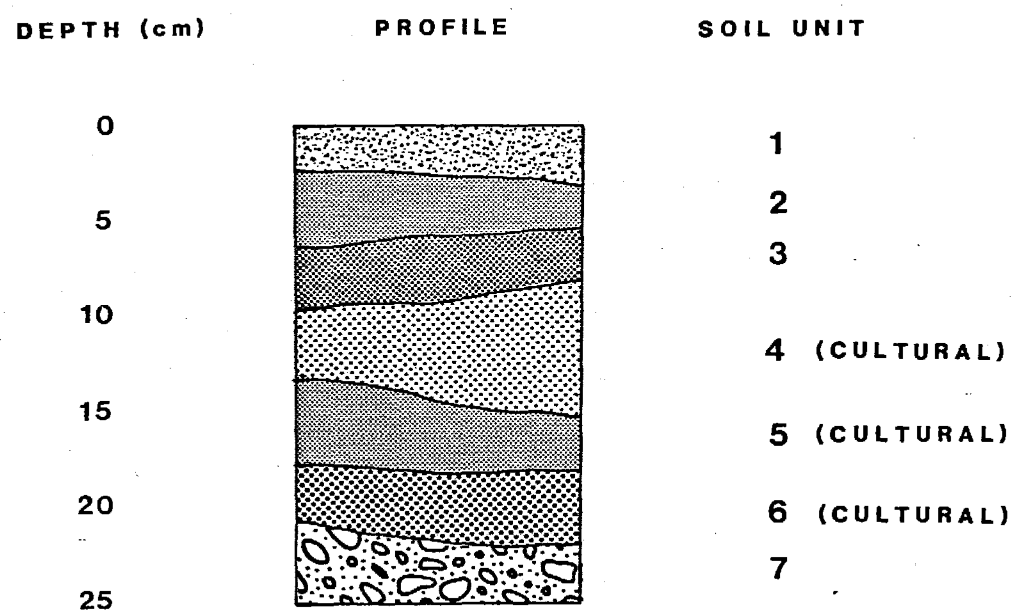


Figure 120. Composite Soil Profile TLM 039.

TABLE 19

SOIL DESCRIPTIONS FOR COMPOSITE SOIL PROFILE, TLM 039

Soil Unit	Description
1	Organic mat. Roots, moss, and leaves. Occurs over site in a layer 1 cm to 5 cm thick. (O-horizon)
2	Silty loam. Dark brown (10 YR 3/4). Occurs only in test square N47/E49. Interpreted as redeposited slope wash.
3	Finely divided organics with silt. Very dark gray (10 YR 2.5/1). Occurs in a 3 cm to 8 cm layer with abrupt lower boundary. (Tephra)
4	Silt. Light brownish gray (10 YR 6/2). Occurs in a thin and discontinuous layer. (Tephra)
5	Silt. Light brownish gray (10 YR 6/2). Heavily oxidized in the upper portion of the unit with the lower contact abrupt and smooth and marked by charcoal fragments. (Tephra)
6	Sandy silt. Grayish brown (2.5 Y 5/2). Silt component dries to a fine white powder. Some mixing in places with underlying unit 7. Lower boundary with unit 7 clear and smooth. (Tephra)
7	Silty, poorly sorted sand mixed with sub-rounded pebbles and cobbles. Upper portion dark yellowish brown (10 YR 4/6), lower portion olive brown (2.5 YR 4/4). (Glacial drift)

evidence for more than one component (Table 19). The greatest number of artifacts were excavated from within the Oshetna tephra (unit 6) and at its upper contact with the Watana tephra (unit 5). The presence of artifacts in other stratigraphic positions at the site may be a result of freeze-thaw activity. This is supported by the apparent random distribution of waste flake lithology in the cultural units (Table 20). Waste flake lithologies include chert, rhyolite, basalt and quartzite. None of the waste flakes show subsequent retouch.

Diagnostic artifacts recovered during systematic testing were excavated from test square N48/E52 and consist of two microblades, one of which is represented by two articulating fragments. One black chert microblade fragment (UA81-277-20) was recovered from the contact between the Watana and Oshetna tephra (units 5/6). This fragment articulates with a second black chert microblade fragment (UA81-277-30) recovered from within the Oshetna tephra (unit 6). This broken microblade is 2.35 cm long and .7 cm wide and shows retouch (possible backing) along one margin and light retouch (possible use wear) along the opposite margin. The second microblade (UA81-277-29) recovered from this test square was excavated from within the Oshetna tephra (unit 6) and is a complete clear obsidian microblade measuring 2.1 cm long and .5 cm wide. This microblade shows continuous abrasion and crushing along one of two parallel aires which could have resulted from hafting. Moderate discontinuous retouch (possible use wear) occurs along the opposite margin and supports the conclusion that this microblade may have served as a projectile point inset. Very minor discontinuous retouch on the opposite margin may have occurred during hafting or use. Curved, paralleled striations (within the obsidian itself) are visible microscopically and indicate percussion rather than pressure flaking which would not leave striations in the lithic material. The only other diagnostic artifact recovered from TLM 039 was a black chert burin spall (UA80-146-1) struck from a biface. This artifact was recovered from Test 1 during reconnaissance testing and was excavated from 12 cmbs associated with Watana Tephra.

TABLE 20

ARTIFACT SUMMARY BY SOIL UNIT, TLM 039

Soil Unit	Description
4	2 Flakes, brown chert
	3 Flakes, gray rhyolite
	3 Flakes, gray speckled chert
4/5 Contact	1 Flake, gray speckled chert
5	2 Flakes, gray rhyolite
	2 Flakes, yellow rhyolite
	1 Flake, brown chert
	3 Flakes, gray basalt
5/6 Contact	1 Microblade fragment, black chert
	1 Flake, redish brown chert
	2 Flakes, quartzite
	1 Flake, yellow rhyolite
	5 Flakes, gray speckled chert
	1 Flake, gray rhyolite
	1 Flake, gray basalt
6	1 Microblade fragment, black chert
	1 Microblade, clear obsidian
	2 Flakes, brown chert
	1 Flake, reddish brown chert
	2 Flakes, green rhyolite
	1 Core fragment, green rhyolite
	1 Flake, yellow rhyolite
	4 Flakes, gray speckled chert
6/7 Contact	4 Flakes, green rhyolite
	1 Flake, gray chert

Evaluation:

The geomorphology of TLM 039 suggests that the site was probably used as a hunting overlook where tool resharpening or limited tool manufacture occurred. As previously mentioned, the site location offers a panoramic view encompassing a large lake and would and does afford excellent visibility of easily accessible terrain. Lack of well defined hearths and diverse artifact types implies that TLM 039 was probably not used as a major campsite. The site is exposed and probably would not have been an attractive camping area. Although there were several deflated areas, no surface artifacts or features were observed. The spacial extent of the site is probably restricted by topography to an area of approximately 20 m by 5 m in the immediate vicinity of the highest part of the knoll (Figure 119).

A total of five charcoal samples was collected, however, no radiocarbon dates are available. The site can be roughly placed chronologically on the basis of the stratigraphic position of the artifacts in relation to the Devil tephra and is certainly older than 1800 yrs. B.P. If the site is single-component and the occupation occurred between the deposition of the Oshetna and Watana tephras, then the site can be relatively dated to between 2300 yrs. B.P. and approximately 4700 yrs. B.P. This assessment is necessarily tentative, and further systematic testing is required before the chronological placement of the site can be ascertained with certainty.

(g) Systematic Testing TLM 040--Tephra Site

Location: See section 3.2 (a-viii)

Testing: Five 1 m test squares and ten shovel tests were excavated at the site (Figure 121).

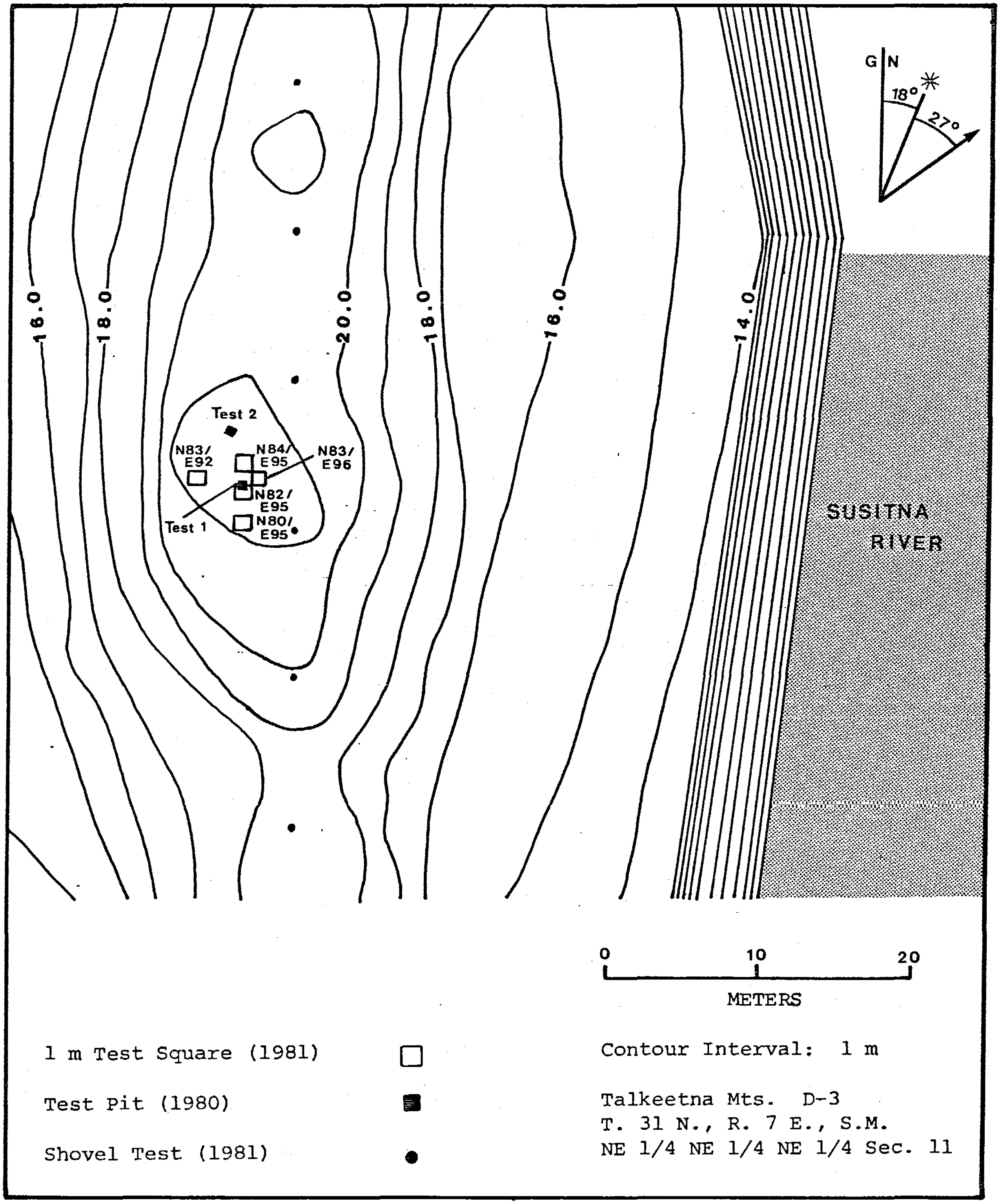


Figure 121. Site Map TLM 040.

Discussion:

Cultural material made from obsidian, basalt, chert and rhyolite was recovered from three of the five test squares. Subsurface testing in 1980 uncovered a retouched blade-like flake and a rhyolite flake. Three 1 m squares were opened initially during systematic testing. Two of these squares were located at 2 m distance from the 1980 test (N80/E95 and N83/E92) and one square was placed a 1-m distance from the 1980 test (N84/E95). Excavation by natural units was hampered by extensive annual frost. The sediments, once thawed, were too wet to screen so they were carefully troweled and thoroughly examined by hand. An additional two test squares (N83/E96 and N82/E95) were excavated because of the sterility of the upper strata and the slowness of excavation caused by the annual frost. Types of artifacts recovered include microblades and microblade fragments, scrapers, blade fragments, a core fragment, a possible graver and waste flakes.

Ten shovel tests were excavated paralleling the grid datum line (Figure 121). These tests were excavated to determine the extent of cultural material on the site, but all produced negative results.

Thirteen soil and sediment units were delineated at the site, although all units were not present in every test (Figure 122, Table 21). All three tephra were present at the site. Soil units 4 through 8 represent paleosol development of a mixed ash and silt deposit. Soil units 1 through 3 represent more recent soil developments. The lower tephra (unit 9, Oshetna) contained a thin, discontinuous layer of charcoal at its uppermost boundary, but did not exhibit the soil development seen in the other tephra units. The effects of frost activity were visible in all test squares, solifluction, upward movement of cobbles, and probable movement of cultural material was noted.

The distinction of the lowest tephra (unit 9, Oshetna) was not continuous in the excavated squares. This discontinuity was particularly

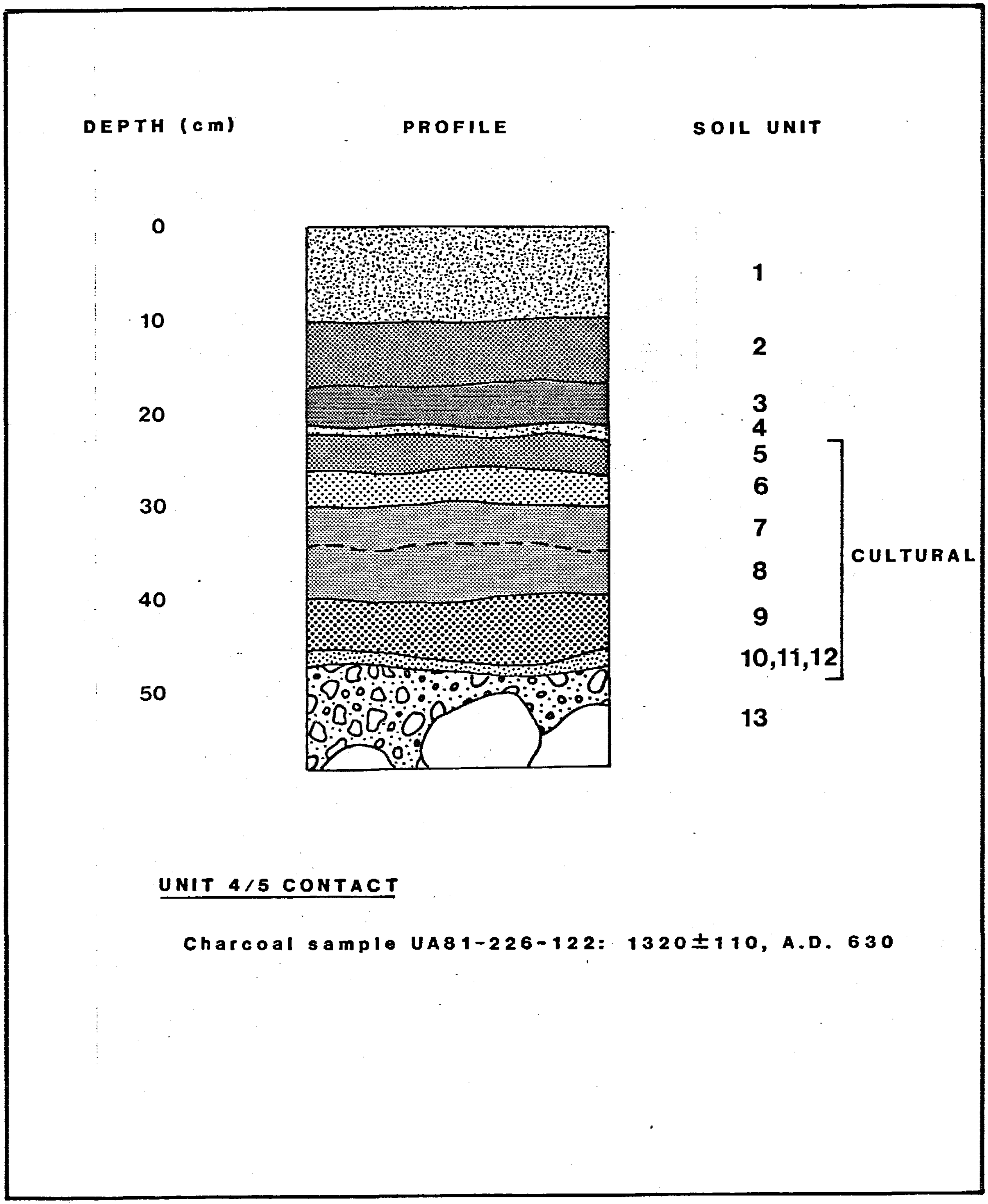


Figure 122. Composite Soil Profile TLM 040.

TABLE 21

SOIL DESCRIPTIONS FOR COMPOSITE SOIL PROFILE, TLM 040

Soil Unit	Description
1	Duff; with roots; 10 YR 3/3 (dark brown). Grades into unit 2. O horizon.
2	Finely divided organic material in fine grained matrix; 10 YR 2/2 (very dark brown). Lower contact of unit 2 also gradational. A horizon.
3	Fine grained silt mixed with organic material; 10 Y 4/3 (brown). Horizon is often not visible because of intermixture with organics. R horizon.
4	Layer of highly decomposed plant material; 10 YR 2/1 (black). Thin layer often missing. O horizon.
5	Finely divided organic matter; 10 YR 2/2 (very dark brown). Some charcoal present in pockets. A horizon.
6	Thin mineral unit (Devil tephra?), fine grained; 10 YR 5/4 (yellowish brown). Sharp upper contact, gradational lower contact. E horizon.
7	Intensely oxidized zone of tephra (Watana); 5 YR 3/3 (dark red-brown). Dark brown concretions present. Gradational lower contact. B horizon.

TABLE 21 (Continued)

Soil Unit	Description
8	Tephra (Watana); 10 YR 5/6 (yellowish brown). Sharp lower contact. Powdery (C horizon).
9	Tephra (Oshetna); 10 YR 6/1 (gray). Fine tephra with fine sand size particles. In some cases this tephra is overlain by a thin charcoal horizon and/or bits of charcoal are found throughout unit. Both upper and lower contacts are sharp. Discontinuous in extent. R horizon.
10	Sand; 2.5 Y 5/4 (light olive brown). Fine to medium grain sized and moderately well sorted. In some cases small cobbles present in lower part of unit.
11	Sand; 10 YR 5/2 (grayish brown). Medium grained. Found only in SW corner of N82/E95 in area where unit 9 was absent.
12	Sand; 2.5 Y 5/4 (light olive brown). Coarse grained. Gradational contact both top and bottom.
13	Boulder-coarse sand. Maximum boulder size (66 cm). Frost shattering seen in some rocks but is not extensive. No apparent polish or aeolian scouring.

important in test square N82/E95 where a medium-grained gray sand (unit 11) containing cultural material occurred in an area where the lower gray tephra was absent. The stratigraphic relationships of cultural material to both tephra units is difficult to assess at this level of testing because microblades were distributed throughout seven soil units while the gray-banded chert material from square N83/E92 appears to occur stratigraphically within or below the lower gray ash (unit 9, Oshetna).

A total of 182 lithic artifacts were recovered from the site (Tables 22, 23). This material was dominated by flakes and other debitage made of obsidian, gray-banded chert and basalt (Table 22), and primarily occurred in squares N83/E92 and N82/E95. Most of the obsidian and basalt material was found in test square N82/E95 while square N83/E92 contained most of the gray banded chert material.

The cultural material from test square N83/E92 was concentrated in the northwest quadrant and may represent a workshop area. Additional cultural material was noted in the northern and western walls of this quadrant indicating that this flake scatter continues in areal extent to squares north and south of this test. Numerous small banded gray-chert fragments formed a "pavement" under the larger flakes and flake fragments of this flake scatter. This small sized debitage was not collected. A bifacially flaked tool (UA81-226-117; core chopper) and a utilized flake (UA81-226-27; graver) were also associated with this flake scatter.

A unifacially retouched flake (UA81-226-4; scraper) from test square N83/E96 was made from similar material as that found in the flake scatter. It, too, was found in association with the lower gray ash (unit 9, Oshetna) brown sand (unit 10) stratigraphic level and could be associated with the artifacts from square N83/E92.

TABLE 22

ARTIFACT SUMMARY, TLM 040

1	Blade fragment, gray-banded chert
1	Graver?, gray-banded chert
1	Scraper, gray-banded chert
1	Boulder chip scraper, rhyolite
1	Core fragment, gray-banded chert
1	Core/chopper, gray-banded chert
22	Microblade/microblade fragments, obsidian
19	Flakes, obsidian
4	Blade-like flakes, obsidian
36	Flakes, basalt
94	Flakes, blade-like flakes and fragments, gray-banded chert
1	Flake fragment, red obsidian

Total Artifacts = 182

TABLE 23

ARTIFACT SUMMARY BY TEST SQUARE, TLM 040

Test Square	Maximum Depth of Excavation*	Cultural Material	Comments
N82/E95	c. 80 cm	22 Gray obsidian microblade and microblade fragments 4 Gray obsidian blade-like flakes 1 Gray-banded chert flake 34 Basalt flakes	Lithic material distributed throughout all four quadrants of the test square. Vertical distribution of the artifacts spanned the area from the upper zone of the brown tephra (Watana) to the basal, brown sand. It is likely that the vertical location of the artifacts has been disturbed through cryoturbation because of the similarity of artifact type and lithology in all soil units.
Total = 80 artifacts			
N83/E92	c. 70 cm	1 Gray-banded chert blade fragment (proximal end) 1 Gray-banded chert graver (?) 1 Boulder chip scraper, rhyolite 1 Gray-banded chert core fragment 1 Core/chopper, gray-banded chert 93 Gray banded chert flakes, blade-like flakes and fragments 2 Basalt flakes	A flake scatter, located in the northwest corner of this test square, accounted for 84 of the gray-banded chert flakes, blade-like flakes and fragments. Lithic material was present in the square walls indicating that the scatter continues to grid north, northwest and west of N83/E92. Material found in square was from gray ash or brown sand.
Total = 100 artifacts			

TABLE 23 (Continued)

Test Square	Maximum Depth of Excavation*	Cultural Material	Comments
N83/E96	c. 70 cm	1 Gray-banded chert scraper 1 Red obsidian flake fragment	
Total = 2 artifacts			
N80/E95	c. 45 cm	None	This square was excavated only to the upper contact of the lower gray tephra (Oshetna). The square was backfilled prior to the discovery of cultural material in the gray tephra and brown soil units. Thus, it is possible that artifactual material may be found in the two basal units.
N84/E95	c. 70 cm	None	

*Measured in cm below square datum.

The cultural material in test square N82/E95 was not as well controlled stratigraphically as in square N83/E92. The lithic material from square N83/E95 consisted of obsidian (45 artifacts) and basalt (34 artifacts) and was distributed through seven of the thirteen defined soil units. Given the similarity in type of artifact and lithology, it is likely that frost action has mixed the material stratigraphically.

Evaluation:

Preliminary systematic testing at this site was unable to accurately define the age and number of occupations at this site. This is due to two factors: 1) annual frost inhibited the excavations and 2) cryoturbation had disturbed the stratigraphic placement of the cultural material. However, the preliminary testing does suggest two and possibly three periods of human utilization at the site based on the apparent *in situ* nature of some of the specimens (the banded gray-chert flake distribution) and the occurrence of different lithologic and artifact types in horizontally separated locales. The occurrence of numerous obsidian microblades, and microblade fragments, at the site create the opportunty to answer numerous questions regarding the age and function of these intriguing specimens. Additionally, the obsidian presents possibilities for trace element analysis, which can link the obsidian to its source and thus elucidate prehistoric patterns of trade and contact.

The function of the site appears to be that of an overlook located on a prominant point projecting northward into the Susitna River, from which hunters scanned the valley bottom for prey while engaged in the manufacture of stone tools. While systematic testing at the site has not provided conclusive results, it has provided sufficient data which suggests that additional excavation at this potentially significant site will provide the data necessary to understand the complex stratigraphy and place the cultural occupation(s) in their proper chronological framework. Additional controlled excavation is essential if these questions are to be answered.

(h) Systematic Testing TLM 042 loci A and B - Goose Creek Site

Location: See section 3.2 (a-ix).

Testing: Locus A - Five 1-m test squares and four shovel tests were excavated at this locus (Figure 123).
Locus B - Six 1-m test squares and one shovel test were excavated at this locus (Figure 124).

Discussion:

Locus A:

A total of 151 lithic artifacts and three bone fragments were collected during surface and subsurface testing. The soil stratigraphy was dominated by solufluction features and the bulk of the artifacts were collected from the eroding bluff face. The extensive presence of solufluction lobes throughout the site indicated that most, if not all, of the artifacts are displaced from their original place of deposition.

Reconnaissance level testing at this site in 1980 revealed surface and subsurface cultural material. The area available for deep subsurface testing was limited because of extensive erosion of the soil from most of the ridge top. Two test squares initially were excavated to define the western (N99/E100) and northern (N100/E102) extent of subsurface material. Both squares contained subsurface artifacts and anomalous soil configurations. Test square N103/E103 located on the ridge top in an area with a more gradual slope, was excavated both to test the spatial extent of the site and to expose a soil profile that was less affected by solifluction. Test square N99/E105 was opened to define the eastern limits of the artifact distribution. Further testing was not conducted in a westward direction because of the predominance at the

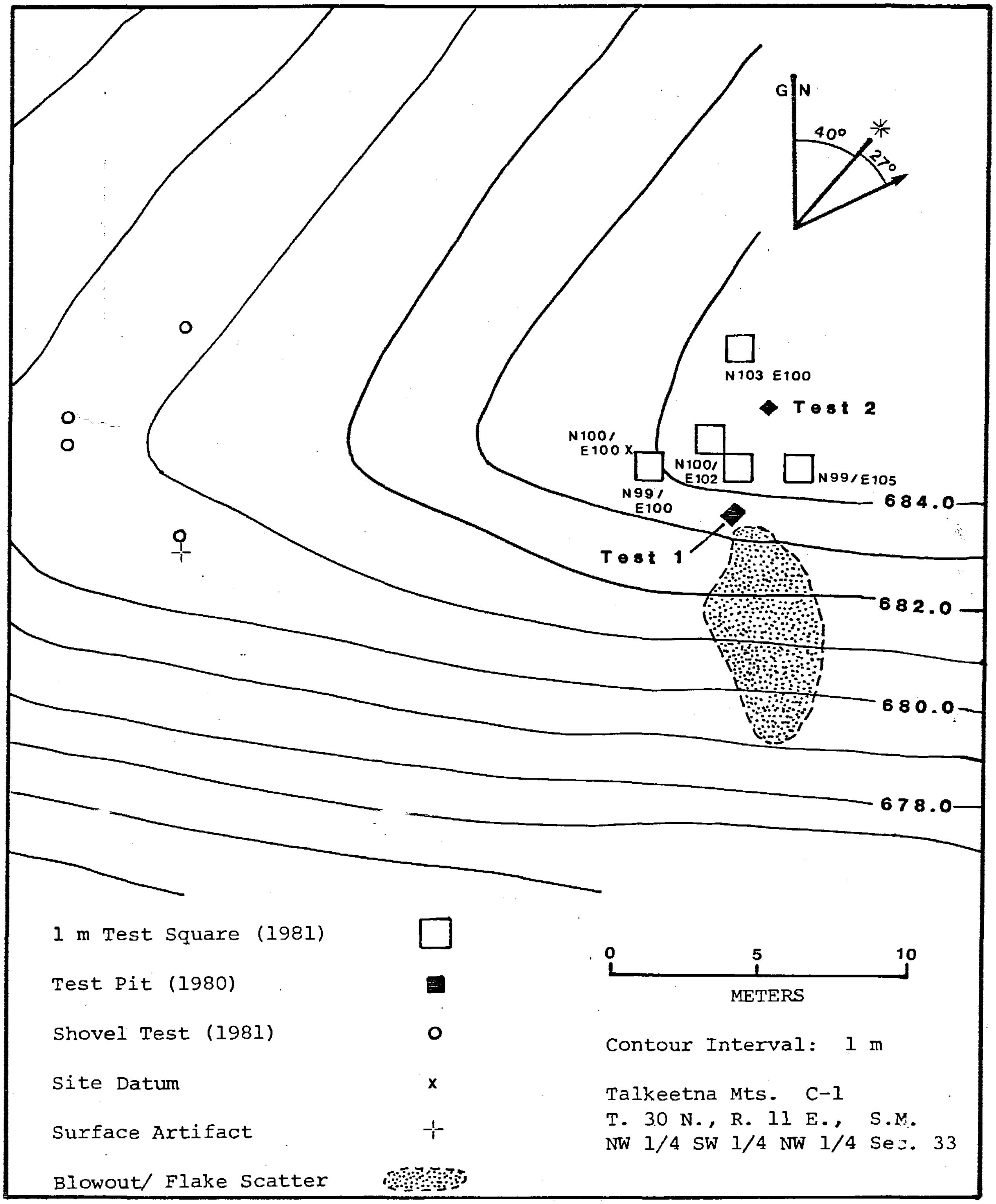


Figure 123. Site Map Locus A TLM 042.

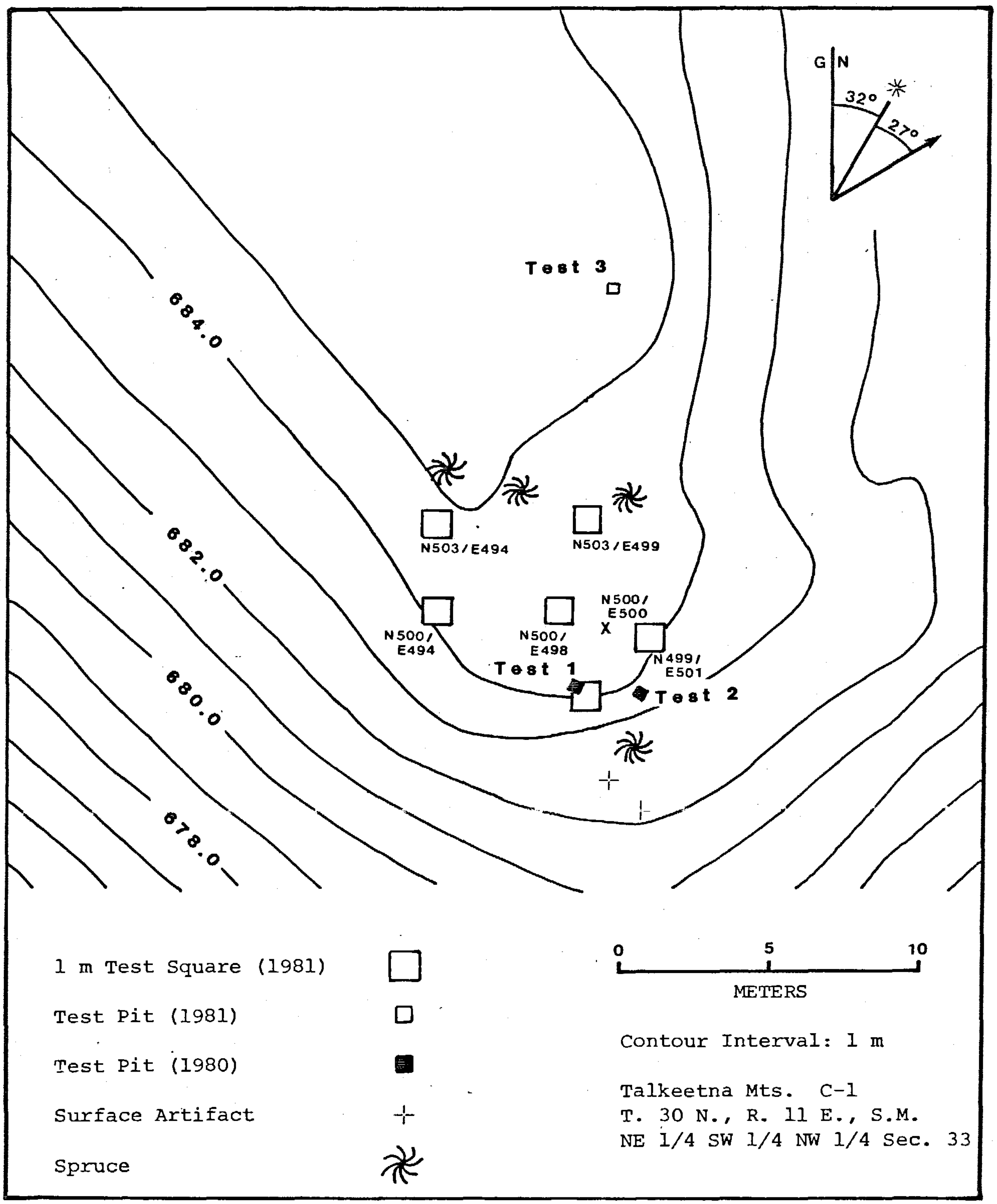


Figure 124. Site Map Locus B TLM 042.

surface of glacial drift. The sterility of square N103/E103 and 1980 shovel test 2 suggests that the limits of the major artifactual concentration are defined by test squares N99/E100, N100/E102, N99/E103 and the slope flake scatter found in 1980.

When a single flake was discovered on the surface ca. 15 m to the west of the main artifact concentration at this locus, four shovel tests were excavated to define the density of artifacts in this area. The placement of the shovel tests were affected by the shallowness of the soil and predominance of drift at the surface. One flake was found.

Sixteen separate soil/sediment units were described at locus A (Table 24). Five of these units were present in all test squares, while the remaining eleven units were present only locally. It appears as if the ridge has been in a long-term process of erosion based on the thinness of the O-horizon, absence of an A-horizon, discontinuity of the tephra units and the presence of numerous disturbed areas. Although artifactual material was found in surface testing, it is likely that most of the material is not in situ. The cultural material, both in the test squares and in the surface flake scatter was uncovered in the upper organic-rich layers or was associated with an underlying dark yellow-brown oxidized zone (Figure 125, unit 9). The oxidized sand unit is visible on the exposed slope suggesting that this unit is more resistant to erosion and, thus, forms a relatively stable surface on which artifacts rest.

A series of depressions and/or "hearth-like" features were discovered in each of the test squares. In some cases, e.g., N100/E102, the depression contained the only artifactual material recovered from the test square. Stratigraphies from test squares N100/E102, N103/E103, and N99/E105 were ambiguous in their definition of these features as cultural or natural. Excavation of test square N99/E103 however, solved the problem and showed these anomalies to be solifluction features.

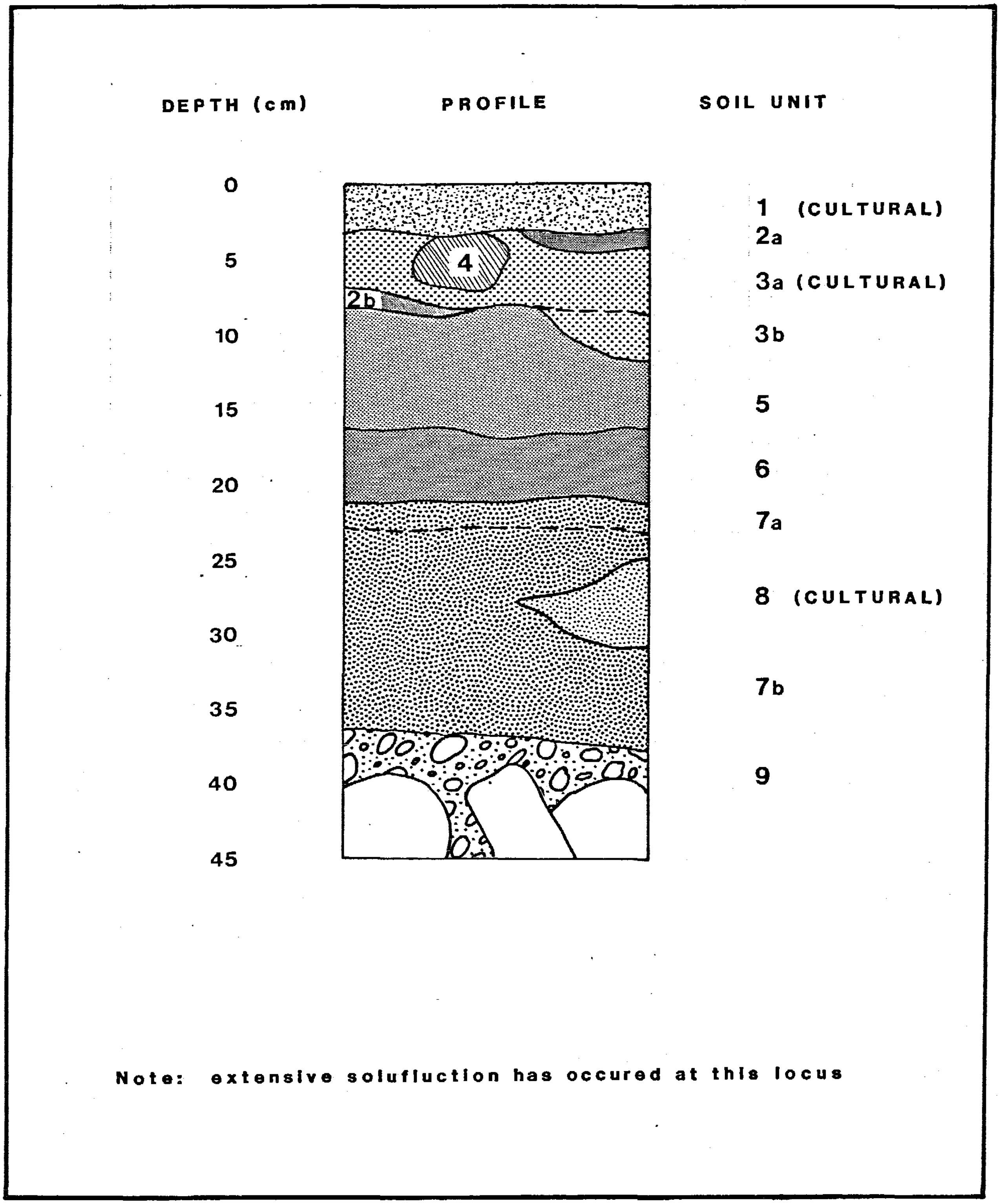


Figure 125. Composite Soil Profile Locus A TLM 042.

TABLE 24

SOIL DESCRIPTIONS FOR COMPOSITE SOIL PROFILE, TLM 042, LOCUS A

Soil/Sediment Unit	Description
1	Duff; (7.5 YR 6/4 light brown); variable thickness, often times less than 1 cm, continuous with clear lower boundary.
2a	Thin charcoal mat associated with unit 3a.
2b	Thin charcoal mat associated with unit 3a.
3a	Tephra; (10 YR 8/2 white); sporadic in occurrence, well sorted, clear contact with both upper and lower units.
3a	Fine silt with intermixed tephra (?); (2.5 Y 3/2 very dark grayish brown); discontinuous distribution, where present contacts are sharp; fairly well sorted, at times thin discontinuous charcoal lens are present (soil unit 1a).
3a	Fine silt with intermixed tephra; (10 YR 7/2 light gray); discontinuous in extent, fairly well sorted, clear upper and lower boundaries. Perhaps differential leaching seen in units 3a and 4 and could be classified as single unit.
3b	Tephra with intermixed fine sand; (10 YR 7/2 light gray), localized in appearance, sharp contacts.

TABLE 24 (Continued)

Soil/Sediment Unit	Description
3b	Fine sand intermixed with tephra; (7.5 YR 5/6 strong brown); localized in appearance, sharp contacts.
4	Medium grained sand (2.5 Y 6/4 light yellowish brown); disturbed area localized appearance, sharp lower contact upper contact intermixed with units 3a and 5.
4	Mixed tephra and silt - mixed zone of unit 3a, localized in appearance, gradational contacts.
5	Fine silt with intermixed tephra; (10 YR 6/6 brownigh yellow), discontinuous in extent but found in all test squares. Contacts vary from clear to gradational. This unit is probably a mixture of silt and middle, golden tephra.
5	Silt intermixed with tephra, oxidized portion of unit 5, localized appearance.
6	Silty sand intermixed with tephra; (2.5 YR 5/2 grayish brown) discontinuous in extent but with sharp boundaries where present.
7a	Fine to medium grained sand, oxidized; (10 YR 5/6 yellowish brown); irregular zone of oxidized sand, probably oxidized horizon associated with soil unit 7b localized in appearance; sharp upper boundary, gradational lower boundary.

TABLE 24 (Continued)

Soil/Sediment Unit	Description
7b	Medium sized sand; (2.5 Y 4/4 olive brown); generally is well sorted gradational boundaries with an upper oxidized sand (unit 7a) and coarser material below (unit 9).
8 Cultural	Fine-grained sand, oxidized; (10 YR 4/6 dark yellowish brown); localized in appearance, sharp contacts.
9	Mixed cobble/boulder/sand; variable in nature from square to square--at times poorly sorted (e.g., N100/E102) and in other cases a fining-upward cycle is evident (e.g., N99/E100). Maximum boulder size is c. 50 cm. Boulders are both rounded and angular (angular probably a function of frost cracking). There is a slight orientation of rocks in NE-SW line that parallels current slope.

Three of the five test squares yielded artifactual material at locus A (Table 25). A total of 151 lithic pieces and three bone fragments were collected at the site. Most of this material was collected from a flake scatter on the slope surface below the site. No diagnostic artifacts were found and the recovered faunal remains were too fragmentary for identification.

The lithic flakes and fragments were composed of minimally three rock types; siltstone, basalt and rhyolite. The material classified as siltstone shows variability in texture and color that is probably due to differential weathering of this material. Much of the lithic debetage shows evidence of frost shattering.

Artifactual material was associated with the upper organic soil units, oxidized sand and depressions filled with tephra and organic material. As discussed under soil stratigraphy, most of the sediments in the test area were disturbed; thus, it is doubtful that any of the artifacts were found _in situ_. It seems likely that the artifacts were originally deposited in upper organic rich zones and subsequently soluflucted or eroded out to their current positions.

The limited extent of flat surface on the ridge top coupled with the sterility of the test square N103/E103 and 1980 shovel test 2 indicated that there is little chance of finding cultural material in place and that it is probable that most or all of the original site has been or is in the process of being eroded.

Four shovel tests were dug ca. 15 m to the west of the main locus of testing (Figure 123). A single basalt flake was found in the back dirt of one of the tests located 60 cm north of an isolated surface flake. The other three shovel tests were sterile.

TABLE 25

ARTIFACT SUMMARY, TLM 042 LOCUS A

TOTAL = 154

124	Flakes and flake fragments, siltstone
15	Flakes and flake fragments, basalt
2	Prismatic flakes, siltstone
3	Biface edge reduction flakes, siltstone
3	Retouched flake fragment, siltstone
1	Blade-like flake, siltstone
1	Graver? siltstone
3	Bone fragments (unidentified)
2	Flake fragment, rhyolite

Surface		Subsurface
105	Flakes and fragments, siltstone	19
4	Flakes and fragments, basalt	11
1	Prismatic flakes, siltstone	1
3	Reduction flakes, siltstone	
3	Retouched flake, siltstone	
1	Blade-like flake, siltstone	
1	Graver? siltstone	
	Bone fragments	3
	Flake fragments, rhyolite	2
TOTAL = 118		35

Evaluation:

Systematic testing at locus A has provided sufficient data to document that virtually all of this site has been destroyed through erosion. The vast majority of artifactual material recovered was derived from the exposed and actively eroding southern slope, which suggests that the site was once located in this direction. While the composite soil profile suggests the site may have been multicomponent, the data are too inconclusive to assertain this with certainty. However the weathered silt stone (or chert) which comprise the majority of the specimens recovered from the errosional surface bear some resemblance to the lithologic type used to manufacture the artifacts from the lowest component at Tuff Creek North. The morphology of many of these specimens also suggest a blade and blade core industry, which may be comparable to the same component. The superficial similarity of the specimens and the fact that a considerable period of time was required for the bluff edge upon which the site was located to erode to its present position, may suggest that this site may have been roughly the same age as the lowest component at Tuff Creek North and may have predated the Oshetna tephra. Further excavation at this locus does not appear to be warranted.

Locus B:

Location: See section 3.2 (ix).

Testing: Systematic testing of locus B included the excavation of six 1 m test squares (Figure 124). Test squares N503/E494 and N503/E499 were placed north of the reconnaissance tests where less disturbance of the soil units from solifluction and erosion was expected. The remaining four test squares were placed closer to the reconnaissance tests to further define the spacial extent of the site.

Discussion:

Cultural material was recovered from five of the six text squares. Only one test square (N497/E499) produced faunal material and N503/E499 was culturally sterile. A total of 108 waste flakes, one retouched flake, a quartzite spall, 4 possible fire cracked rocks and a side-notched projectile point base were recovered during systematic teting, in addition to 23 calcined bone fragments.

Stratigraphy at TLM 042 locus B consisted of approximately 35 cm of deposition overlying glacial drift (Figure 126 and Table 26). Stratigraphic units in test squares N500/E494 and N497/E499 showed a great deal of disturbance as a result of soil creep and solifluction. Test squares placed on more level portions of the site showed less post depositional disturbance but very little cultural material was recovered from these tests.

A total of five stratigraphic units was identified above glacial drift (Figure 126, Table 26). A silty sand (unit 5) overlies unsorted drift (unit 6). Above the sand unit is a discontinuous paleosol (unit 4) consisting of peat and charcoal fragments associated with cultural material. A mixed silt and tephra (unit 3) overlies this paleosol, or unit 5, where the paleosol is not present. Unit 3, the Watana tephra, was the only volcanic ash recognized at locus B. A fine sandy loam (unit 2) overlies the mixed silt and Watana tephra. A radiocarbon determination on charcoal sample UA81-230-121 from unit 2 in test square N499/E105 yielded a modern date (DIC-2282). No cultural material was directly associated with this charcoal. The uppermost stratigraphic unit at locus B consists of an organic root and leaf horizon (unit 1) which is continuous over most of the site.

Cultural material at locus B occurred in all stratigraphic units above glacial drift. Faunal material in test square N497/E499 was associated primarily with the paleosol (unit 4) below the mixed Watana tephra but

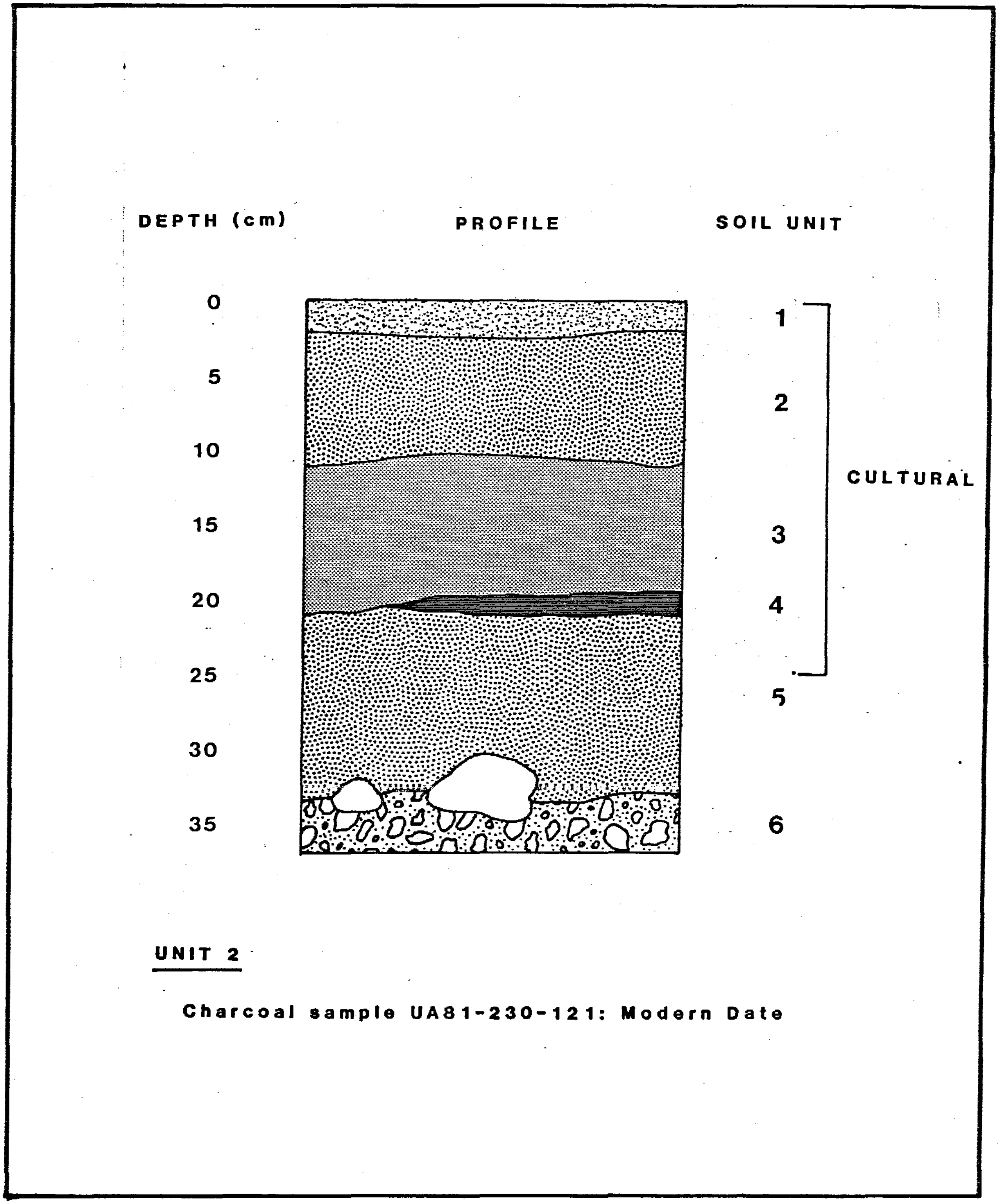


Figure 126. Composite Soil Profile Locus B TLM 042.

TABLE 26

SOIL DESCRIPTIONS FOR COMPOSITE SOIL PROFILE, TLM 042, LOCUS B

Soil Unit	Description
1	Organic, roots and leaf litter. Thickness varies from 1 cm to 3 cm. Continuous over most but not all of site. Lower boundary abrupt and smooth.
2	Fine sandy loam. Yellow brown (10 YR 5/5). Thickness varies from 2 cm to 6 cm. Lower boundary abrupt where it overlies unit 3, clear where it overlies unit 4.
3	Mixed silt and tephra. Occurs in three subunits varying in color from very dark gray (10 YR 3/1) to light grayish brown (10 YR 6/2) to yellowish brown (10 YR 6/2). Dries to a light powder. Present throughout most of site. Lower boundary abrupt. (Watana Tephra)
4	Peat with charcoal fragments. Discontinuous. Buried A horizon. (Paleosol)
5	Silty very fine sand. Occurs in four subunits varying in color from very dark grayish brown (2.5 3/2) to grayish brown (2.5 5/2) to dark yellowish brown (10 YR 4/6) to olive (5 Y 4.5/3). This unit grades coarser with depth and occurs throughout site. Lower boundary very abrupt.
6	Gravel, well rounded boulders, cobbles, pebbles and coarse sand. Maximum boulder size observed ca. 60 cm diameter.

also occurred in units 2 and 5 (Figure 126, Table 26). Faunal material consisted entirely of unidentifiable calcined small to medium sized mammal long bone fragments (Table 27).

Lithic material consisting of basalt, chert, rhyolite and obsidian artifacts was recovered from five test squares and occurred in all stratigraphic units above glacial drift (Table 28). The largest concentration of lithic material (87 flakes and a point base) occurred in test square N497/E499. In this test a rhyolite side-notched point base (UA81-230-27) was excavated from the organic horizon (unit 1). The largest concentration of lithic material (57 rhyolite waste flakes) in this test occurred in the silt and sand horizon (unit 5) below the paleosol (unit 4) containing calcined bone. It appears that the cultural material at locus B is primarily associated with a former ground surface represented by the paleosol (unit 4) in this test. The occurrance of cultural material above and below unit 4 is probably a result of post depositional disturbances which have resulted in a mixing of artifacts and sediments. Because of these disturbances it is difficult to determine good stratigraphic provenience for the cultural material at locus B. It is also unclear whether more than a single component is present at this locus because of this mixing as a result of natural processes.

Artifacts from other test squares do not help to clarify the question of a second component because of extensive post depositional disturbance and because few artifacts were recovered in situ. A retouched black chert flake (UA81-230-18) was excavated from the lower silt and sand horizon (unit 5) in test square N500/E498. This flake shows a possible burin facet on one margin and dorsal polish which may suggest hafting. This artifact and the point base from the organic horizon in N497/E499 were the only diagnostic specimens recovered during systematic testing at locus B. Diagnostic artifacts recovered during earlier reconnaissance testing at this locus include an edge-ground basalt side-notched biface (UA80-149-31), a retouched chert flake (UA80-149-30) which were

TABLE 27

FAUNAL MATERIAL LOCUS B, TLM 042

Soil Unit	Description
	Locus B N497/E499
2	1 Long bone fragment, calcined, small-medium mammal
4	21 Long bone fragments, calcined, small-medium mammal
5	1 Long bone fragment, calcined, small-medium mammal

TABLE 28

ARTIFACT SUMMARY BY TEST SQUARE AND SOIL UNIT, TLM 042, LOCUS B

Soil Unit	Description
	<u>N503/E494</u>
2	1 Flake
	<u>N499/E501</u>
Screen (backdirt)	1 Flake, black obsidian
	<u>N500/E498</u>
Top of 4	4 Flakes, light gray chert 1 Flake, black obsidian
	<u>N500/E498</u>
1	Rock fragments, possibly fire cracked
4	5 Flakes, gray basalt
5	4 Flakes, gray basalt 1 Flake, black chert, retouched and possibly burinated, dorsal polishing
Screen (backdirt)	2 Flakes, gray basalt 1 Flake, gray chert 1 Flake, black chert

TABLE 28 (Continued)

Soil Unit	Description
	N497/E499
1	1 Projectile point base, gray rhyolite, asymetric side-notching, concave base 2 Flakes, gray basalt 1 Flake, gray rhyolite
2	8 Flakes, dark gray rhyolite 5 Flakes, light gray rhyolite 1 Flake, black obsidian
3	3 Flakes, dark gray rhyolite 3 Flakes, light gray rhyolite 1 Flake, black obsidian
3/4 Contact	1 Quartzite spall, with cortex
4	1 Flake, light gray rhyolite 1 Flake, gray chert
5	57 Flakes, dark gray rhyolite
Screen (backdirt)	2 Flakes, dark gray rhyolite 1 Flake, light gray rhyolite

surface collected at locus B and a basalt endscraper fragment (UA80-149-34) excavated 15 cm to 16 cm below the ground surface in test 1.

It appears that the original context of most of the site at locus B has been lost as a result of erosion and solifluction. Cryoturbation has mixed cultural material and no clear cultural horizons are discernable other than the paleosol horizon (unit 4) below the Watana tephra. Test squares placed back from the eroding bluff edge lacked faunal remains and were either sterile or produced little artifactual material. It appears that most of the site has been lost to erosion. Locus B appears to occupy an area of approximately 8 m by 10 m in extent (Figure 124).

Evaluation:

Lack of well defined features and the limited assemblage of artifacts make it difficult to assess the function of TLM 042, locus B. The presence of two point bases, an endscraper fragment, waste flakes, and calcined bone suggest locus B was probably a temporary campsite. Its position at the edge of a bluff overlooking a lower alluvial terrace and the Susitna River suggest that locus B functioned as a briefly occupied hunting camp from which large mammals moving in the surrounding area could be observed. The 1.5 km long peninsula on which the two loci of TLM 042, as well as site TLM 026, occur is the easiest and most direct access to the Susitna River from the uplands on the north side of the Susitna. It is likely that this peninsula was used to travel between the Susitna River and the uplands to the north. Both loci of TLM 042 are situated on the southeastern facing edge of this peninsula overlooking a lower terrace, rather than on the northeastern edge which drops steeply at an angle of 30 to 40 degrees all the way to the Susitna River, which may support the additional inference that locus B, as well as locus A, was probably a hunting overlook.

The diverse lithologies and some of the artifact types, such as the side notched projectile point and the burin spall, commonly associated with different cultural traditions (e.g., Northern Archaic and Denali Complex, respectively) may indicate that the site is multicomponent. However, because of soil creep, cryoturbation, and erosion this cannot be documented, based on the results of systematic testing. Although further work at TLM 042 Locus B may possibly resolve some of these problems, the active and apparently extensive erosion of this site may render such efforts fruitless.

(i) Systematic Testing TLM 043--No Name Creek Site

Location: See section 3.2 (a-x)

Testing: Six 1 m test squares and eleven shovel tests were excavated at this site (Figure 127).

Discussion:

Faunal material, fire cracked rock and chert flakes were recovered from this site, all of which are attributed to a single cultural component, located in soil units 1 and 2 (Figure 128).

Test square N53/E50 was excavated to test the northern extent of the cultural material distribution. Cultural remains were limited to three small bone fragments recovered from unit 2a (Figure 128, Table 29). Test square N46/E49 was excavated to test the southern extent of the site. Cultural remains were limited to six pieces of fire cracked rock and a single bone fragment, all from unit 2. Test square N49/E42 was excavated to test the western extent of the site. No cultural material was recovered from this test. Test square N49/E48 was excavated to yield information on the cultural material first encountered in the reconnaissance level test.

Cultural material was restricted to unit 2 and consisted of nine chert flakes and three bone fragments. Five chert flakes exhibiting thermal

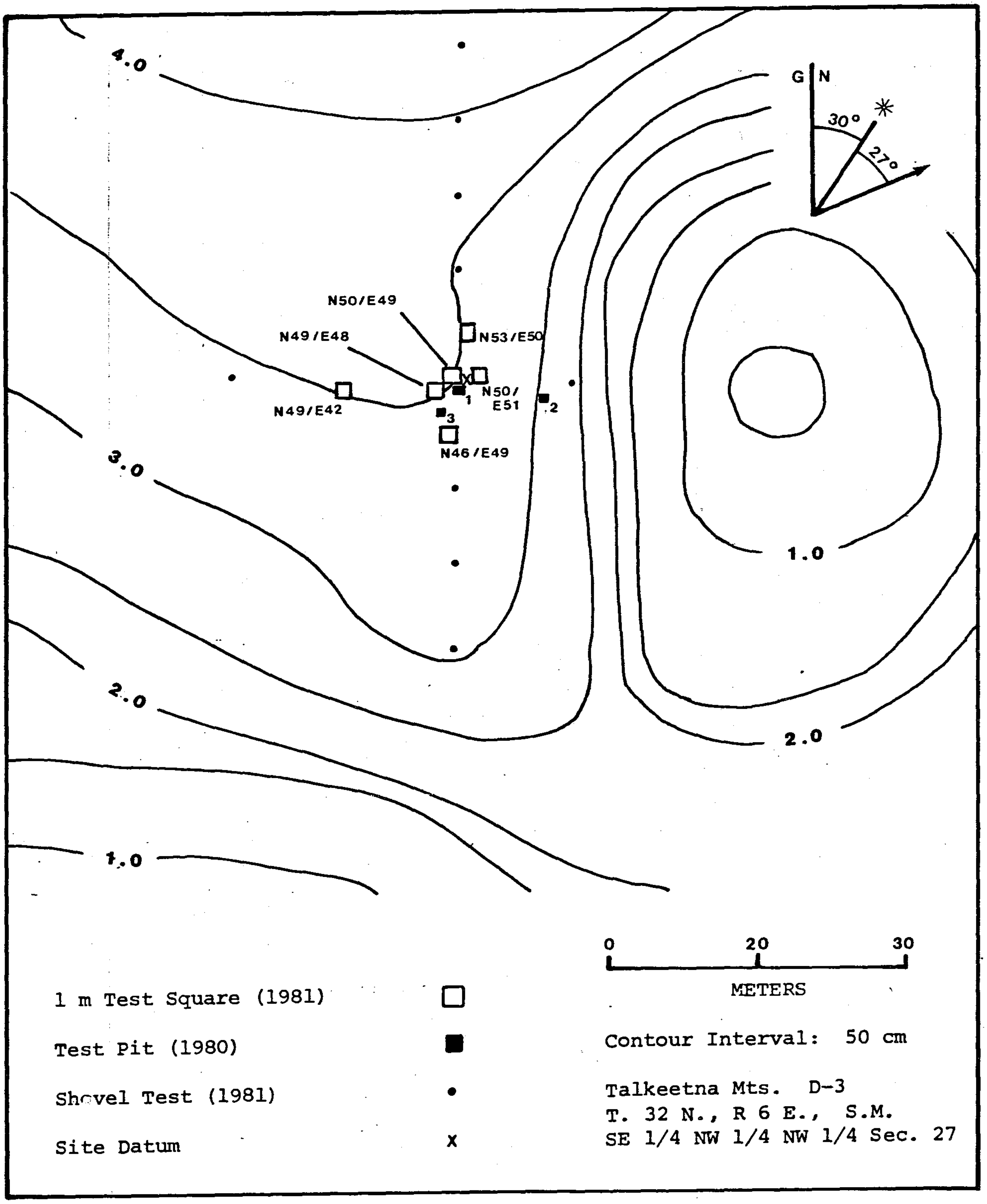


Figure 127. Site Map TLM 043.

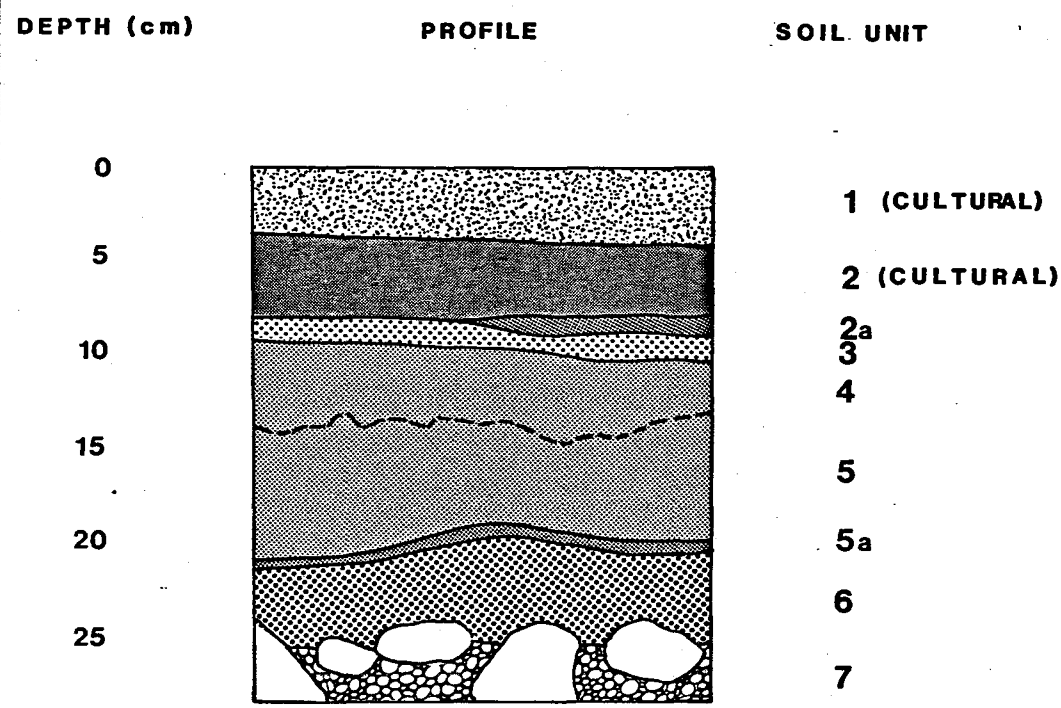


Figure 128. Composite Soil Profile TLM 043.

TABLE 29

SOIL DESCRIPTIONS FOR COMPOSITE SOIL PROFILE, TLM 043

Soil Unit	Description
1	Highly organic dark reddish brown sandy loam with root pack, burned and unburned wood. Thickness varies as a function of surface vegetation, indiscrete boundary to unit below, continuous occurrence throughout site.
2	Highly organic silt loam with roots, charcoal, and unburned wood present; very dark gray (10 YR 3/1 moist). At its lower boundary and limited in extent is a thin (1-2 cm) black (2.5Y 2.75/0 moist silt loam (designated as unit 2a), lower boundary discrete and irregular.
3	Upper tephra (Devil). Light grayish brown (10 YR 6/2 moist) silt loam, occurrence varies but present throughout site, boundary to next unit below discrete.
4	Mottled dark redish brown (5 YR 3/2.5 moist) tephra (Watana), occurrence mixed with unit 5, lower boundary to unit 5 indiscrete.
5	Yellowish brown (10 YR 5/4 moist) tephra (Watana), occurrence mixed with unit 4, lower boundary discrete and in places, marked by a thin black (5Y 2.5/2 moist) band of loam (designated 5a).
6	Lower tephra deposit (Oshetna). Grayish brown (10 YR 5/2 moist), occurrence throughout site, irregular and conforms to top surface of boulders and cobbles of underlying unit.

TABLE 29 (Continued)

Soil Unit	Description
7	Coarse sandy loam with over 50% (by volume) rounded pebbles, cobbles, and boulders. Matrix strong brown (7.5 YR 4/5 moist) occurs throughout site, depth unknown.

spalling, and potlidding, are derived from one chert flake (UA81-221-45). All thermal spalls from the flake were found within this single square. Three other chert flakes, representing three different chert varieties, were also recovered. Test square N50/E49 revealed a dense concentration of faunal remains in the southeast quadrant. In addition to the faunal remains, six chert flakes and one chert nodule were also recovered. The chert flakes exhibit thermal spalling and a glossy surface sheen, indicative of exposure to high temperatures. Test square N50/E51 was excavated to test the eastern limits of the site. This test yielded one chert flake, six bone fragments, and 30 fire cracked rocks (Table 30).

Faunal material from this site was restricted to units 1 and 2. Over 10,000 bone fragments were recovered from the soil/bone matrix, most of which were burned. Species represented include caribou (Rangifer tarandus) and possibly moose (Alces alces, 1 tooth fragment) (Table 31).

In addition to the excavation of six 1 m test squares, 11 shovel tests were excavated at the site along the north-south and east-west axis of the grid. Annual frost impeded progress on six of the eleven tests. However, none of the shovel tests produced cultural material. Soil profiles revealed the stratigraphy in the shovel tests to be consistent with the 1 m test squares.

Seven soil units were identified at this site. Cultural material was recovered from the upper two units only (units 1 and 2, Figure 128). Underlying the cultural units were three units (units 3, 4/5 and 6), identified as tephra units, Devil, Watana and Oshetna, respectively (Figure 128, Table 29).

Evaluation:

The site occurs on a comparatively minor terrace near the junction of a small clear water tributary to the Susitna in the valley bottom. It

TABLE 30

ARTIFACT SUMMARY BY TEST SQUARE, TLM 043

N53/E50	3 Bone fragments
N46/E49	1 Bone fragment 6 Fire cracked rocks
N49/E48	9 Chert flakes 3 Bone fragments
N50/E49	1 Sample of feature matrix (bone and flakes) 6 Chert flakes 1 Chert Nodule
N50/E51	1 Chert flake 6 Bone fragments 30 Fire cracked rocks
N49/E12	No cultural material recovered.

TABLE 31

FAUNAL MATERIAL, TLM 043

Soil Unit	Description
	N50/E94
2	Ca. 10,000 long bone fragments, calcined, medium-large mammal
	7 Long bone fragments, heavily burned, medium-large mammal
	3 Medapodial fragments, heavily burned, caribou (*Rangifer tarandus*)
	1 Medapodial fragment, shaft, lightly burned, caribou (*Rangifer tarandus*)
	1 Rib fragment, unburned, large mammal
	1 Phalanx fragment, unburned, large mammal
	1 Phalanx fragment, heavily burned, caribou (*Rangifer tarandus*)
	3 Tooth fragments, unburned, caribou (*Rangifer tarandus*) or moose (*Alces alces*)
	N50/E51
2	10 Long bone fragments, calcined, medium-large mammal
	N49/E48
1	27 Long bone fragments, calcined, madium-large mammal
2	12 Long bone fragments, calcined, small-large mammal
	N46/E49
2?	1 Long bone fragment, calcined, medium-large mammal
2?	3 Long bone fragments, calcined, medium-large mammal

probably represents the remains of a hunting camp occupied for a relatively short period of time. The distribution of fire cracked rock, caribou and possibly moose remains, and the ecological situation of the site is strikingly similar to that of the Tsusena Creek site (TLM 022). Both sites could well represent late prehistoric Athapaskan occupation of the Susitna valley. A striking dissimilarity between the sites is the apparent occurrence of lithic debetage at TLM 043 which indicates that stone was heat treated to alter its crystaline structure to render it more suitable for flaking. This is discernable by the "vitrious" surface of the debetage and the several thermal spalls recovered.

Although no radiocarbon determinations are available from this site, the occupation clearly occurred following deposition of the Devil tephra and quite probably sometime within the last 1000 years. The possibility for obtaining datable organic material from this site is high, and further excavation should enable more accurate dating of the occupation. Further excavation at this site is certainly warrented because it may yield tools of bone or antler, provide further documentation of this aspect of the prehistoric subsistance cycle and settlement pattern, and will provide new insights into prehistoric heat treating of lithics.

(j) Systematic Testing at TLM 046--Windy Knoll Site

Location: See section 3.7 (a-xiv).

Testing:

Systematic testing consisted of additional surface reconnaissance and the excavation of five 1 m test squares (Figure 129). Test squares were excavated adjacent to surface flake and bone scatters to determine whether subsurface cultural material was present and, if so, to ascertain its stratigraphic position. Test square N239/E198 was excavated at scatter 1 to test the possible continuation of subsurface cultural material first encountered in nearby reconnaissance test 2.

Discussion:

In addition to the four flake scatters identified during reconnaissance testing, two additional surface clusters were identified and field designated 5, between scatters 3 and 4, and scatter 6, on the west side of the knoll summit (Figure 129). Surface material was collected from two of the six lithic surface loci at the site. A red chert point base (UA81-263-73) was surface collected from scatter 6. This bifacially chipped, oblanceolate, straight-based point is similar to two other point bases (UA80-153-50, 53) previously surface collected from scatter 2. Additional surface collection at scatter 3 yielded 75 flakes and 9 bone fragments (Table 34).

Subsurface cultural material was recovered from three of the five test squares. The two sterile test squares were N226/E191, excavated at the northern limit of scatter 2, and N130/E227, placed directly upslope from flake scatter 4.

Stratigraphy at TLM 046 is characterized by very localized processes of erosion and reworking of stratigraphic units so that each test square

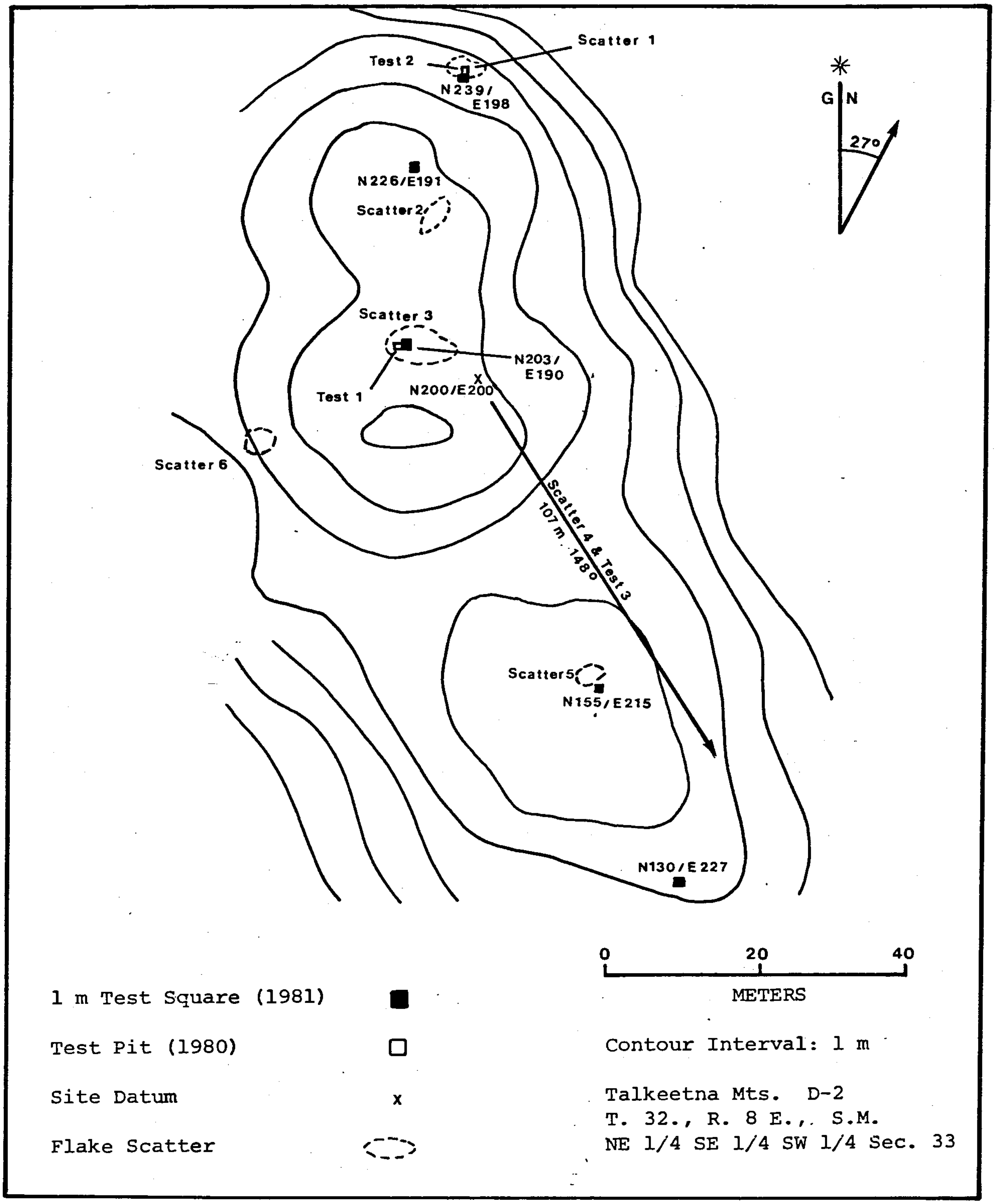


Figure 129. Site Map TLM 046.

revealed a unique stratigraphy. In addition, considerable cryoturbation is evident at the site adding further difficulty to correlation between test squares. Test square N130/E227 was the only test which revealed the full stratigraphic sequence present at the site (Figure 130, Table 32). The stratigraphy, as revealed in this test, is comprised of approximately 20 cm of deposition overlying glacial drift and fractured bedrock. The organic horizon, 5 cm to 7 cm thick in this test, is absent or very thin over most of the site and much of the surface of the site is deflated.

Three tephra horizons were identified at TLM 046 and all three occur in N130/E227. Both lithic and faunal material were recovered during subsurface testing. Cultural material occurred primarily in the middle (Watana) tephra (unit 4), below the Watana tephra associated with a cultural horizon containing charcoal and humic material (unit 5), and the lower (Oshetna) tephra (unit 6). Because of the localized stratigraphy, each test square which produced cultural material will be discussed separately.

N155/E215

This test square was excavated near a surface concentration of burned bone at flake scatter 5. Due to time limitations only the west half of this test was excavated. A total of 43 subsurface flakes and 332+ calcined long bone fragments, the majority of which were surface finds, were recovered from this test (Tables 33 and 34). Some lithic and faunal material was found in the upper cryoturbated stratigraphic units (unit 1 and 2) but the concentration of cultural material occurred in a grayish brown silt horizon (unit 6) interpreted as Oshetna tephra mixed with glacial drift (unit 7). This cultural horizon contained finely divided organic material and charcoal and may represent an old living surface at the upper contact of the Oshetna and Watana tephra. Devil tephra is not present in this test and unit 5 (a possible paleosol) is not well defined. Deflation has eroded the ground surface so that the Oshetna

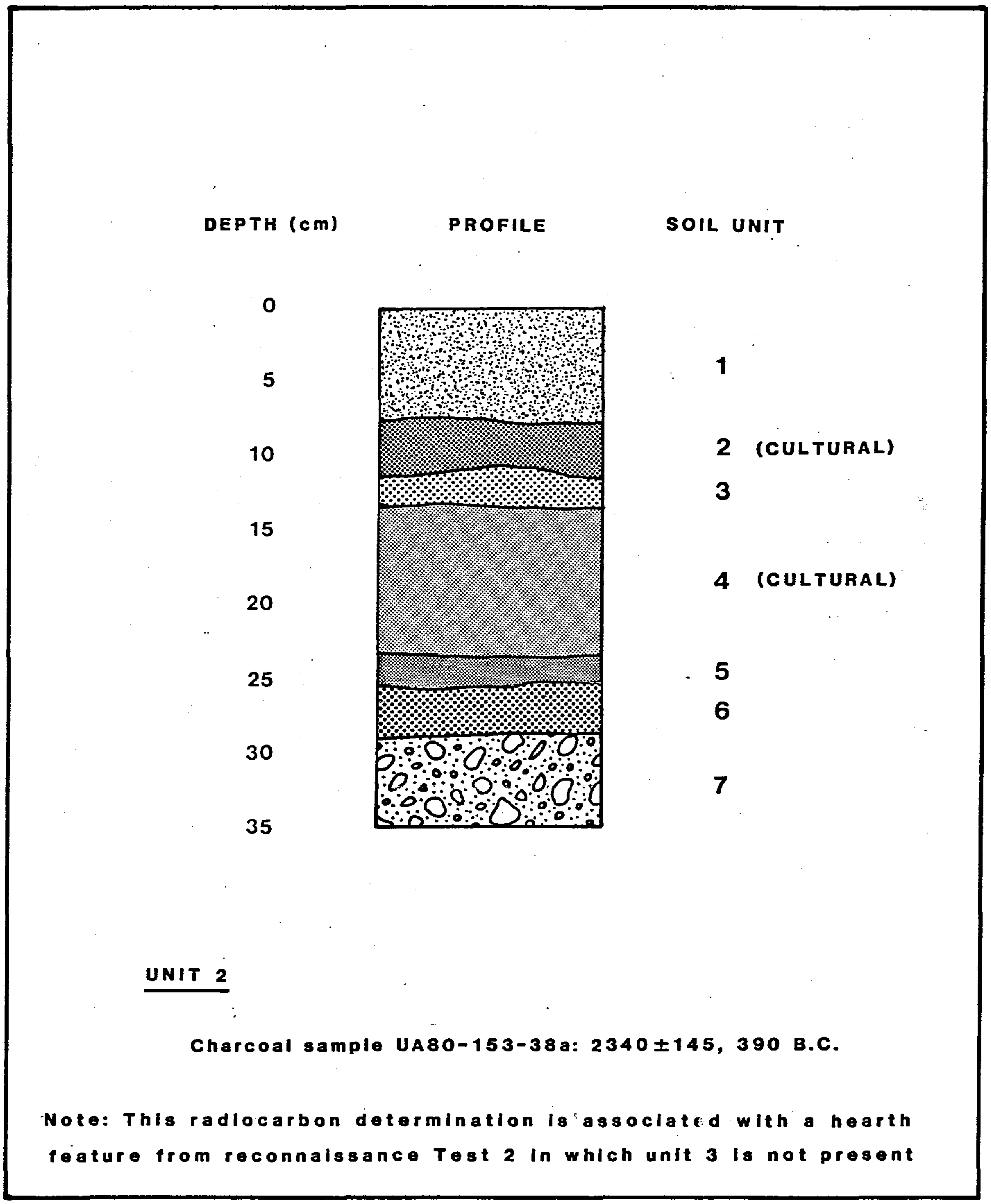


Figure 130. Composite Soil Profile TLM 046.

TABLE 32

SOIL DESCRIPTIONS FOR COMPOSITE SOIL PROFILE, TLM 046

Soil Unit	Description
1	Organic silt. Brown (10 YR 4/3). Includes silt, fine roots, very small amount of humus. Generally from 5 cm to 7 cm thick but discontinuous in places. (0 horizon)
2	Finely divided organics with silt and charcoal fragments. Very dark gray (5 YR 3/1). Discontinuous and generally thin varying from 2 cm to 3 cm in thickness. Lower contact with unit 3 gradational. (A horizon)
3	Fine silt. (Tephra) Gray (7.5 YR 7/2). Discontinuous with charcoal fragments occasionally present. Sharp to gradational lower contact with unit 4. (Devil tephra)
4	Silt. (Tephra) Varies in color from oxidized strong brown (7.5 YR 5/6) to unoxidized light yellowish brown (10 YR 6/4). Generally 10 cm thick. Evidence of frost action and solufluction where oxidized bands are perpendicular to ground surface. Sharp lower contact with units 5 and 6. (Watana tephra)
5	Silt/Charcoal. Very dark gray (10 Yr 3/1). Thin discontinuous layer comprised of silt, charcoal and some humic material. Occasional pebbles present. Lower gradational contact with unit 6. (Paleosol)
6	Fine silt. (Tephra) Light brownish gray (2.5 Y 6/2). Discontinuous and in places mixed with unit 5. Generally 2 cm to 3 cm thick. Sharp lower contact with unit 7. (Oshetna tephra)
7	Unsorted silt, pebbles, gravels, cobbles and boulders. Varies in color from oxidized yellowish red (5 YR 4/6) to unoxidized olive (5 Y 5/3). Mixing with unit 6 occurs in some places. (Glacial Drift)

TABLE 33

FAUNAL MATERIAL, TLM 046

Soil Unit	Description
	N203/E190
Surface	25 Long bone fragments, calcined, medium-large mammal
Surface	129 Long bone fragments, calcined, medium-large mammal
Mixing 4 and 5	11,000+ Long bone fragments, calcined, small-large mammal
Surface	3 Long bone fragments, calcined, small-large mammal
Surface	2 Long bone fragments, calcined, small-large mammal
Surface	7 Long bone fragments, calcined, small-large mammal
	N239/E198
4	100+ Long bone fragments, calcined, small-large mammal
	N155/E215
Surface	300+ Long bone fragments, calcined, medium-large mammal
Contact 1 and 2	32 Long bone fragments, calcined, small-large mammal

TABLE 34

ARTIFACT SUMMARY BY TEST SQUARE AND SOIL UNIT, TLM 046

Soil Unit	Description
	<u>Scatter #1</u>
	N239/E198
4 (tephra)	89 Flakes, gray rhyolte 2 Flakes, white rhyolite 5 Flakes, basalt 10 Flakes, gray chert 2 Flakes, black chert 1 Flake, dark gray chert
5	1 Flake, white rhyolite 2 Flakes, basalt 1 Flake, gray chert
7	10 Flakes, gray rhyolite 1 Flake, basalt
	<u>Scatter #3</u>
Surface	61 Flakes, gray rhyolite 14 Flakes, basalt
	N203/E190
4, 5	16 Flakes, white rhyolite 3 Flakes, gray rhyolite 17 Flakes, basalt 1 Flake, dark gray chert 1 Flake, brown chert

TABLE 34 (Continued)

Soil Unit	Description
	<u>Scatter #5</u>
	N155/E215
1	2 Flakes, dark gray chert
	25 Flakes, light gray rhyolite
	2 Flakes, basalt
	4 Flakes, light gray chert
	3 Flakes, brown-gray chert
	1 Flake, dark gray chert
	1 Flake, gray and brown banded chert
4 and 5	2 Flakes, light gray rhyolite
	1 Flake, gray rhyolite
	1 Flake, basalt
	1 Flake, brownish gray chert
	<u>Scatter #6</u>
	1 Projectile point base, red chert

tephra (unit 6) is exposed at the surface in the north wall of this test and consequently cultural material from this unit appears as a surface scatter. It is likely that the origin of cultural material at surface locus 5 is from this mixed Oshetna/Drift horizon (unit 6). Faunal material was too fragmentary for identification and no diagnostic lithic artifacts were recovered.

N203/E190

This test square was excavated at scatter 3 adjacent to reconnaissance test 1 which was sterile despite hundreds of bone fragments on the surface nearby. Surface collection at scatter 3 during reconnaissance testing produced 28 flakes and a gray chert endscraper (UA80-153-55) in addition to ca. 100 bone fragments. Because of time limitations, only the north half of this test square was excavated.

Excavation of N203/E190 revealed a probable hearth, 5 cm to 10 cm below the surface, which consisted of black silty sand mixed with calcined bone fragments, flakes and charcoal (Figure 130, unit 5). This cultural horizon was below a yellowish brown silt interpreted as Watana tephra (Figure 130, unit 4) which contained some calcined bone fragments. This was the only tephra present in the test. Both Devil and Oshetna tephra were missing. The cultural material in the Watana tephra is interpreted as having originated in unit 5 which had subsequently been mixed with the Watana tephra by cryoturbation. The possible hearth overlies a reddish brown silty coarse sand mixed with fractured and weathered bedrock.

Faunal material recovered from this test included 32 calcined long bone fragments collected from the surface of the test square and more than 11,000 calcined long bone fragments excavated from units 4 and 5 (Table 33). Thirty-eight basalt, chert and rhyolite waste flakes (Table 34) were recovered from the possible hearth (unit 5). Faunal material from this test was too fragmentary for identification and no diagnostic artifacts were recovered.

N239/E198

This test square was excavated at scatter 1, adjacent to reconnaissance test 2, which revealed charcoal associated with calcined bone and flakes 5 cm to 16 cm below the surface. A radiocarbon determination of 2340 ± 145 years: 390 B.C. (DIC-1903) was obtained on charcoal from test 2. N239/E198 was excavated to ascertain the extent and stratigraphic location of the cultural horizon revealed by test 2.

The stratigraphy of N239/E198 was extremely cryoturbated and ranged from very poor to none. Because of this, excavation in this test was done in arbitrary 10 cm levels. A brown silt interpreted as Watana tephra (unit 4) directly underlay a thin organic mat. Devil tephra was not present. Below the Watana tephra, which showed evidence of extensive mixing by solifluction, was a humic horizon (unit 5) consisting of black silt. Below unit 5 was a discontinuous, very dark brown silt lense, also containing humic material and mixed with glacial drift and fractured bedrock (unit 7). The organic buildup in soil units 5 and 7 is attributed to natural water collection in a small depression centered 2 m southwest of the test square. Due to the poor stratigraphy and mixing of stratigraphic units in N239/E198, no correlation can be made between the cultural material from this test square and the cultural material and radiocarbon date in test 2.

The cultural material in N239/E198 was mixed by cryoturbation but appeared to occur in association with the Watana tephra (unit 4). Both faunal material and lithic artifacts were recovered from this test. Faunal material excavated from the Watana tephra included ca. 100 calcined long bone fragments (Table 33). Lithic artifacts included 109 waste flakes of basalt, rhyolite and chert excavated from the Watana tephra (unit 4) and 15 flakes of the same lithologies excavated from the black silt humic horizon (unit 5) and the top of the glacial drift (Table 34).

Evaluation:

Extensive deflation has exposed six lithic concentrations at the summit of this knoll. Based on observed surface artifact distribution (Figure 129), the entire summit, comprising an area of approximately 40 m by 150 m appears to have been utilized as a site. Both the geomorphic setting and the nature of the artifacts suggests the use of TLM 046 as a hunting overlook and campsite. The surface collection of calcined bone in association with charcoal concentrations, surface finds of three projectile point bases and two endscrapers (and the lack of projectile point tips), suggests the site functioned as a campsite and overlook, and possibly a kill site. The commanding panoramic view, especially to the north overlooking a broad valley with several lakes makes this locale an excellent overlook site. Two other sites (TLM 044, TLM 045) are located on nearby knolls overlooking the same terrain and further demonstrates the excellent advantages of this locality for hunting.

Three probable hearth features were located during reconnaissance and systematic testing. The extremely poor stratigraphy and localized erosion at the site make correlation of subsurface cultural material between tests extremely difficult. The C^{14} determination of 2340 ± 145 B.P. on charcoal from the hearth in test 2 was the only date obtained, although charcoal from the other hearths was collected. This date cannot be correlated with other hearth features because of the lack of uniform stratigraphy at the site.

Cultural material from what are probably hearths in test squares N155/E215 and N203/E190 both occur below Watana tephra. In N155/E215, the only test in which Oshetna tephra occurs, the cultural material appears to be associated with the upper contact of the Oshetna and Watana tephras. In test square N239/E198 cultural material appears to be associated with the Watana tephra but both Devil and Oshetna tephra are absent in this test and solifluction has mixed stratigraphic units and artifacts. Association of cultural material with specific soil units is uncertain.

Evidence for more than a single component is inconclusive because of the extensive cryoturbation at this site. Horizontal distribution of lithic artifacts does not reveal difference between surface loci which might imply different occupations. Of 342 surface and subsurface artifacts, rhyolite is the most common lithology (68%) followed by basalt (21%), chert (10%) and obsidian (1%). Artifacts of all these lithologies (except obsidian) occur in approximately these ratios at all scatters with a sufficient number of artifacts to represent a valid sample (loci 1, 3, 5). Obsidian occurs only at locus 1 (Table 34).

Based on the above data, there appears to be at least one occupation of the site earlier than the deposition of the Watana tephra which is presently understood to have occurred 2300 to 3200 B.P. The date of 2340 ± 145 B.P. from test 2 may date this component but stratigraphic correlation is uncertain and a later component may be present at the site. Further detailed work at this site is essential if these problems are to be adequately addressed.

(k) Systematic Testing TLM 048, Duck Embryo North Site

Location: See section 3.2 (a-xi).

Testing: Five 1 m test squares were excavated at the site (Figure 131).

Discussion:

Four of the five test squares contained cultural material. All three tephra were present at the site, but in certain areas the contacts of the stratigraphic units were unclear or the tephras were mixed with other sediments. In spite of this ambiguity in stratigraphy, two components were clearly in evidence at this site.

Component I occurred stratigraphically above the Devil tephra (soil unit 3, Figure 132) and was defined in test squares, N34/E25 and

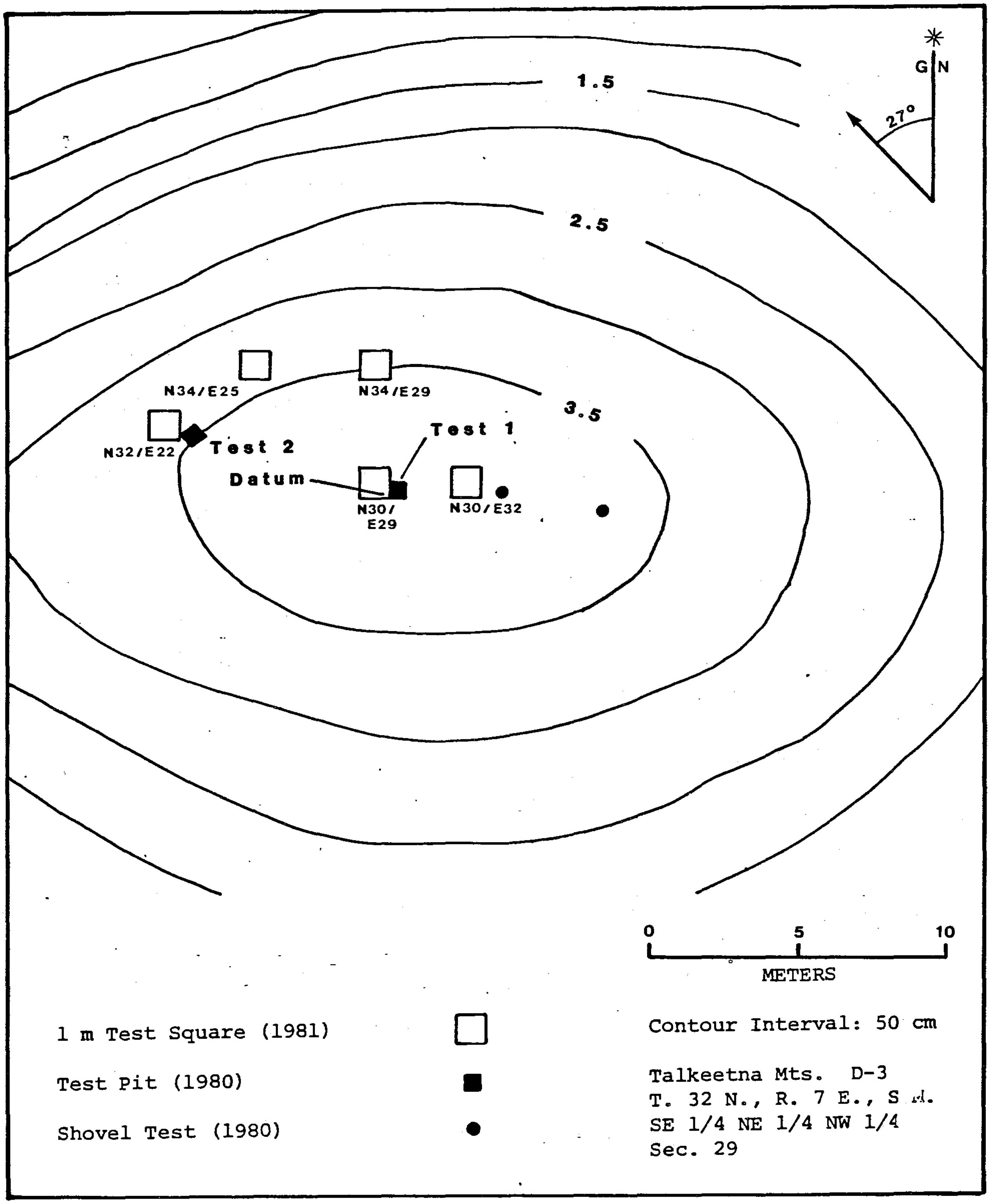


Figure 131. Site Map TLM 048.

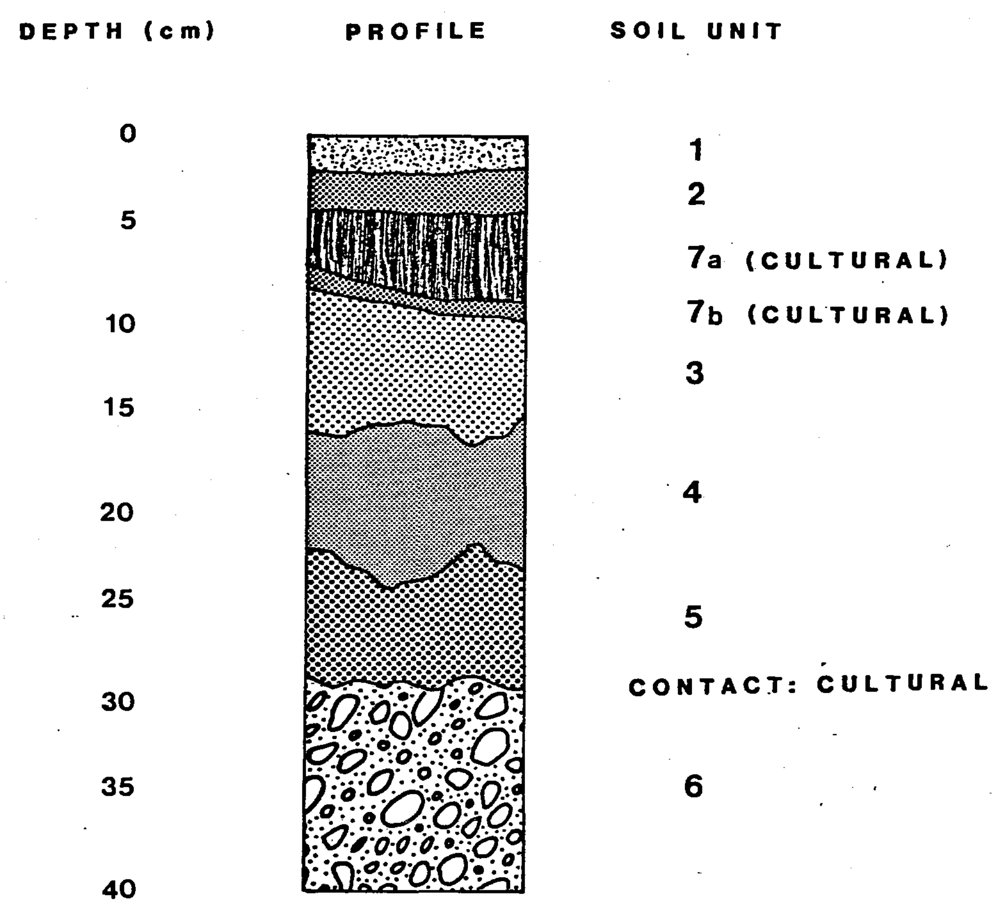


Figure 132. Composite Soil Profile TLM 048.

N32/E22. Component II was associated with soil units 5 and 6 (Figure 132, Table 35) in three test squares, N30/E29, N34/E29 and N34/E25. Component I was best represented in test square N32/E22 by a hearth that contained over 1000 pieces of burned bone and 300+ fire cracked rocks. Several of the specimens were identified as caribou (Rangifer tarandus) (Table 36). In addition, nine flakes and one flake core were located in this hearth (soil unit 7a; Figure 132), and the lithics show signs of being exposed to heat.

Component II is poorly represented in the tests and lies in the contact between the Oshetna ash and the glacial drift. Twelve flakes and one microblade fragment comprise the total artifact inventory for this component.

Artifacts that form this component are summarized in Tables 37 and 38. A portion of the hearth (Feature 1) was uncovered in test square N34/E22. A single fire cracked rock found in N34/E25 is the only other specimen from Component I that post dates the most recent tephra (Devil, soil unit 3, Figure 132).

The bone and rock concentration of Feature 1 was limited to the northern half of the test square. A thin layer of ash, however, did extend 15 cm to 50 cm beyond this concentration into the southeast and southwest quadrants respectively. A few isolated bone fragments and fire cracked rock were found in these two quadrants, but these represent only a fraction of the total collected from the entire feature. Over 300+ pieces of fire cracked rock were excavated from the hearth, ranging in size from ca. 20 cm to less than 1 cm. The matrix between the fire cracked rocks consisted of a combination of ash, bone fragments, and bone meal. Thousands of pieces of bone were present in the hearth with approximately 1000 pieces, representing the larger pieces, collected.

Nine flakes and one flake core were also present in Feature 1. Three flakes (2 quartzite and 1 basalt) are questionable. These flakes may be

TABLE 35

SOIL DESCRIPTIONS FOR COMPOSITE SOIL PROFILE, TLM 048

Soil Unit	Description
1	Organic layer; thick root mat in some squares; in other parts of site limited to a sparse lichen cover; variable in thickness; O-horizon.
2	Finely divided organic matter; (5 YR 2.5/2 dark reddish brown); irregular in extent sometimes absent; in some areas unit 2 contains many rootlets and small pieces of charcoal.
3	Tephra; variable in color (10 YR 6/1, gray, to 7.5 YR 6/2 pinkish gray); also variable in thickness, continuous in some units while discontinuous in others; contacts irregular and sharp; fine grained and well sorted.
4	Tephra; variable in color depending on degree of oxidation (5 YR 3/3 dark reddish brown to 10 YR 3/3 dark reddish brown to 10 YR 6/6 brownish yellow); unit discontinuous in occurrence; in places is mixed with other units (e.g., unit 5); generally no distinct oxidized band within unit as occurs commonly in area; instead oxidized areas are distributed throughout unit; contacts vary from gradational to sharp, well sorted to moderately well sorted with some sand, irregular contacts.

TABLE 35 (Continued)

Soil Unit	Description
5	Tephra; (10 YR 5/1 gray); unit rarely occurs in "pure" form but rather is intermixed with underlying drift (unit 6); discontinuous in extent and variable in thickness where present; upper and lower contacts (especially the latter) tend to be gradational; thin (c. 1 cm or less) band of organics is present sporadically at the upper contact of the unit, very irregular contacts.
6	Mixed sand, granules, and cobbles (7.5 YR 4/6 strong brown); oxidized throughout; cobbles generally rounded but occasional angular rock fragment; poorly sorted; maximum cobble size c. 15 cm; upper contact irregular and gradational.
Feature 1	
7A	Ash of cultural origin (10 YR 5/2 grayish brown); intermixed with rootlets, fire cracked rocks, bone, bone meal; present only in northern portion of N32/E22, in some areas may be mixed with unit 3 otherwise sharp contacts.
7B	Organic rich lens in ash (unit 7A) (7.5 YR 2/0 black); irregular in extent and thickness, sharp contacts where present.

TABLE 36

FAUNAL MATERIAL, TLM 048

Soil Unit	Description
	N32/E22
7A Associated with Feature 1	1 Metapodial fragment, heavily burned, caribou (*Rangifer tarandus*)
7A Associated with Feature 1	3 Phalanx fragments, calcined, caribou (*Rangifer tarandus*)
7A Associated with Feature 1	2 Phalanx fragments, 1st, calcined, caribou (*Rangifer tarandus*)
7A Associated with Feature 1	2 Metapodial fragments, possible burning, possible caribou (*Rangifer tarandus*)
7A Associated with Feature 1	1 Phalanx fragment, 3rd, calcined, caribou (*Rangifer tarandus*)
7A Associated with Feature 1	1104+ Long bone fragments, calcined, medium-large mammal
7A Associated with Feature 1	8 Long bone fragments, heavily burned, large mammal
7A Associated with Feature 1	1 Long bone fragment, calcined, medium-large mammal

TABLE 37

ARTIFACT SUMMARY, TLM 048

11	Flakes, chert
3	Flakes, rhyolite
1	Flake (?), basalt
2	Flakes (?), quartzite
4	Flakes, tuffaceous material
TOTAL - 21 Flakes	
1	Microblade fragment, tuffaceous material (?)
1	Flake core, chert
316+	Fire cracked rock
1178+	Bone fragments

TABLE 38

ARTIFACT SUMMARY BY TEST SQUARE AND SOIL UNIT, TLM 048

Soil Unit	Test Squares N32/E22	N30/E29	N34/E25	N34/E29
1-2 Contact			1 Fire cracked rock	
Total =	0	0	1	0
7A and 7B	6 Flakes, chert 1 Flake(?) basalt 2 Flakes(?) quartzite 1 Flake core, chert 1178+ Bone fragments 315+ fire cracked rocks			
Total =	1503+	0	0	0
4-5 Contact (?)				2 Flakes, chert
Total =	0	0	0	2
5-6 Contact		2 Flakes, tuff 3 Flakes, rhyolite 2 Fragments, tuff	1 Flake, chert	2 Flakes, chert
Total =	0	8	1	2
TOTAL	1503+	8	2	4

the result of heat spalling from rocks and may not be cultural in origin. The remaining 6 flakes and the core are made of a brown chert and show evidence of exposure to heat.

Evaluation:

Component II, although present in a greater number of test squares, is more poorly defined stratigraphically than is the upper component. Because of the irregular and gradational contacts in the lower stratigraphic units at the site, the precise delineation of an original, depositional surface for the twelve flakes and 1 microblade fragment is difficult to address at this time. The 13 artifacts are definitely associated with the lowermost tephra (soil unit 5; Figure 132), but whether they lie on the contact of soil units 5 and 6, on the soil unit 4-5 contact, or on both contacts is not clear at this time.

This site is situated beside an 18 hectare lake at the top of a 20 m high discrete knoll and probably functioned as a brief camp during both periods of occupation. Proximity to the lake and its outlet may suggest exploitation of freshwater aquatic resources such as fish and waterfowl.

Component I shows evidence of activity centered around a hearth in association with caribou bone and fire cracked rock. It is underlain by the Devil tephra, thus giving this component a maximum limiting date of ca. A.D. 200.

(1) Systematic Testing at TLM 050--Permafrost Creek Site

Location: See section 3.2 (a-xii).

Testing:

Systematic testing of TLM 050 included the excavation of six 1 m test squares and five shovel tests (Figure 133). Four 1 m test squares were concentrated in the immediate vicinity of Test Pit 2 which produced cultural material from a possible hearth feature during reconnaissance testing. The two additional test squares and five shovel tests were placed to help define the southern extent of the site.

Discussion:

Cultural material was recovered from all six test squares from what appear to be two occupational horizons at the site. The two northern-most shovel tests produced three fire cracked rock fragments but no other cultural material (Figure 133). Lithic material, faunal material and fire cracked rock were recovered from test squares during systematic testing.

Stratigraphy throughout the site consisted of approximately 55 cm of fluvial deposits overlying glacial drift (Figure 134, Table 39). Eight major stratigraphic units were recognized. The upper organic mat with roots and decaying wood (unit 1) overlies a humic A horizon consisting of finely divided organics mixed with silt and sand (unit 2). Unit 3 consisted of sand and fine-grained gravel probably resulting from overbank deposits from flooding of the Susitna River. This unit was continuous throughout the site. Underlying unit 3 was a very dark brown silt and sand deposit (unit 4) which contained lighter colored silt and sand lenses. Unit 5 consisted of a mixed silt and tephra deposit which exhibited a distinctive E-B-C soil horizon indicating a prolonged period of weathering. The upper part of this unit is reworked and mixed, as

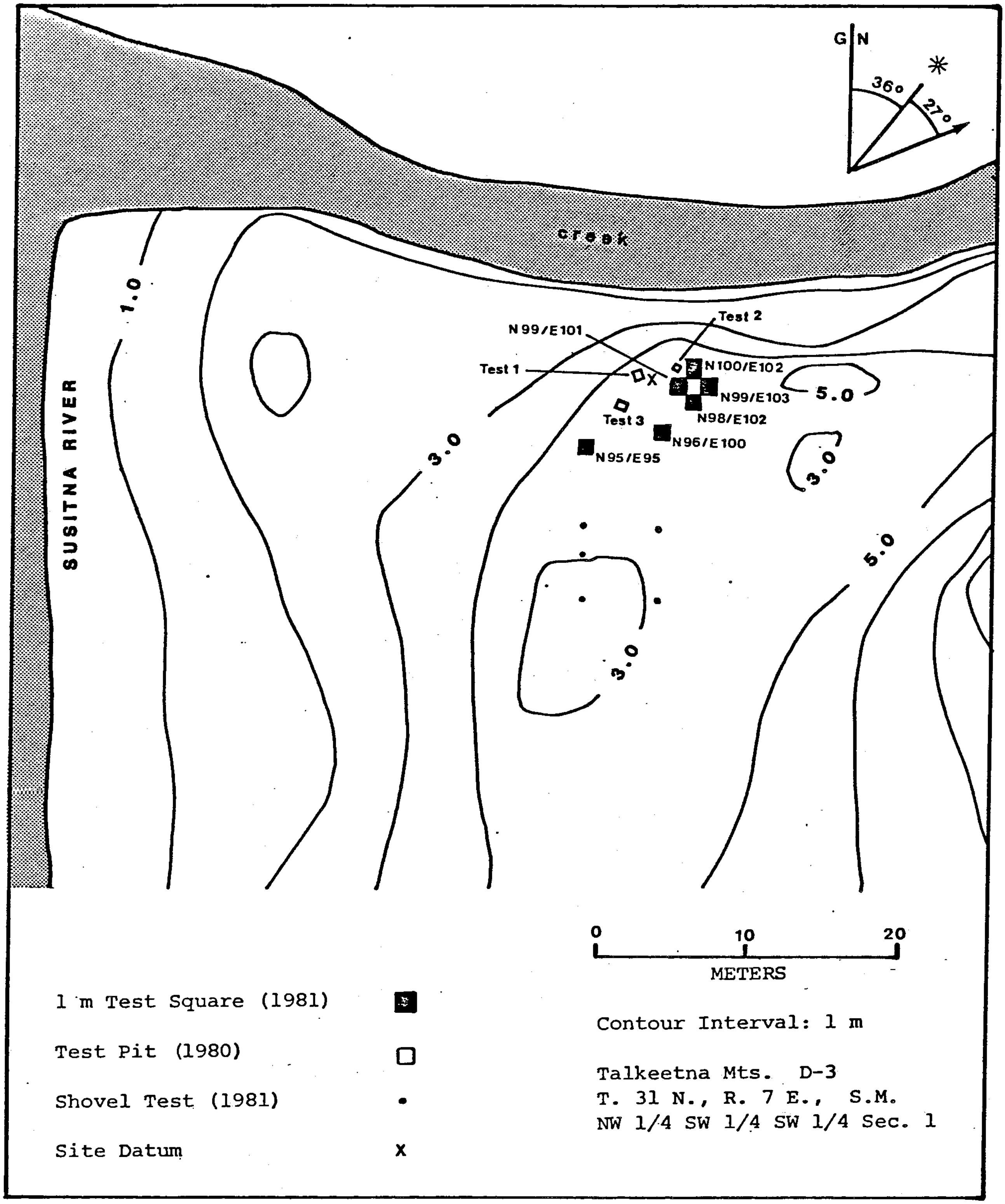
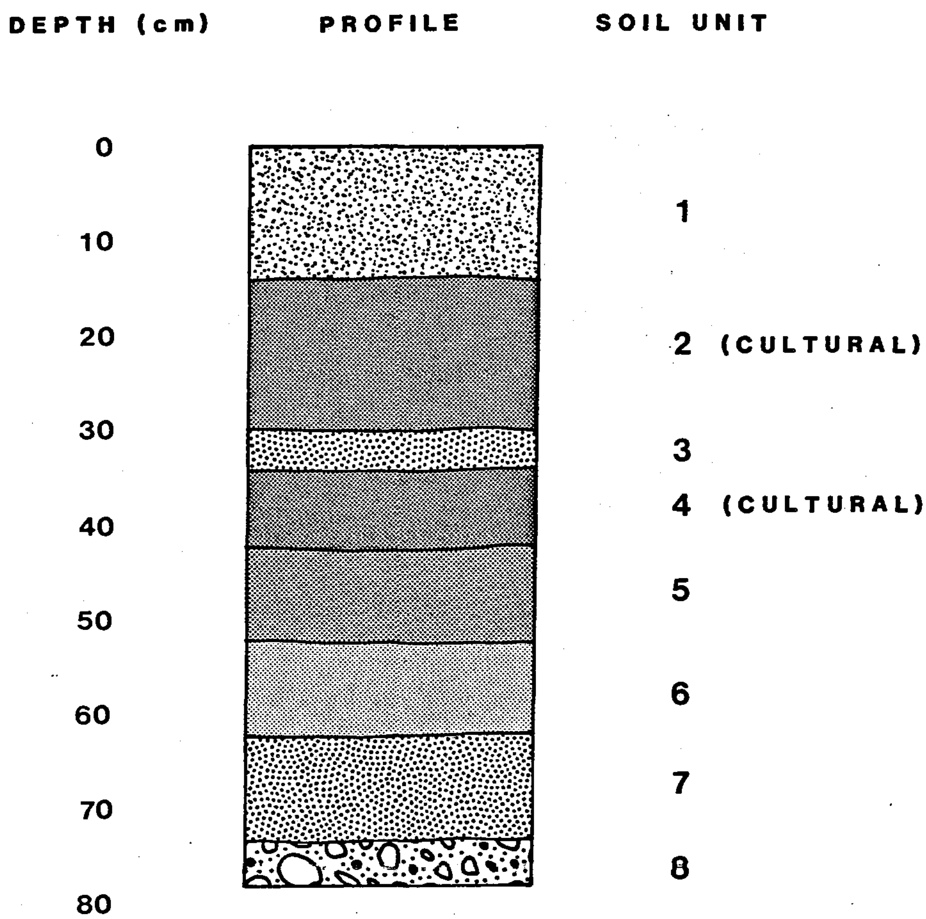


Figure 133. Site Map TLM 050.



UNIT 2

Charcoal sample UA80-157-1: 280 ± 245, 1670 A.D.

Charcoal sample UA80-157-3: 280 ± 110, 1670 A.D.

Figure 134. Composite Soil Profile TLM 050.

TABLE 39

SOIL DESCRIPTIONS FOR COMPOSITE SOIL PROFILE, TLM 050

Soil Unit	Description
1	Organic mat, roots up to 20 cm in diameter. Lower boundary sharp.
2	Silt. Very dark brown (10 YR 3/2). Varies in thickness from 15 cm to 20 cm, occurs over entire site. Dark brown and grayish brown lenses present along with decayed wood. Lower boundary abrupt. (Cultural material present.)
3	Sand. Dark grayish brown (10 YR 4/2). Poorly sorted, varies from medium to very coarse throughout site. Lower boundary abrupt.
4	Silt. Very dark brown (10 YR 3/2). Varies in thickness from 10 cm to 15 cm and is present over entire site. Dark brown and grayish brown color variation in discontinuous lenses. Possibly mixed with tephra. Lower boundary clear but involuted. (Cultural material present.)
5	Silt. Yellowish brown (10 YR 5/3). Unit varies in thickness from 8 cm to 14 cm. Possibly a tephra. Occurs throughout entire site. Lower boundary abrupt.
6	Silty loam. Olive gray (5 Y 4/2). Sand and clay percentage varies. Thin dark brown silt subunit occurs discontinuously at upper contact. Lower contact clear and involuted or mixed with unit 7.
7	Sandy loam. Olive gray (5 Y 4/2). Approximately 10% cobbles. Lower boundary diffuse.
8	Poorly sorted silty coarse sand with pebbles, cobbles and boulders. Very dark brown.

evidenced by small sand lenses found within it. Below unit 5 a silty loam (unit 6) overlays another sand and fine to coarse gravel deposit (unit 7) interpreted as overbank flooding deposits from the nearby creek west of the site. Below this, glacial drift (unit 8) was encountered consisting of unsorted coarse sand, gravel and cobbles.

Cultural material at TLM 050 was associated with two stratigraphic units 2 and 4 (Figure 134) and the site appears to represent two periods of occupation.

Component I

The uppermost component is associated with the humic A horizon (unit 2) and consists of lithic and faunal material associated with a probable hearth. A dense concentration of charcoal in this unit and the recovery of 91 fragments of fire cracked rock associated with this charcoal and the lithic and faunal material supports this interpretation.

Cultural material associated with component I was recovered from five test squares and was associated with this hearth. A total of 327 calcined and two unburned long bone fragments associated with the hearth were too fragmentary for identification (Table 42). The bone fragments were recovered from three adjacent squares (N100/E102, N99/E101 and N98/E102) associated with the charcoal and fire cracked rock. The majority of the calcined faunal remains represent medium-large size mammals.

Lithic artifacts associated with this component were excavated from a single test square (N96/E100) 3 m southwest of the main concentration. Six waste flakes of white chalcedony, chert, jasper and basalt were recovered from unit 2 (Tables 40 and 41). None of the flakes exhibit cortex. The flakes appear to be products of pressure retouch resulting from resharpening of tools rather than detritus from primary tool manufacture.

TABLE 40

ARTIFACT SUMMARY BY SOIL UNIT, TLM 050

Soil Unit	Description
2	2 Flakes, white chalcedony
	1 Flake, basalt
	1 Flake, gray chert
	1 Flake, brown chert
	1 Flake, dark red chert or jasper
	1 Rock, quartzite
	91 Rock fragments, thermally fractured
3	1 Flake, gray-green banded chert
4	2 Flakes, gray-green banded chert
	2 Flakes, yellow brown jasper or chert
	1 Flake, unifacially retouched, gray-green banded chert
	2 Rock fragments, thermally fractured

TABLE 41

ARTIFACT SUMMARY BY TEST SQUARE AND SOIL UNIT, TLM 050

Test Square	Material Collected	Comments
N100/E102	24 Fire cracked rocks 2 Bone fragments	Square excavated to test limit on apparent hearth feature. Dug 60 cm depth, into soil unit 6. Cultural material from upper dark brown silt, unit 2.
N99/E101	4 Flakes 12 Fire cracked rocks 10 Bone fragments	Square excavated to provide correlation with reconnaissance level test. Dug 70 cm depth, into soil Unit 8. Cultural material came from both units 2 and 4.
N99/E103	1 Flake 5 Fire cracked rocks	Square excavated to provide correlation with reconnaissance level test. Dug 40 cm depth, into soil unit 4. Cultural material came from both units 2 and 4.
N98/E102	48 Fire cracked rocks 4 Bone fragments	Square excavated to test limit on apparent hearth feature. Dug 35 cm depth, into soil unit 3. Cultural material from unit 2.

TABLE 41 (Continued)

Test Square	Material Collected	Comments
N96/E100	6 Flakes 4 Bone fragments 1 Fire cracked rock	Square excavated to test presence of cultural material in close proximity to other squares. Dug 50 cm depth, into soil unit 6. Cultural material from both units 2 and 4.
N95/E95	1 Flake 18 Fire cracked rocks	Square excavated to test extent of cultural material at distance to other squares and observe continuation of soil units throughout site. Dug 75 cm depth, into soil unit 8. Cultural material from units 2 and 4.

TABLE 42

FAUNAL MATERIAL, TLM 050

Soil Unit	Description
	N99/E101
2	188 Long bone fragments, calcined, medium-large mammal
	1 Long bone fragment, heavily burned, medium-large mammal
	N96/E100
3	2 Long bone fragments, unburned, large mammal
	1 Long bone fragment, calcined, small-large mammal
	N98/E102
2	29 Long bone fragments, calcined, medium-large mammal
	5 Long bone fragments, heavily burned, small-large mammal
	N100/E102
2	2 Long bone fragments, calcined, small-large mammal
	1 Long bone fragment, unburned, medium-large mammal

Two radiocarbon determinations on separate charcoal samples collected from this stratigraphic unit in Test 2 during reconnaissance testing yielded almost identical dates of 280 ± 245 years: A.D. 1670 (DIC 1904) and 280 ± 110 years: A.D. 1670 (DIC 1905). These two dates suggest latest occupation of TLM 050 took place in the late pre-historic period.

Component II

Component II is separated from component I by a sand deposit (Figure 134, unit 3) which does contain some cultural material. Three bone fragments were found in unit 3 in test N96/E100 (Table 42) and a single gray-green banded chert flake was recovered from this unit in test N99/E101. Because the chert flake is similar in lithology to lithic artifacts primarily associated with unit 4, the chert flake found in unit 3 is interpreted as intrusive from unit 4. The faunal material in unit 3 is interpreted as intrusive from unit 2.

Cultural material recovered from unit 4, a dark brown silt and sand deposit underlying the well-sorted sand in unit 3, consists of lithic material only. Lithic artifacts associated with this component were excavated from three test squares (N99/E101, N95/E95 and N99/E103). Two large waste flakes of gray-green banded chert similar to the flake from unit 3 were excavated from unit 4 in test N99/E100. The only diagnostic tool recovered from TLM 050, a large unifacially retouched flake of this same lithic material (UA81-229-2), was also recovered from unit 4 in test N99/E100. This retouched flake has continuous dorsal retouch along the distal margin. It is large enough so that it fits easily in the hand and may have been used without hafting. Two yellow-brown jasper or chert waste flakes were also recovered from unit 4 in tests N95/E95 and N99/E103. In addition, two fire cracked rock fragments were recovered from this unit in test N95/E95.

Evaluation:

TLM 050 appears to be a temporary campsite which shows evidence of two periods of occupation, the most recent of which was in late prehistoric or early historic times. The sheltered location of the site and the close proximity to water would make this location an attractive campsite. The lack of extensive detritus from tool manufacture and resharpening and the presence of only one tool suggests that TLM 050 was not occupied for a very long time during the two periods of occupation.

The older (component II) occupation of the site is not dated by radiocarbon but occurs in a unit which was interpreted in the field as a mixed silt/tephra deposit (unit 4) overlying a yellowish brown tephra which shows evidence of considerable weathering (unit 5). If unit 5 is interpreted as Watana tephra and the tephra in unit 4 is Devil tephra, then component II would not be earlier than 2300 years B.P., the minimum limiting date on the Watana tephra. Thus the time of occupation for component II probably occurred between the late 1600's A.D. and 2300 B.P.

The size of the site is probably not much greater than 10 square meters. Topography restricts the extent of the site to the north, west and east. If the shovel tests to the south of the site are representative of the artifact distribution, the site is probably limited to the immediate vicinity of the area excavated during reconnaissance and systematic testing. Component I is strikingly similar to the Tsusena Creek site (TLM 022) and the No Name Creek site (TLM 043), which coupled with data from TLM 050 will greatly enhance our understanding of Late Prehistoric Athapaskan subsistance cycle in this aspect of the Upper Susitna River area. Component II could provide critical data pertinent to understanding cultural developments and transitions prior to or during the early phases of Late Prehistoric Athapaskan times.

(m) Systematic Testing TLM 059--Little Bones Ridge Site

Location: See section 3.2 (a-xiv)

Testing: Three 1 m test squares were excavated at the site (Figure 135).

Discussion:

Test squares at this site were excavated to define the extent and nature of the rectangular depression found at the site during reconnaissance testing. Lenses of drift were found in all three test squares between the upper organic units and the Devil tephra (Figure 136). All three tephra are present at the site. The presence of this material suggests that it originally had been dug from the area of the depression and tossed a distance of approximately 3 m. Although cultural material was found in all three 1 m test squares (N103/E102, 5 fire cracked rocks; N101/E103, 1 basalt flake, contact of units 4 and 5; N104/E99, 1 bone fragment, contact units 4 and 5), the concentration of material suggests that activity at the site appears to have centered around the depression.

Stratigraphy in all test squares at this site, while containing all three tephra units, shows considerable reworking of the tephra (Figure 136, Table 43). Other disturbance in the "normal" regional stratigraphic sequence (i.e., unit 3) is probably the result of human activity at the site associated with the excavation of the depression. The conformity of the three tephra units to the current topography of the depression is difficult to explain. Initially it was postulated that the depression was natural and was altered later by human activity. However, if the depression were natural, variability in tephra thickness would be expected (e.g., thicker tephra deposits towards the center of the depression where more tephra would tend to collect). The degree to which the depression is totally cultural in origin or partially natural in origin is unclear at this time.

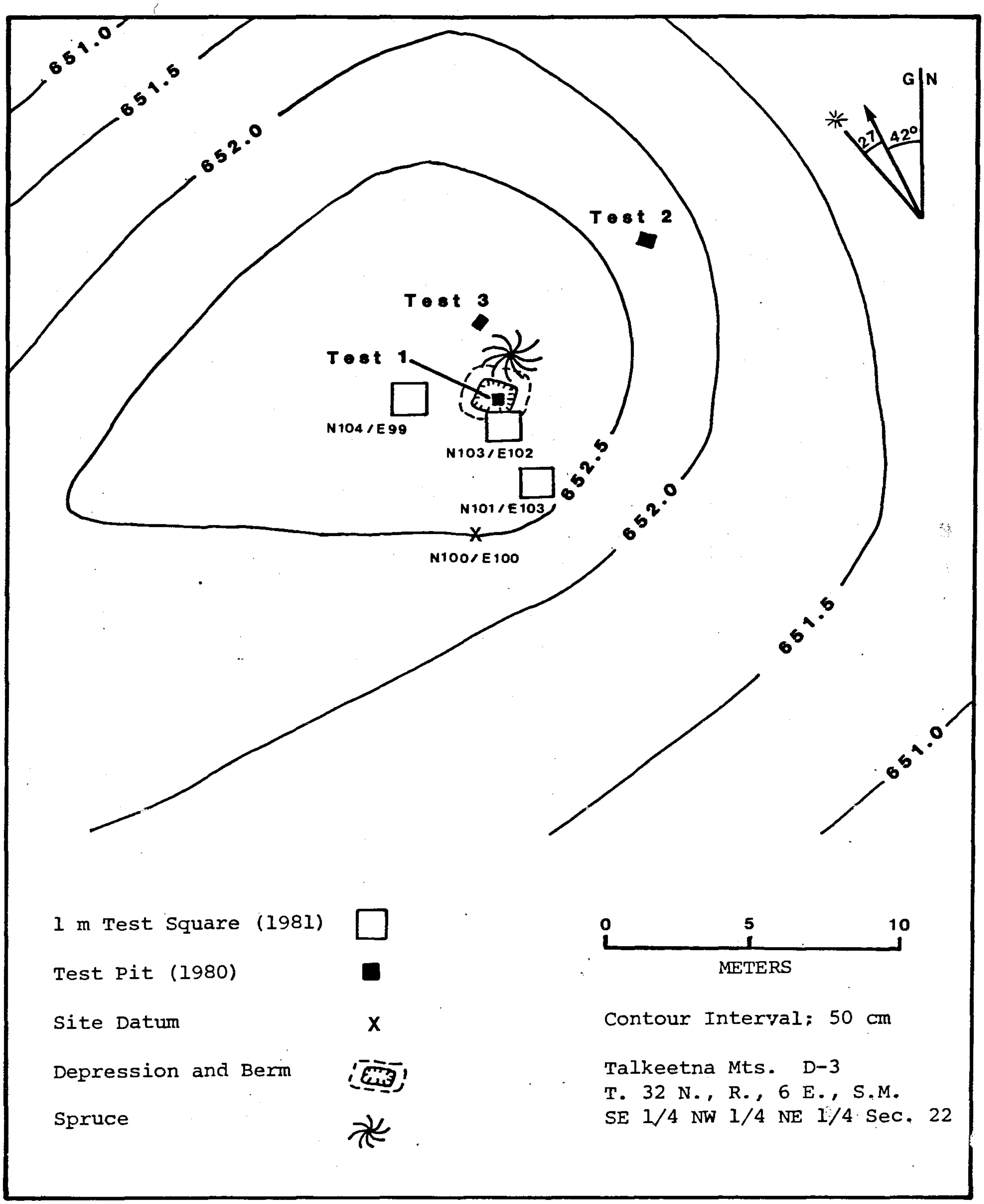
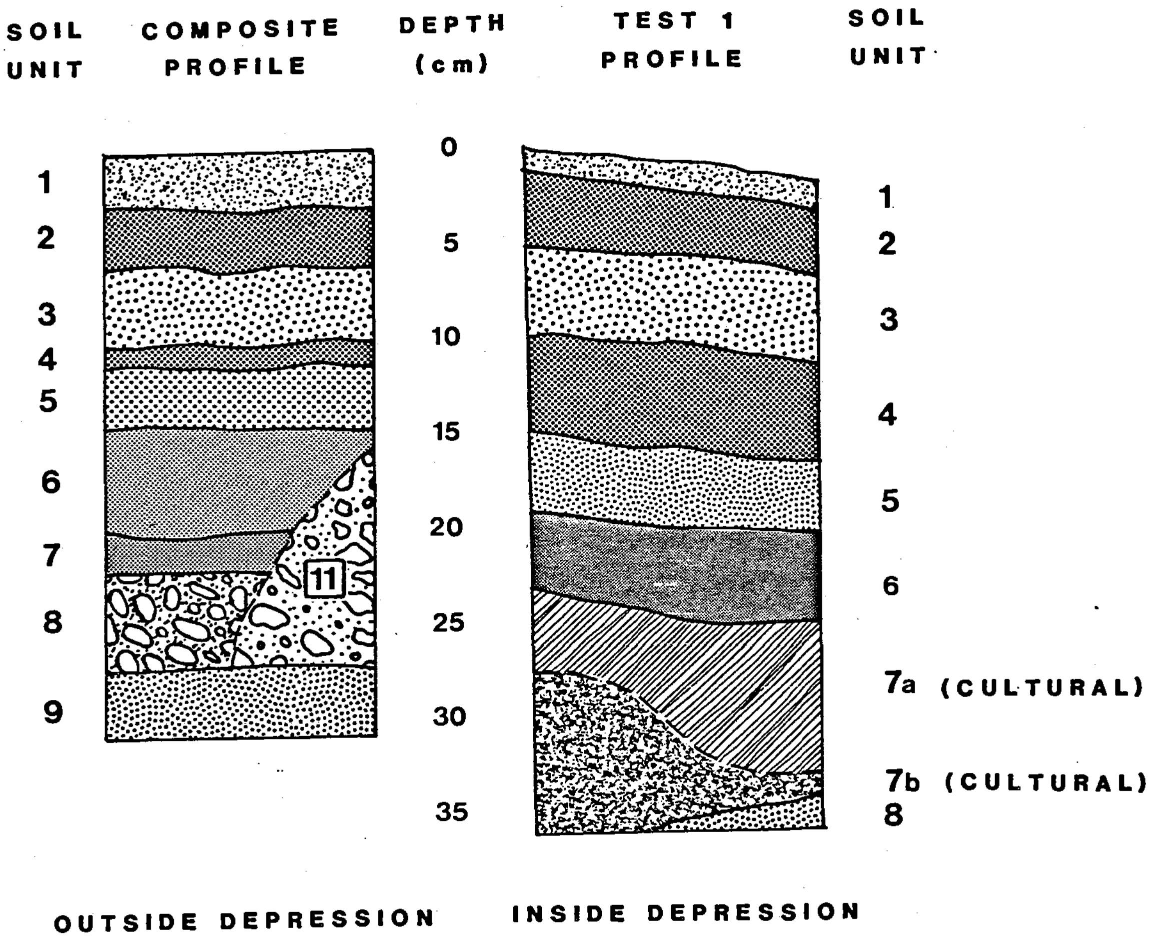


Figure 135. Site Map TLM 059.



TEST 1: UNITS 7a & 7b

Charcoal sample UA81-205-14: 740±70, A.D. 1210

Figure 136. Composite Soil Profile TLM 059.

TABLE 43

SOIL DESCRIPTIONS FOR COMPOSITE SOIL PROFILE, TLM 059--OUTSIDE DEPRESSION

Soil Unit	Description
1	Organic material, roots, lichens; variable in extent and thickness. O horizon.
2	Finely divided organic material (10 YR 2/2 very dark brown); variable in thickness. A horizon.
3	Poorly sorted sand, granules and cobbles (2.5 Y 4/4 olive brown); discontinuous in occurrence but present in all 3 test squares; material probably from depression.
4	Organic-rich lens (10 YR 2/1 black) finely sorted; discontinuous in occurrence but present in all 3 test squares; irregular and gradational upper and lower contacts; at times overlies unit 5 and at times found within unit 5.
5	Tephra (Devil) (10 YR 4/1 dark gray to 10 YR 6/2 light brownish gray). Variable in color; discontinuous in extent with gradational upper contacts and sharp to gradational lower contacts.
6	Tephra (Watana); or tephra mixed with sand; variable in color depending on degree of oxidation (10 YR 4/6 dark yellowish brown to 10 YR 5/6 yellowish brown) discontinuous in appearance and variable in thickness; contacts, especially lower one, often gradational.

TABLE 43 (Continued)

Soil Unit	Description
7	Mixed sand-tephra (Oshetna); variable in color depending on amount of mixing (10 YR 5/1 gray to 10 YR 5/3 brown); some pebbles present in unit; discontinuous in appearance; both upper and lower contacts tend to be gradational; generally not a well defined unit at this site.
8	Poorly sorted sand, granules and large cobbles (10 YR 5/6 yellowish brown) oxidized; both rounded and angular cobbles are present; continuous across site; gradational upper and lower contacts.
9	Medium to coarse grained sand; variable in color (5 Y 4/2 olive gray to 2.5 Y 4/2 dark grayish brown), moderately well sorted, upper contact gradational.
10	Disturbed area found in N103/E102 containing numerous roots; appears to be related to excavation of depression.
11	Mixed drift with 2 or 3 tephra units (10 YR 4/6 dark yellowish brown); gradational boundaries (both vertical and horizontal) with a sandy texture; occurs locally in N101/E103.

A summary of cultural material is given in tables 44 and 45. The minimal amount of material in test square N103/E102, N101/E103, and N104/E99 suggests that the site is essentially limited to the 1.8 m x 1.5 m depression itself. The lack of structural feature in N103/E102, which bisected the southern corner of the depression, suggests that the depression is not a house pit, but might instead represent a cache or some other type of feature. It is probable that only full excavation will reveal the true nature of the site.

The depression is younger than ca. 1800 years because it truncates all three tephra. One radiocarbon date is available for this site. This date, taken on charcoal from within the depression, is 740 ± 70 years: A.D. 1210 (DIC 2253). The stratigraphy in the depression suggests that the feature may have a complex history of reuse.

The presence of fire cracked rock in soil unit 3 of test square N103/E102 could be used as evidence for multiple use of the depression (i.e., the redigging of a previous hearth area, throwing the earlier hearth material onto the burm surrounding the depression). The stratified nature of test pit 1 would also argue for multiple events within the depression. Additional excavation in test pit 1 produced faunal material in soil unit 7b (Table 46) similar to the faunal material collected in this test during reconnaissance testing. Identifiable faunal remains represent one species--caribou (Rangifer tarandus) although it is possible that other species are present but, due to the fragmentary nature of the bones, not identifiable (Table 46). One unidentified bone fragment was found in soil unit 3 of test square N104/E99.

Evaluation:

This site is unique among those found during the course of the archeological survey of the project area. It is obviously the remains of a structure which may represent a series of activities which did not occur

TABLE 44

ARTIFACT SUMMARY, TLM 059

5	Fire cracked rocks
1	Basalt flake
1	Bone fragment

TABLE 45

ARTIFACT SUMMARY BY TEST SQUARE AND SOIL UNIT, TLM 059

Soil Unit	Test Squares		
	N103/E102	N101/E103	N104/E99
3	5 Fire cracked rocks		
Contact 4 and 5		1 Basalt flake	1 Bone fragment

Note: Further excavation of test 1 removed 17 pieces of bone from 66-70 cmbs (Table 45).

TABLE 46

FAUNAL MATERIAL, TLM 059

Soil Unit	Description
	Test #1
7b (inside depression)	1 Pelvis fragment, acetabulum, heavily burned, caribou (<u>Rangifer tarandus</u>) 1 Phalanx fragment, 2nd, heavily burned, caribou (<u>Rangifer tarandus</u>) 1 Tibia fragment, heavily burned, caribou (<u>Rangifer tarandus</u>) 1 Phalanx fragment, heavily burned, possible caribou (<u>Rangifer tarandus</u>) 1 Vertebra fragment, calcined, medium-large mammal 2 Phalanx fragments, heavily burned, large mammal 1 Vertebra fragment, heavily burned, medium-large mammal 1 Rib fragment, calcined, medium-large mammal 2 Vertebrae fragments, calcined, medium-large mammal 1 Vertebra fragment, cervical, calcined, medium-large mammal
	N104/E99
3 (outside depression)	1 Long bone fragment, heavily burned, small-large mammal

at the same time, but within a relatively brief interval of time. Although it has been suggested that it functioned as a cache, this explanation is tenuous at best and is offered only because no better rationale for its occurrence has been postulated. The site is located in an elevated region above Watana Creek, but does not offer a panoramic view of the surrounding area. The feature can be quite firmly dated to approximately 740 A.D. by radiocarbon and its stratigraphic superposition above the Devil tephra. Further work at this site is certainly warrented because it presents the only example of this type of archeological site within the project area and will undoubtedly contribute new insights to our understanding of human behavior in a firmly documented temporal context.

(n) Systematic Testing TLM 062--Red Scraper Site

<u>Location</u>: See section 3.2 (a-xvii).

<u>Testing</u>: Six 1 m test squares and 49 shovel tests were excavated during systematic testing (Figure 137). Five test squares were placed near the eastern edge of the terrace where reconnaissanc testing had shown cultural material to be present. These tests were placed to define the extent and continuity of the site along the terrace edge and to obtain additional diagnostic artifacts and charcoal if possible. Shovel testing was conducted along east-west transects at 5 m intervals to define the western extent and boundary of the site.

<u>Discussion</u>:

Testing at TLM 062 produced both lithic and faunal material. Five of the six test squares produced cultural material from a minimum of two components. Only one shovel test (N90/E96) produced cultural material. This shovel test was enlarged to test square N90/E95.5 which was the only test square excavated away from the terrace edge (Figure 137).

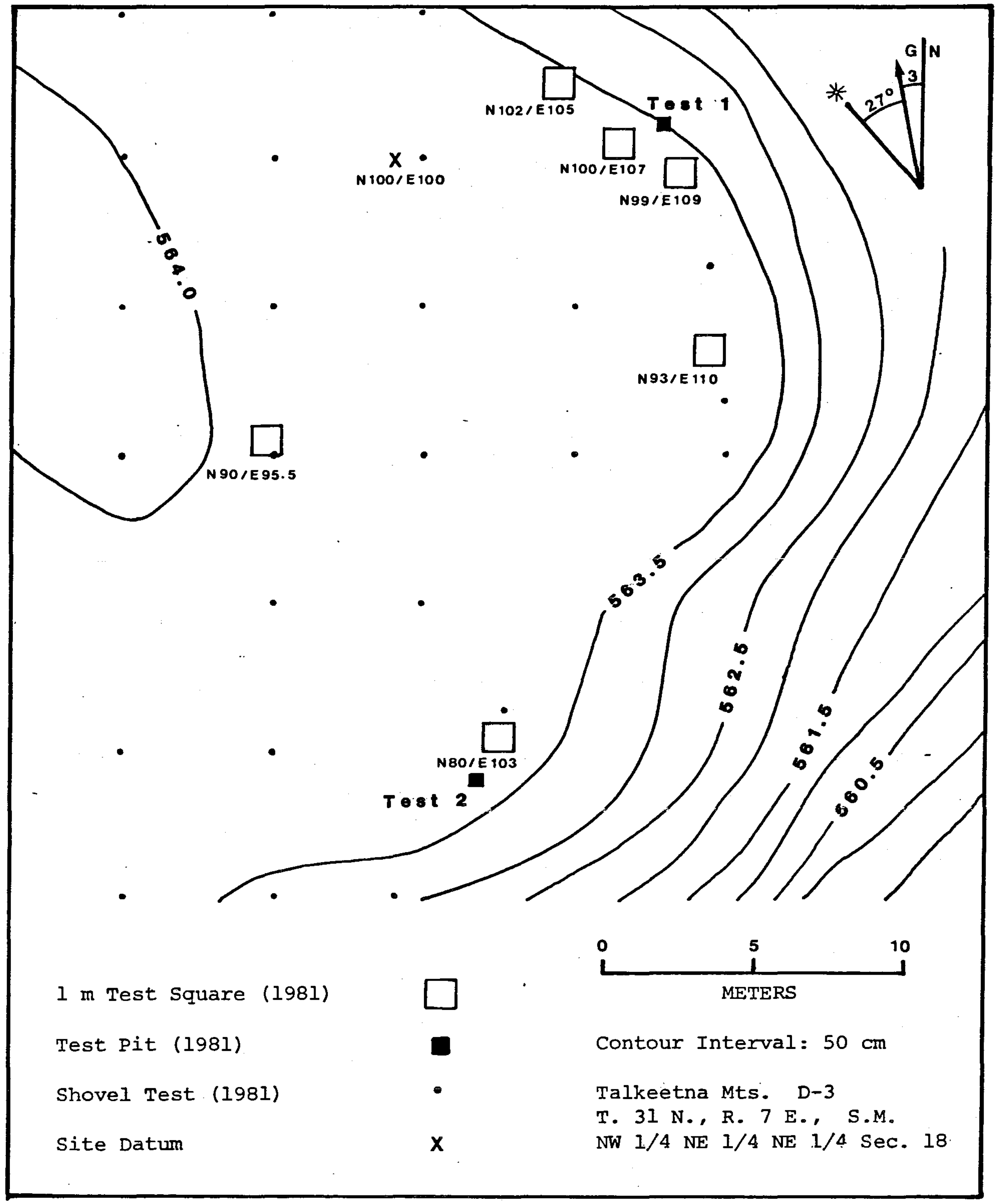


Figure 137. Site Map TLM 062.

The upper cultural component at the site is associated with the uppermost of three tephra deposits (Figure 138, unit 3, Table 47) and is represented by chert and basalt flakes and calcined bone fragments. This component was present in all five test squares which produced cultural material. It also occurred in test 1, excavated during initial reconnaissance which produced a red chert endscraper (UA81-208-2, 3) found in two fragments. Cultural material from this component was primarily associated with the contact between the A horizon and the uppermost tephra (Figure 138, units 2, 3) but also occurred within the upper (Devil) tephra and at its lower contact with the middle (Watana) tephra. Feature 1, a concentration of ca. 4,000 calcined bone fragments associated with 28 basalt flakes occurred in test N100/E107 at the gradational contact between the A horizon (unit 2) and the Devil tephra (unit 3) with some lithic and faunal material recovered from within the Devil tephra. Devil tephra (unit 3) was not present directly below feature 1 in test N100/E107, indicating a possible cultural mixing or modification of this surface. A radiocarbon determination on charcoal recovered from within the Devil tephra (unit 3) and in association with the red chert endscraper from test 1 yielded a date of 1380 ± 155 years: A.D. 570.

The lower component at the site was present only in test square N90/E95.5 and was associated with the lowest of the three tephra present at the site (Figure 138, unit 5). Cultural material includes basalt waste flakes and calcined bone fragments. A concentration of 177 basalt flakes (Feature 2) was associated with the lower (Oshetna) tephra and a zone of apparent mixing between the Oshetna tephra and the middle (Watana) tephra in the northern half of the test (Figure 138, units 5, 5a). A concentration of ca. 400 calcined bone fragments and two basalt flakes (Feature 3) occurred in the zone of mixing (unit 5a) between the Oshetna and Watana tephra in the southern half of the test. In addition, six basalt flakes and 76 calcined bone fragments, one with possible butchering marks (UA81-208-95), were recovered from the Watana tephra and appeared to be associated with Feature 3.

Unfortunately N90/E95.5 was the only test square containing artifacts from both the upper and lower components at the site and cryoturbation has mixed cultural material through several stratigraphic units and no sterile horizon separates the two components. Calcined bone and/or flakes occurred within the middle (Watana) tephra in four test squares bur further testing is necessary to determine if this represents a third component or is due to the mixing of cultural material by cryoturbation.

Stratigraphy at the site is characterized by 15 cm to 30 cm of deposits overlying unsorted glacial drift (Figure 138, Table 47). Much of the deposition at the site appears to be of volcanic origin with 20 cm to 25 cm of tephra directly overlying the drift and capped by modern organic and humic horizons. Three volcanic tephra horizons have been distinguished on the basis of color, weathering and contacts (Table 47). Contacts between these tephra units are in some cases extremely involuted and often gradational so that artifact provenience at the contact zone between tephra units could frequently not be assigned to a single tephra and was instead assigned to a contact transition zone. In general, the stratigraphy was fairly uniform at the site and correlation of tephra and soil units between test squares was possible. Test N80/E103 contained a buried humic horizon (Figure 138, unit 2a) and a Devil tephra lense (unit 3a) within the Watana tephra (unit 4). These were interpreted as a localized disturbance of the stratigraphy probably as a result of an uprooted tree. In test square N90/E95.5 a lense of charcoal (Figure 138, unit 6) was associated with flakes and calcined bone at the contact between the middle (Watana) tephra and the lower (Oshetna) tephra.

Approximately 4500 calcined bone fragments were recovered from three of the five test squares (Table 48). Only two of these fragments were identifiable. A sesamoid bone from a caribou (*Rangifer tarandus*) was recovered from the contact between the A horizon and the Devil tephra (units 2, 3) in test N100/E107 and a phalanx fragment, also from a caribou (*Rangifer tarandus*), was recovered from the Oshetna tephra (unit 5) in test N90/E95.5.

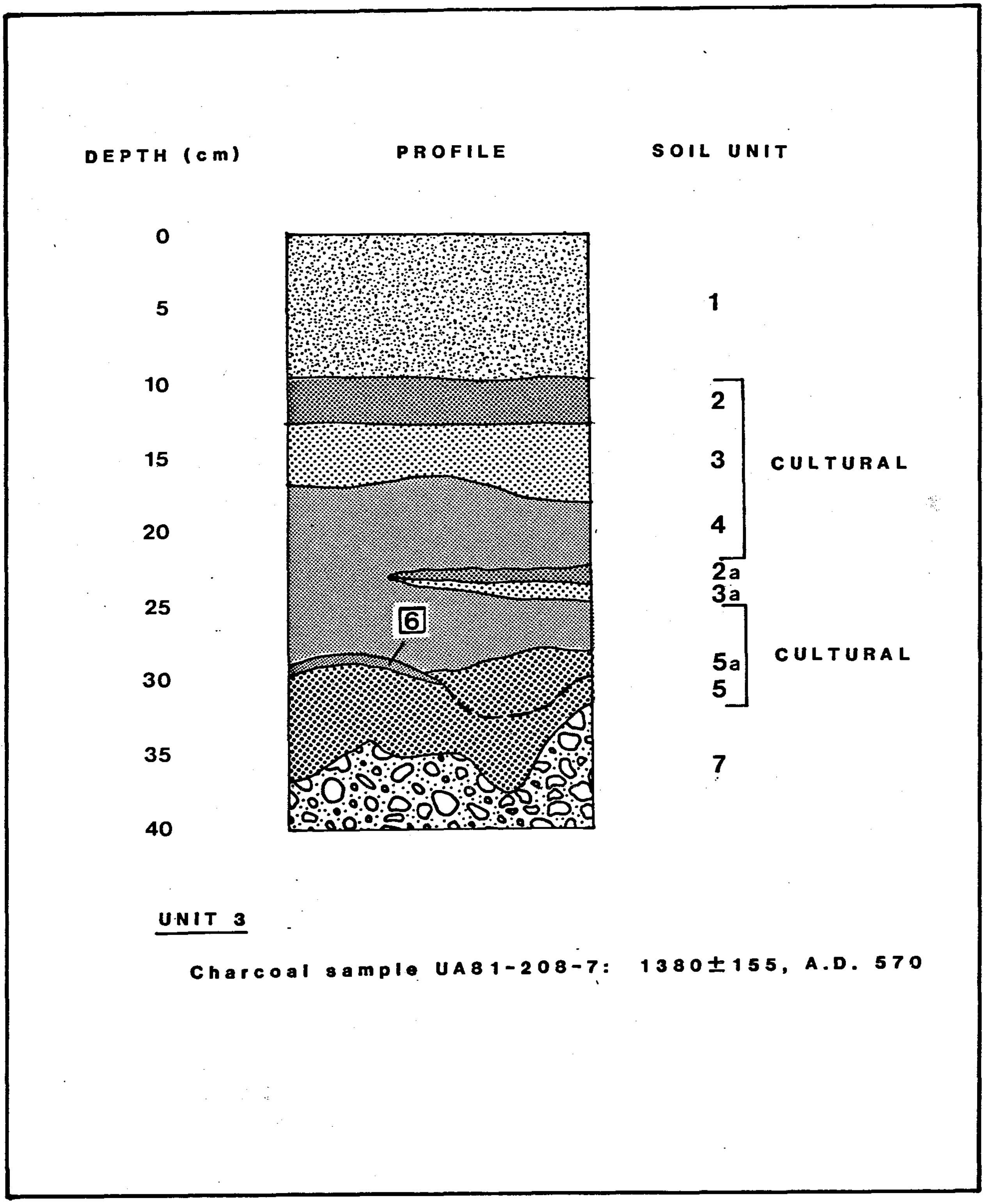


Figure 138. Composite Soil Profile TLM 062.

TABLE 47

SOIL DESCRIPTIONS FOR COMPOSITE SOIL PROFILE, TLM 062

Soil Unit	Description
1	Organic with roots and rootlets. Varies in color from very dusty red (10 YR 2.5/2) to dark reddish brown (10 YR 2/2). Varies in thickness from 2 cm to 17 cm. Small pieces of charcoal are occasionally present. Contact with unit 2 is gradational (O-horizon).
2	(Cultural) Finely divided organics. Black (5 YR 2.5/1 to 10 YR 2/1). Charcoal present in all tests and shovel tests with greatest concentration at contact with unit 3. Thickness varies from 2 cm to 9 cm. Lower contact with unit 3 gradational with some mixing. Greasy texture. (A-horizon)
2a	Finely divided organics. Black (5 YR 2.5/1). Occurs only in test square N80/E103. Interpreted as buried unit 2.
3	(Cultural) Very fine silt (Tephra). Ranges from light brownish gray (10 YR 5/2) to light gray (10 YR 7/1) with dark gray mottles (10 YR 3/1) at upper gradational contact with unit 2 where mixing occurs and charcoal flecks are present. Varies in thickness from 1 cm to 8 cm and is occasionally discontinuous. Sharp lower contact with unit 4. Occasional charcoal flecks present. Dries to a fine white powder. (Devil tephra).

TABLE 47 (Continued)

Soil Unit	Description
3a	Very fine silt (tephra). Lt. brownish gray (10 YR 6/2). Occurs only in test square N80/E103. Interpreted as buried unit 3.
4	(Cultural) Very fine silt (tephra). Ranges in color from dark reddish brown (2.5 YR 2.5/4 in strongly oxidized upper contact with unit 3 to yellowish brown (10 YR 5/6) or pale yellow (2.5 Y 7/2) in lower portion of unit. Strongly oxidized zone discontinuous and mottled with granular texture. Oxidation gradational within unit. Thickness varies from 4 cm to 28 cm. Lower contact with unit 5 sharp and involuted. (Watana tephra).
5	(Cultural) Medium silt to sandy silt (tephra). Varies in color from dark grayish brown (10 YR 4/2) to gray (10 YR 6/1). Pebbles present, probably due to mixing with unit 6. Often overlain by thin discontinuous charcoal lense. Sharp but very involuted contact with unit 6. (Oshetna tephra).
5a	(Cultural) Fine silt. Brown (10 YR 5/3). Contains many charcoal flecks. Involuted and gradational contacts with units 4 and 5. Contains flakes and calcined bone fragments. Occurs only in test square N90/E95.5. Interpreted as mixing of units 4 and 5.

TABLE 47 (Continued)

Soil Unit	Description
6	Charcoal lense.
7	Oxidized coarse sand, pebbles, gravel and cobbles. Ranges in color from strong brown (7.5 YR 4/6) to yellowish brown (10 YR 5/6). Unsorted. (glacial drift)

TABLE 48

FAUNAL MATERIAL, TLM 062

Soil Unit	Description
	N99/E109
4	170 Long bone fragments, calcined, medium-large mammal
	N90/E95.5
4	75 Long bone fragments, calcined, medium-large mammal 1 Phalanx fragment, 2nd, calcined, caribou (Rangifer tarandus)
5	331 Long bone fragments, calcined, medium-large mammal
	N100/E107
Contact 2 and 3	1 Sesamoid bone, calcined, caribou, (Rangifer tarandus)
Contact 2 and 3 (Feature 1)	4000+ Long bone fragments, calcined, medium-large mammal

TABLE 49

ARTIFACT SUMMARY BY TEST SQUARE, TLM 062

<u>N99/E109</u>

4 Flakes, gray to black basalt

<u>N80/E103</u>

1 Flake, light gray chert
1 Flake, gray basalt

<u>N93/E110</u>

18 Flakes, light gray chert
6 Flakes, dark gray chert

<u>N100/E107</u>

23 Flakes, dark gray basalt
5 Flakes, gray basalt
1 Biface fragment, dark gray basalt

<u>N90/E95.5</u>

149 Flakes, dark gray basalt
1 Flake, retouched, black basalt (possible endscraper)
1 Flake, retouched, black basalt (possible endscraper fragment)

Lithic material was recovered during both reconnaissance and systematic testing at the site. Reconnaissance testing produced a unifacially retouched red chert endscraper (UA81-208-2, 3) in two fragments and a gray chert flake core fragment (UA81-208-1) associated with Devil tephra (unit 3) in test 1. A single basalt flake of uncertain provenience was recovered from test 2.

Systematic testing produced a biface fragment, two unifacially retouched flakes, 182 basalt flakes and 25 chert flakes (Table 49). The basalt biface fragment (UA81-208-75) was recovered from within the Devil tephra (unit 3) in test N100/E107. It shows continuous retouch along two adjacent margins and hinge fractures on two margins. Both retouched flakes (UA81-208-85, 174) appear to be of the same lithology (fine grained black basalt) and were recovered from test N90/E95.5. Each shows unifacial retouch, probably use wear, along one (distal) margin only. UA81-208-85 was excavated from the lower portion of the Devil tephra (unit 3) and may be an endscraper fragment. UA81-208-174 was excavated from the Oshetna tephra (unit 5) and may be a complete endscraper. Table 49 lists artifacts by test square and lithology and Table 50 lists all cultural material recovered by test square and soil unit.

The two types of chert (light gray and very fine grained dark gray) are associated with the Devil tephra (unit 3) and do not occur below its lower contact with Watana tephra (unit 4). Basalt flakes are concentrated in the Oshetna tephra (unit 5, 5a) and at its upper contact with unit 4. They also occur in the Watana and Devil tephra with less frequency. There appears to be a striking difference in the lithology of artifacts between the upper and lower components. The chert flakes from component I lack cortex while many of the basalt flakes from the lower component show cortex. This would suggest that local basalt sources were being utilized for raw material while chert was being imported in either a blank or preform state with finishing work or resharpening occurring at the site during the component I occupation.

TABLE 50

ARTIFACT SUMMARY BY TEST SQUARE AND SOIL UNIT, TLM 062

Test Square	Cultural Material by Soil Units	Comments
N102/E105	No cultural units.	Profile not drawn.
N100/E107	Unit 2-3 Contact: 27 Flakes, basalt. 1 Flake, basalt; retouch (?), UA81-208-56, 16-25 cmbd. 1000 Burned bone fragments, 18-25 cmbd associated with Feature One in the west half of test square. Unit 3: 1 Biface fragment, basalt (UA81-208-75), 28 cmbd.	-Cultural horizon appears to be associated with top of unit 3 (Devils tephra), with some mixing of materials in units 2 and 4. -Charcoal sample taken at 20 cmbd from unit 3 associated with Feature One.
N99/E109	Unit 2-3 Contact: 1 Flake, basalt, 24 cmbd. Unit 3: 3 Flakes, basalt. Unit 4: 150 ca., burned bone fragments, 21-23 cmbd.	-Possible 2-component square: Component 1: -Basalt flakes in unit 3 (Devil tephra). Component 2: -Burned bone in unit 4 (Watana tephra). No unit 3 atop unit 4 here. -Flakes from SW¼ -Bone fron NE¼ and NW¼
N93/E110	Unit 3: 23 Flakes chert 18-28 cmbd. Materials associated with unit 3 at contacts with units 2 and 4.	-Flakes concentrate at top of unit 3 (Devil tephra). They occur in the NE, SE, and SW¼. 21 of 23 flakes in the S½. Charcoal sample taken at cmbd from unit 5 (Oshetna tephra).

TABLE 50 (Continued)

Test Square	Cultural Material by Soil Units	Comments
	TWO LITHOLOGIES PRESENT 14 Flakes, light gray chert 9 Flakes, dark gray chert	
N80/E103	Unit 3: 1 Flake, chert, 35 cmbd. 1 Flake, basalt, 25 cmbd.	
N90/E955	Unit 2: 8 Flakes, basalt Unit 3: 10 Flakes, basalt 1 Flake, basalt retouch UA81-208-85, 33 cmbd. Unit 4: 6 Flakes, basalt 76 Burned bone fragments, one with possible cut marks (?). Unit 5a: 52 Flakes basalt 400 ca. Burned bone fragments Unit 5a-5 Contact: 64 Flakes, basalt Unit 5: 11 Flakes, basalt 1 Endscraper (?), basalt (UA81-208-174) 31 Burned bone fragments	-Concentration of flakes and bone in unit 5a (transition zone) and at top of unit 5 (Oshetna tephra). -Charcoal sample taken at 42-45 cmbd, top of unit 5. -Four tephra samples taken. -Cortex flakes present.

The light gray chert differs from the darker gray chert both in texture and in luster, which may suggest that this material was heat treated prior to flaking. This evidence is uncertain because of the small number of artifacts exhibiting this characteristic. The possibility of natural heating of artifacts by forest fire should also be considered. The chert flakes are of small size characteristic of pressure flaking which would support the hypothesis that chert was imported to the site in semi-finished form. The one larger chert flake core fragment found during reconnaissance testing is unique in that it is the only chert artifact that suggests percussion flaking in component I. Many of the basalt flakes are biface reduction flakes and are generally larger and thicker and probably result from pressure and percussion flaking. This would be consistent with the hypothesis that the basalt source is local.

Evaluation:

No evidence of permanent or semi-permanent structures was observed during testing and the site probably functioned as a temporary campsite and hunting overlook at which tool manufacture occurred. The negative evidence of 48 sterile shovel tests suggests that the site is limited in spacial extent with the utilized area in vicinity of the terrace edge approximately 15 m by 20 m in size. There appears to be a spacial separation horizontally between the two components with the most recent occupation concentrated near the edge of the terrace and the earlier occupation well back (19 m) from the edge. With the limited amount of testing it is too early to look for patterns relating to activity areas at the site but there does seem to be some preliminary evidence of differential use of the site at different time periods.

While the results of systematic testing were not entirely conclusive, they do demonstrate TLM 062 to be a multicomponent site. Component I probably documents the site's use as a hunting camp approximately A.D. 570. This component is critical to understanding the culture history of the Upper Susitna, because it occurs immediately prior to the time Athapaskans are believed to have occupied the area. Thus component I may delineate the cultural affiliation of the peoples who occupied the Susitna prior to Athapaskans or through the direct historic approach, which will be possible through the excavation of adjacent sites, may extend the Athapaskan continuum temporally further in the region. Further work is needed to define and date component 2 at the site. TLM 062 warrents further investigation.

(o) Systematic Testing at TLM 065--Kosina Depression Site

<u>Location</u>: See section 3.2 (a-xx).

<u>Testing</u>: Four 1 m test squares were excavated at the site (Figure 139).

<u>Discussion</u>:

Surface features observed at TLM 065 include two shallow rectangular depressions (Features 1 and 4) and two circular depressions (Features 2 and 3) located on a relatively level terrace overlooking the confluence of Kosina Creek and the Susitna River (Figure 139).

Test squares were located at three of the surface depressions recorded during reconnaissance level testing which were located near test 1 (Figure 139). Test square N90/E103 bisected Feature 2 (Figure 139), a spherical depression approximately 1 m in diameter. Six bone fragments, 1 piece of wood, 1 glass bead, 3 fire cracked rocks and a piece of birch bark were recovered in this test. Test N93/E104 was positioned to transect the wall of the larger rectangular depression (Feature 1) located 3 m north of Feature 2. Excavation of Feature 1 revealed heavily decayed logs running parallel to the berm forming the margin of the depression. Artifacts collected from this test include 8 beads and 4 fire cracked rocks. N99/E105 was placed 1 m south of reconnaissance test 1. A shallow concentration of faunal material was encountered directly below the organic mat. Material collected included 1 gray

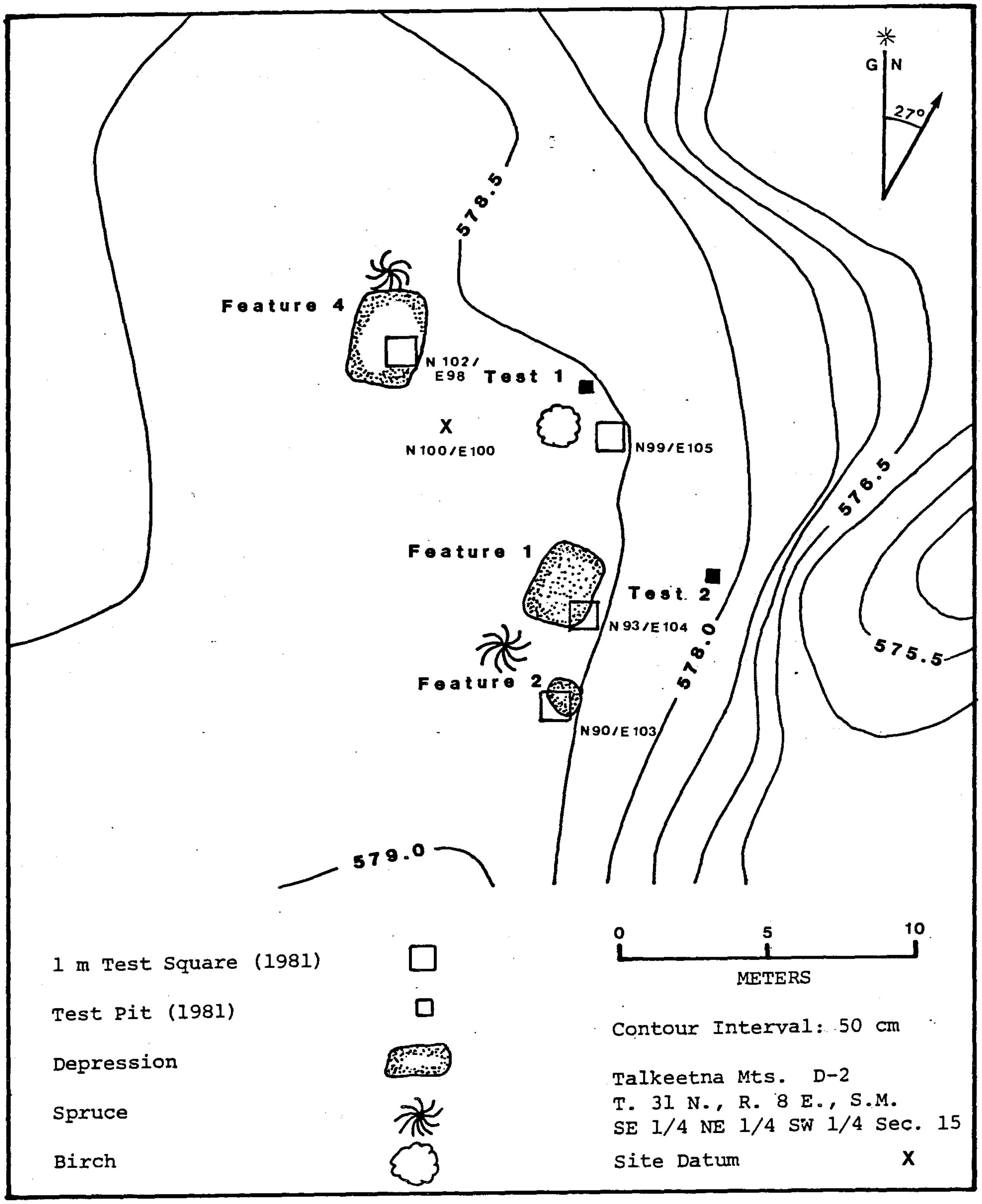


Figure 139. Site Map TLM 065.

chert flake, a fragment of weathered glass, 1 bead and ca. 100 burned bone fragments, many of which were identified as caribou (Rangifer tarandus). Test square N102/E98 was excavated to test the nature of a very shallow depression at the northern end of the site (Feature 4). Bone, fire cracked rock and faunal material was encountered and testing was immediately discontinued without collecting any cultural material so as not to disturb this feature prior to systematic excavation of the entire site.

Feature 3, a small circular depression similar to Feature 2, is located approximately 60 m southwest of test 1 and is not shown on the site map (Figure 139). This feature was not tested.

Faunal material occurred in tests N90/E103 and N99/E105. In both tests burned and unburned bones were recovered from the contact between the organic horizon (unit 1) and the culturally disturbed sandy loam (unit 2) and from within unit 2. The majority of this faunal material was unburned (Table 53). Identifiable faunal remains represent caribou (Rangifer tarandus).

Lithic material was limited to 7 fire cracked rocks and a single gray chert waste flake (Table 52). Most of this material was associated with the culturally disturbed sandy loam (unit 2). Ten beads and 10 rolls of birch bark, some of which shows evidence of sewn seams also associated with unit 2, attest to the relatively late occupation of TLM 065. In addition to the trade beads, a fragment of glass, found in test square N99/E105 within the culturally disturbed unit 2, demonstrates either direct or indirect contact with Europeans.

Evaluation:

This site is extremely important to the prehistory of the Susitna region because it clearly documents early historic occupation of the area at a time when Athapaskan culture was beginning to undergo rapid, dramatic,

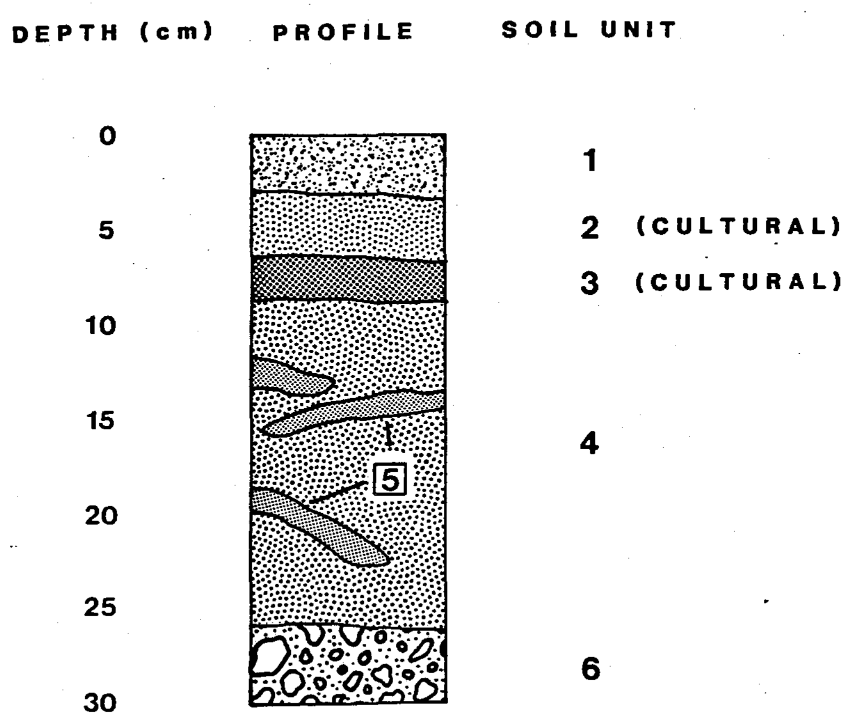


Figure 140. Composite Soil Profile TLM 065.

TABLE 51

SOIL DESCRIPTIONS FOR COMPOSITE SOIL PROFILE, TLM 065

Soil Unit	Description
1	Organic duff. Mat of undivided organics, roots and leaves. Lower boundary abrupt.
2	Sandy loam. Very dark brown (10 YR 2/1). Lies directly below the organic mat. This is a culturally disturbed unit with cultural material mixed with disturbed soil horizon.
3	Sandy silt. Black (5 YR 2/0). Occurs in a 1 cm to 4 cm thick unit throughout entire site.
4	Coarse sand and gravel. Gray (5 Y 5/1). Pebbles angular and rounded range in size from 1 cm to 4 cm in diameter. Grades to gravel with depth. Contains lenses of fine silt (tephra: unit 5) mixed within this unit by soil disturbance.
5	Fine silt (tephra). Light yellow (2.5 Y 7/2). Discontinuous over site. Considerable mixing of units 4 and 5 has occurred and unit 5 occurs as lenses within unit 4. Watana tephra.
6	Coarse sand and pebbles. Olive (5 Y 5/4) Continuous over square. Poorly sorted. Upper contact with unit 5 is sharp. Glacial drift.

TABLE 52

ARTIFACT SUMMARY BY TEST SQUARE AND SOIL UNIT, TLM 065

Soil Unit	Description
	N99/E105
2	1 Flake, gray chert
	1 Glass fragment
	1 Bead fragment
	N93/E104
1	1 Organic sample of seeds(?)
2	1 Fire cracked rock
	2 Wood samples (?)
	4 Trade beads
4	3 Fire cracked rocks
	4 Trade beads
	N90/E103
2	1 Wood sample
	1 Trade bead
	3 Fire cracked rocks
	10 Sheets of birch bark

TABLE 53

FAUNAL MATERIAL, TLM 065

Soil Unit	Description
	N99/E105
2	2 Mandible fragments, unburned, caribou (*Rangifer tarandus*)
2	1 Vertebra fragment, thoracic, unburned, possibly caribou (*Rangifer tarandus*)
2	1 Tibia shaft fragment, unburned, possible caribou (*Rangifer tarandus*)
2	1 Astragalus, right, unburned, caribou (*Rangifer tarandus*)
2	1 Metatarsal fragment, unburned, caribou (*Rangifer tarandus*)
2	1 Mandible fragment, unburned, caribou (*Rangifer tarandus*)
2	2 Tooth fragments, molar, unburned, possible caribou (*Rangifer tarandus*)
2	1 Carpal, unburned, caribou (*Rangifer tarandus*)
2	4 Tooth fragments, molar, unburned, caribou (*Rangifer tarandus*)

TABLE 53 (Continued)

Soil Unit	Description
2	1 Tooth, premolar, unburned, caribou (*Rangifer tarandus*)
2	1 Phalanx fragment, calcined, caribou (*Rangifer tarandus*)
2	1 Phalanx fragment, 1st, unburned, caribou (*Rangifer tarandus*
2	1 Phalanx fragment, 2nd, unburned, caribou (*Rangifer tarandus*
2	1 Parietal fragment, unburned, large mammal
2	1 Rib fragment, unburned, medium-large mammal
2	9 Long bone fragments, calcined, medium-large mammal
2	63 Long bone fragments, unburned, large mammal
2	13 Long bone fragments, unburned, large mammal
2	1 Flat bone fragment, unburned, large mammal
	N99/E103
2	1 Tooth fragment, crown, molar, unburned, caribou (*Rangifer tarandus*)

TABLE 53 (Continued)

Soil Unit	Description
2	1 Tooth fragment, root, unburned, possibly caribou (*Rangifer tarandus*)
2	1 Tooth fragment, unburned, possibly caribou (*Rangifer tarandus*)
2	2 Mandible fragments, unburned, caribou (*Rangifer tarandus*)
2	1 Tooth fragment, molar, unburned, caribou (*Rangifer tarandus*)
Feature 2	1 Pelvis fragment, right, acetabulum, unburned, caribou (*Rangifer tarandus*)
Feature 2	1 Pelvis fragment, left, acetabulum, unburned, caribou (*Rangifer tarandus*)
Feature 2	1 Radius fragment, right, unburned, caribou (*Rangifer tarandus*)
Feature 2	1 Vertebra fragment, atlas, unburned, caribou (*Rangifer tarandus*)
Feature 2	2 Long bone fragments, unburned, medium-large mammal 102 Long bone fragments, unburned, medium-large mammal 8 Long bone fragments, unburned, large mammal

and irrevocable cultural change. The nature of the site is equally significant, because it represents the only major living structure(s) that was systematically tested in the project area which suggests year round occupation of the region. The site probably dates to the late 1800's based on the rather clear definition of the surface features at the site and the discovery of trade beads and glass. There is little doubt that future excavation at this site will provide new and significant insights into the nature of Athapaskan culture during the contact with western European culture. TLM 065 provides the essential physical link which will enable future research to apply the direct historical approach to delineate cultural development through time.

(p) Systematic Testing TLM 069--Left Fork Site

Location: See section 3.7 (a-xxiv).

Testing:

Three 1 m test squares and three 50 cm x 50 cm tests were excavated at TLM 069 during systematic testing (Figure 141). Test square N99/E101 was excavated near reconnaissance test 3 at the highest point of the knoll on which the site is located. Test square N99/E112 was placed at the eastern end of the knoll to test the extent of subsurface cultural material east of reconnaissance test 1. Test square N100/E108 was excavated near reconnaissance test 1 at the north edge of the knoll. The three smaller 50 cm x 50 cm test pits were excavated on the eastern flank of the knoll to define the limit of subsurface cultural material where the topography of the site was more subdued and the site boundary in relation to the landform was less clearly defined.

Discussion:

All three 1 m test squares placed at the summit of the knoll revealed subsurface cultural material consisting of both lithic and faunal

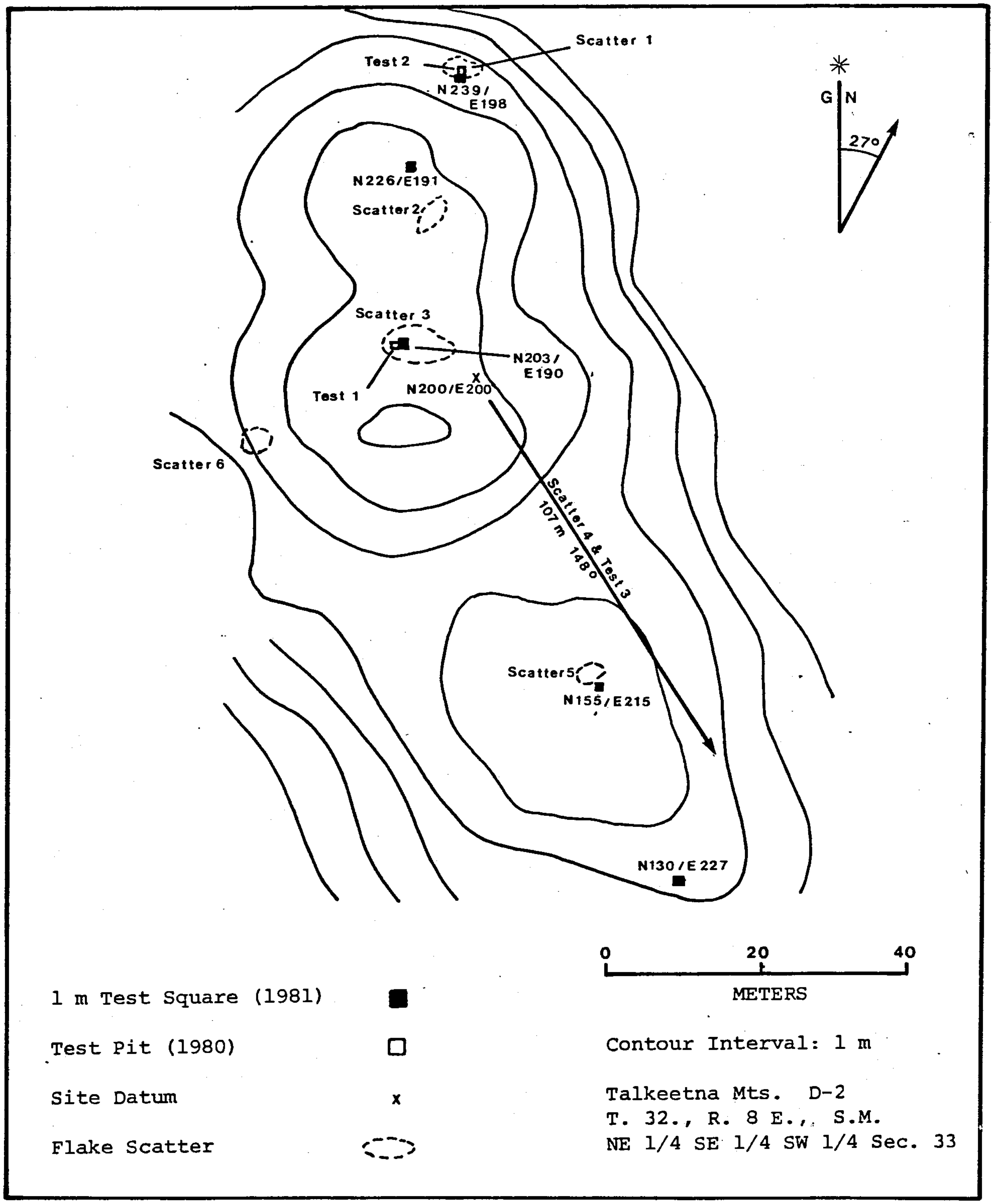


Figure 141. Site Map TLM 069.

material. Only one of the 50 cm x 50 cm test pits, excavated to the east of the knoll summit (N94/E123) produced cultural material. Both lithic and faunal material occurred in dense concentration during systematic testing. Lithic material recovered included eight diagonistic artifacts, a flake core and 1067 waste flakes (Table 55). Faunal material was found in all subsurface tests which produced lithic material and consisted of more than 900 calcined bone fragments (Table 56).

The stratigraphy at TLM 069 was limited to less than 15 cm of deposition overlying glacial drift (Figure 142, Table 54). All three tephra deposits were identified, however the lowest (Oshetna) tephra (unit 5) was present only in test square N100/E108 and in this test it appeared to be mixed with the underlying drift deposit. Watana tephra (unit 4) was identified in all test squares either overlying the drift directly where the Oshetna tephra was absent, or as in N100/E108, overlying the mixed Oshetna/Drift horizon. Devil tephra (unit 3) overlay Watana tephra in all test squares and was capped by the modern humic (unit 2) and organic (unit 1) horizons.

Cultural material was recovered from all stratigraphic units at TLM 069 except the organic horizon. Table 55 lists the provenience of artifact and faunal material by test square and stratigraphic unit. The majority of cultural material recovered at TLM 069 was associated with the lower Watana tephra contact with either glacial drift (unit 6) or the Oshetna tephra (unit 5) where it was present. A total of 820 waste flakes (77%) were associated with this contact. It appears that in all test squares except N100/E108 the Oshetna tephra has been eroded away leaving the cultural material as a lag deposit at the contact between the drift and the Watana tephra. The concentration of cultural material at the Oshetna/Watana contact in test square N100/E108 strongly indicates that this is the original context for the lithic and faunal material found at the Watana/Drift contact where the Oshetna tephra is missing. Considerable mixing of stratigraphic units and cultural

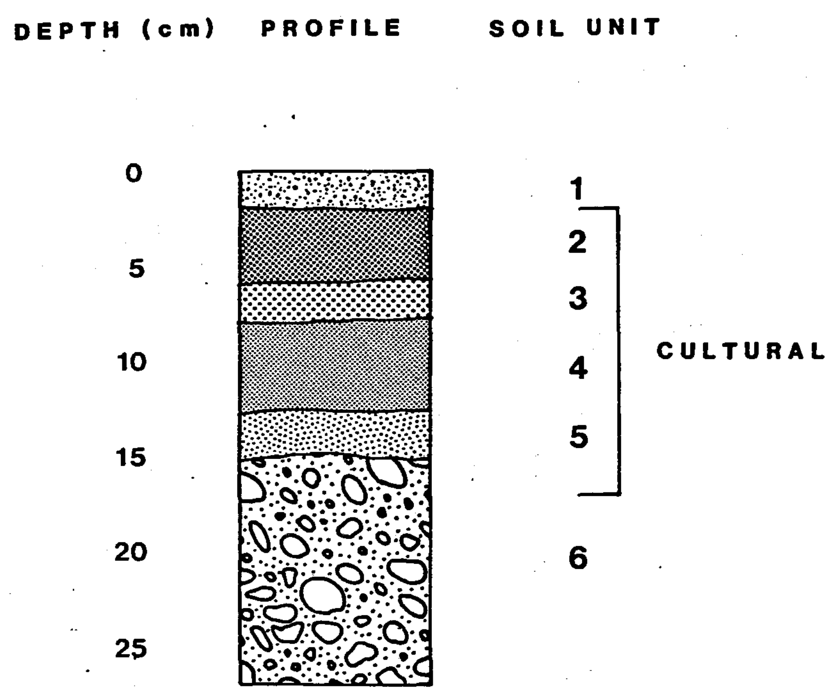


Figure 142. Composite Soil Profile TLM 069.

TABLE 54

SOIL DESCRIPTIONS FOR COMPOSITE SOIL PROFILE, TLM 069

Soil Unit	Description
1	Organic, very thin and varies as a function of surface vegetation.
2	(Cultural) Silt [believed to be tephra], very dark brown to black (7.5 YR 2/2 to 10 YR 2/1), finely divided organics, present throughout site.
3	(Cultural) Light brownish gray (10 YR 6/2 silt [believed to be tephra], very thin if not discontinuous.
4	(Cultural) Silt [believed to be tephra], color varies from dark reddish brown (5 YR 3/3) to yellowish brown (10 YR 5/6) to light yellowish brown (10 YR 6/4, <u>cultural material present</u> but <u>believed to have been mixed from below</u>, lower boundary abrupt.
5	Silty sand mixed with cobbles and pebbles [believed to be tephra mixed with other units], light gray (5 Y 7/1), unit found only in test N100/E108, lower boundary clear.
6	(Cultural) Silty very coarse sand with pebbles cobbles and boulders, pebbles-boulders rounded and subrounded positioned with horizontal axis greater than vertical axis ("lying flat"), upper portion of unit oxidized and light olive brown (2.5 Y 5/6) in color, grades to olive (5 Y 5/3) with depth.

TABLE 55

ARTIFACT SUMMARY BY TEST SQUARE AND SOIL UNIT, TLM 069

Soil Unit	Description			
	N99/E112			
	NE Quad	SE Quad	SW Quad	NW Quad
3 and 4	10 Flakes bone fragments	3 Flakes	3 Flakes	10 Flakes bone fragments
Contact between 4 and 6	1 Biface fragment 1 Tool fragment 219 Flakes bone fragments	1 Scraper 1 Tool fragment 60 Flakes bone fragments	1 Core 81 Flakes bone fragments	1 Obsidian scraper 1 Projectile point 1 Obsidian tool fragment 101 Flakes bone fragments
6		67 Flakes bone fragments	18 Flakes bone fragments	2 Flakes bone fragments

Soil Unit	N99/E101			
	NE Quad	SE Quad	SW Quad	NW Quad
2				4 Flakes bone fragments
3 and 4	11 Flakes		5 Flakes	2 Flakes bone fragments

TABLE 55 (Continued)

Soil Unit	Description			
Contact between 4 and 6		46 Flakes	15 Flakes bone fragments	1 Tool fragment 16 Flakes
6	18 Flakes bone fragments	Bone fragments		
	<u>N100/E108</u>			
	NE Quad	SE Quad	SW Quad	NW Quad
2			4 Flakes	10 Flakes
2 and 3	1 Flake			9 Fakes
3			5 Flakes bone fragments 4 Flakes from float sample	1 Flake
4	1 Flake	41 Flakes bone fragments	35 Flakes bone fragments 13 Flakes from float sample	1 End scraper 22 Flakes bone fragments

TABLE 55 (Continued)

Soil Unit	Description			
4 and 5	19 Flakes bone fragments	1 Biface 10 Flakes	48 Flakes bone fragments 151 Flakes from float sample	54 Flakes
6	1 Flake bone fragment		22 Flakes bone fragments 13 Flakes from float sample	4 Flakes
	<u>N94 E123</u>			
	<u>SE Quad Only</u>			
3	3 Flakes			
4	1 Flake			
5 and 6	15 Flakes bone fragments			

TABLE 56

FAUNAL MATERIAL, TLM 069

Soil Unit	Description
Contact 3 and 4	1 Long bone fragment, calcined, small-large mammal 2 Long bone fragments, calcined, medium-large mammal
Contact 4 and 6	450+ Long bone fragments, calcined, medium-large mammal (note unit 5 not present in this square)
6	11 Long bone fragments, calcined, medium-large mammal
	N99/E101
2	1 Long bone fragment, calcined, medium-large mammal
3	2 Long bone fragments, calcined, medium-large mammal
4 and 6	(note unit 5 not present in this square)
6	140+ Long bone fragments, calcined, medium-large mammal
	N11/E108
3	1 Long bone fragment, calcined, medium-large mammal
4	125+ Long bone fragments, calcined, medium-large mammal
Contact 4 and 5	200+ Long bone fragments, calcined, medium-large mammal
5 and 6	
6	19 Long bone fragments, calcined, medium-large mammal

material is evident at TLM 069. Lithic material consisting of 145 waste flakes (13%) was recovered from within the glacial drift (unit 6) in all three 1 m test squares. Faunal material was also recovered from within the drift in these tests. Although both lithic and faunal material was recovered from within the Watana tephra in all three 1 m test squares and from the Devil tephra in one test square (N100/E108), it appears that only one component is present at TLM 069 at the contact between the Watana and Oshetna tephra. Cultural material recovered from other units has probably been mixed by cryoturbation.

Diagnostic artifacts were recovered entirely from the Watana/Drift contact except for a gray chert biface (UA81-215-290) excavated from the Oshetna tephra in test square N100/E108. Diagnostic artifacts recovered from the Watana/Drift contact include a pentagonal rhyolite projectile point (UA81-215-49), an obsidian endscraper (UA80-215-47), a basalt flake core (UA81-215-46), a retouched basalt flake (UA81-215-51), two basalt biface fragments (UA81-215-50, 127), a rhyolite biface fragment (UA81-215-203) and an obsidian biface fragment (UA81-215-48).

Faunal material was also recovered from all stratigraphic units below the organic horizon but, like the lithic material, was concentrated at the lower contact of the Watana tephra with either the Oshetna tephra where it was present or with the drift where the Oshetna was absent. All faunal material was calcined and consisted of bone fragments from small to large mammals. The faunal material recovered was too fragmentary for identification.

Evaluation:

TLM 069 appears to be a single component site utilized as a temporary campsite at which tool manufacture occurred. Its position on a well drained low knoll offers a panoramic view of the surrounding terrain and suggests that the site also functioned as a game lookout. A nearby pond shows evidence of having been a larger lake at one time and this lake would have provided an easily accessible water source and may have also attracted game to the vicinity of the site. The topography of the site location, as well as the results of systematic testing, indicates the site is primarily limited to the immediate vicinity of the top of the knoll upon which it is situated. The spacial extent of TLM 069 appears to be approximately 10 m by 30 m in size. The high concentration of lithic and faunal material and the presence of diagnostic artifacts make TLM 069 a site at which future excavation is warranted. The presence of cultural material below the Watana tephra also adds important data to the temporal chronology of the prehistory of the Susitna Valley.

Typological comparison of the bifacial artifacts and the pentagonal projectile point may suggest a Choris/Norton period occupation of the site. This interpretation is supported, but not conclusively documented, by stratigraphic data which suggests that the cultural component occurs immediately below the Watana and stratigraphically above the Oshetna tephras. This may prove to be a critical site in defining the cultural chronology in the project area and further work at this site is warranted.

(q) Systematic Testing of TLM 097--Borrow C Site

Location: See section 3.7 (a-xliii).

Testing:

Five 1 m test squares and 24 shovel tests were excavated during systematic testing (Figure 143). Three 1 m test squares were placed initially near the edge of the bluff where reconnaissance test 1 had produced subsurface cultural material. A test square was placed ca. 6 m from the bluff edge adjacent to reconnaissance test 2 which had produced a single flake. One test square (N92.5/E80.5) was also placed ca. 30 m from the bluff edge between two shovel tests which produced cultural material. Shovel tests were dug at 5 m intervals on east-west transects

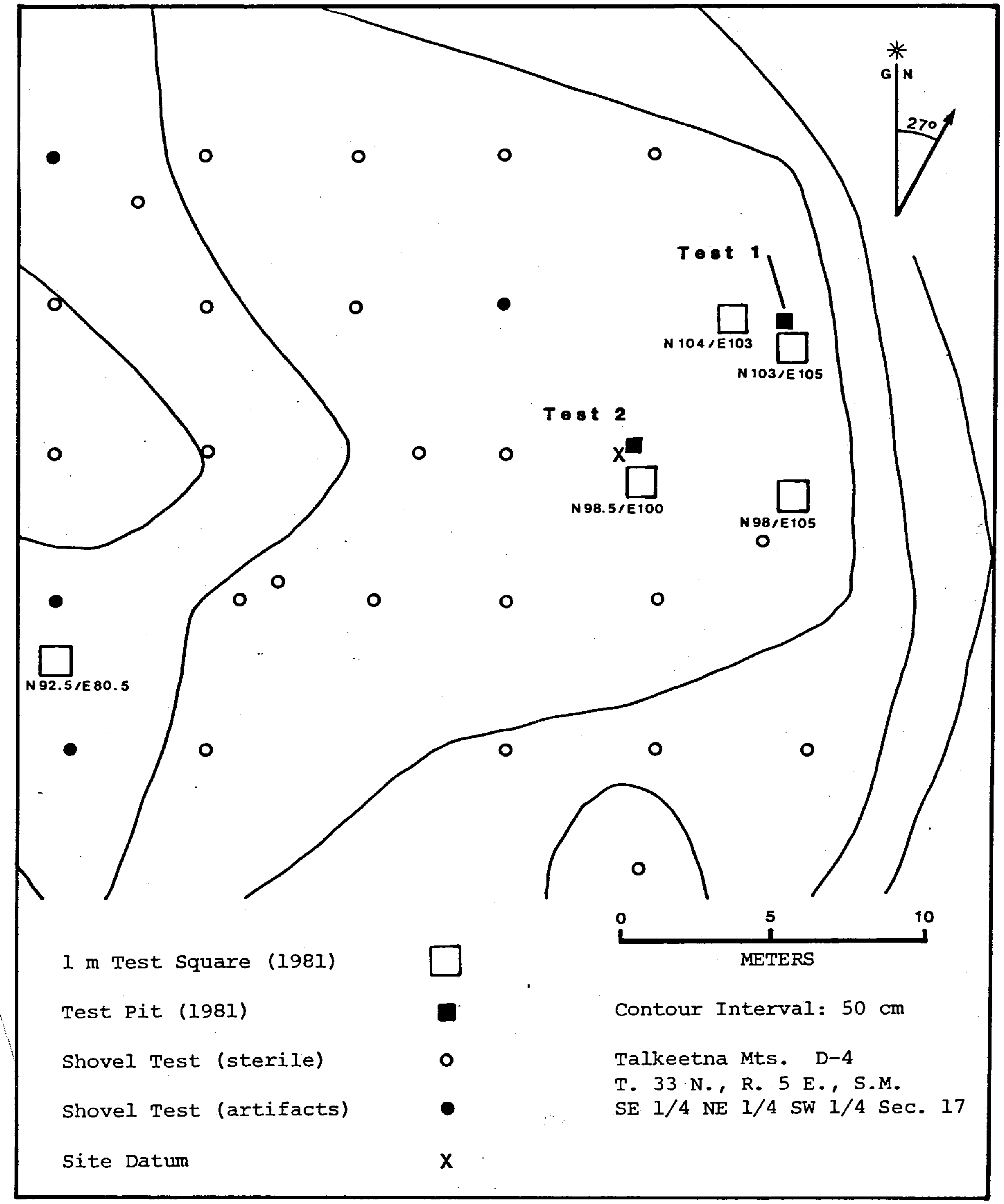


Figure 143. Site Map TLM 097.

in order to guide the placement of test squares and to help define the spacial extent and eastern boundary of the site.

Discussion:

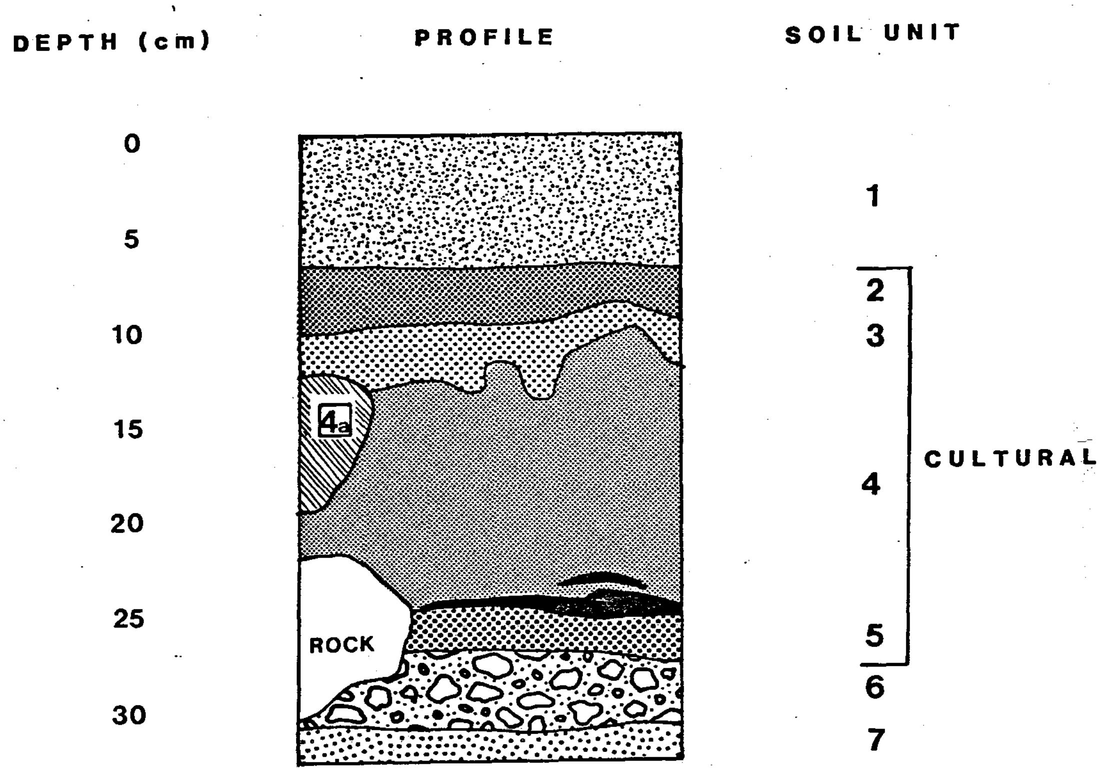
Testing at TLM 097 produced lithic and faunal material in addition to fire cracked rock and charcoal. All five test squares and four of the shovel tests produced cultural material from what appear to be four components (Table 58).

Component I

This component is present in three test squares at the contact between the A horizon and the uppermost of three volcanic tephra (Devil) present at the site (Figure 144, units 2, 3). This component is best represented in two of these tests by a dense concentration of 296 basalt flakes associated with charcoal and burned soil in test N103/E105, and by more than 400 calcined bone fragments, 118 fire cracked rocks, 33 rhyolite and siltstone flakes and a basalt endscraper (UA81-252-115) associated with charcoal in test N104/E103. A radiocarbon determination of 1400 ± 55 years: A.D. 550 (DIC-2245) was obtained on charcoal at the contact between the A horizon (unit 2) and the uppermost (Devil) tephra and should date this uppermost component.

Component II

This component is associated with the uppermost (Devil) tephra (Figure 144, unit 3) and is present in all five test squares although it is less well defined than the other components at the site because it is represented by fewer artifacts and is not associated with concentrations of charcoal. Artifacts associated with this component are found within the Devil tephra and in close proximity to its lower contact with the Watana tephra (unit 4). Two brown chert flakes and a brown chert endscraper (UA81-252-360) are from this component. Brown chert is not found in any



UNIT 2/3 CONTACT

Charcoal sample UA81-252-51: 1400±55, A.D. 550

UNIT 4/5 CONTACT

Charcoal sample UA81-252-427:±4020 65, 2070 B.C.

Figure 144. Composite Soil Profile TLM 097.

TABLE 57

SOIL DESCRIPTIONS FOR COMPOSITE SOIL PROFILE, TLM 097

Soil Unit	Description
1	Organic mat of sphagnum moss, lichens and roots. Dark reddish brown (5 YR 3/2 to 5 YR 3/4). Thickness varies from 1 cm to 19 cm. Lower contact with unit 2 is gradational. Occasionally fine silt (loess) mixed with organics. (O-horizon)
2	(Cultural) Finely divided organics with charcoal present at lower contact with unit 3. Black (7.5 YR 2.0). Sharp lower textural and color contact with unit 3. Thickness varies from 1 cm to 3 cm. (A-horizon)
3	(Cultural) Very fine silt (tephra). Light brownish gray (10 YR 6/2) to dark brown (7.5 YR 3/2). Black staining and charcoal flecks are present in upper portion due to mixing with unit 2. Thickness varies from 2 cm to 6 cm. Sharp lower textural and color contact with unit 4. Dries to fine white powder. (Devil tephra)
4	(Cultural) Fine silt (tephra). Upper portion heavily oxidized with granular concretions and rootlets. Dark reddish brown (5 YR 3/3) grading downward to light yellow brown (10 YR 6/4). Thickness generally varies from 3 cm to 30 cm but unit is occasionally discontinuous in small areas where unit 3 rests directly on unit 5. Dries to fine powder. (Watana tephra)

TABLE 57 (Continued)

Soil Unit	Description
4a	(Cultural) Rodent Burrows. Disturbance due to ground squirrel activity resulting in mixing of coarse sand, pebble and gravels with units 3, 4 and 5 is occasionally present. Filled burrows are evident in the profiles of several test squares. Rodent activity accounts for some mixing of soil units, movement of artifacts between soil units and occasional discontinuity of soil units.
5	(Cultural) Silty sand (tephra) with occasional small pebbles and gravel. Grayish brown (2.5 Y 5/2). Often capped by charcoal. Lower contact with unit 6 is gradational with some mixing but upper and lower contacts are distinct. Matrix appears to be a mixture of tephra and drift. (Oshetna tephra)
6	Unsorted oxidized coarse sand with pebbles, gravel and cobbles with heavily oxidized compacted zones. Dark reddish brown (5 YR 2.5/2) in heavily oxidized portions to strong brown (7.5 YR 4/6) in less oxidized portions. Lower contact with unit 7 sharp. (Glacial drift)
7	Loosely consolidated coarse to medium sand with occasional pebbles. Strong brown (7.5 YR 4/6) to yellowish brown (10 YR 5/4). Not present in all tests. (Fluvial)

of the other components at the site. Other flake lithologies associated with component II include a speckled whitish gray quartzite (although one flake of this lithology was found in the Watana tephra (unit 4), gray chert, basalt, a whitish tuff and a light green tuff. There is a possibility that the artifacts found within the Devil tephra are a result of mixing due to processes of cryoturbation and that artifacts assigned to component II may have originated from the contacts above and below the Devil tephra. Artifacts within the Devil tephra probably represent a separate component because the brown chert apparently occurs only in this stratigraphic position.

Component III

This component was present in two of the test squares and is associated with the contact between the Devil tephra (unit 3) and the Watana tephra (unit 4). It is best represented by 65 light green tuffacious flakes and 9 fire cracked rocks associated with charcoal and burned soil from the contact between unit 3 and unit 4 in N98/E105. Many of these flakes and the larger fire cracked rocks were lying flat directly on top of the Watana tephra (unit 4) and do not appear to have been affected by post depositional disturbances. Component III is also represented in test square N98.5/E100 at the unit 3/4 contact by 15 very small flakes of rhyolite and tuff.

Component IV

Component IV, the earliest site component, is present in all five test squares at the contact between the Watana and Oshetna tephras (Figure 144, units 4, 5). It is represented by dense concentrations of basalt flakes in three of the test squares. In N92.5/E80.5 115 basalt flakes were recovered from the Watana/Oshetna contact in association with charcoal. In N98.5/E100 145 basalt flakes, a fine grained black siltstone flake core (UA81-252-160), 10 rhyolite flakes and a basalt side-notched point base (UA81-252-159) were associated with this contact. In test square N103/E105 47 basalt flakes, 4 rhyolite flakes and 4 tuff flakes also associated with a concentration of charcoal occurred at the unit 4/5 contact. A radiocarbon determination on charcoal at the Watana/Oshetna (unit 4/5) contact from test N103/E105 yielded a date of 4020 ± 65 years; 2070 B.C. (DIC-2283). This date should date the side-notched point base (UA81-252-159) found in a similar stratigraphic position in test N98.5/E100 and also provides a minimum limiting date on the Oshetna tephra. The remaining two test squares produced only a few flakes from the Watana/Oshetna contact. N98/E105 yielded two speckled whitish gray rhyolite flakes and N104/E103 produced five basalt flakes from this component.

Stratigraphy at the site is characterized by 25 cm to 30 cm of deposits overlying unsorted glacial drift. Much of the deposition at the site appears to be of volcanic origin with ca. 20 cm of tephra directly overlying glacial drift deposits and capped by modern organic and humic horizons. Three tephra horizons have been distinguished on the basis of color, weathering and contacts (Table 57). Contacts between these tephra units are in some cases extremely involuted and often gradational. This involution is often apparent at the lower contact of the Oshetna tephra (unit 5) with the glacial drift (unit 6) where considerable mixing of the two units frequently occurs. Stratigraphy was generally uniform at the site and correlation of tephra and soil units between test squares was possible.

In some tests, especially N98/E105 and N92.5/E80.5, the stratigraphy was disturbed by extensive rodent activity. Artifacts from rodent burrows and disturbed areas were bagged separately and not assigned to soil or tephra units. Charcoal which occurred within the A horizon (unit 2) near the lower contact with the Devil tephra (unit 3) was present in practically all test squares and shovel tests and was attributed to noncultural causes. The charcoal sample dated to 1400 ± 55 years: A.D. 550, from the contact between unit 2 and unit 3 which was associated with artifacts in test N103/E105 was, however, interpreted to be

TABLE 58

ARTIFACT SUMMARY, TLM 097

1	Point base, side-notched, basalt
1	Endscraper, basalt
1	Endscraper, brown chert
1	Scraper, backed, pale green tuff
1	Core fragment, siltstone
1	Flake, retouched, gray basalt
1	Flake, retouched, black basalt
1	Flake, retouched, gray chert
1	Flake, retouched, translucent chalcedony
5	Flakes, blade-like, basalt
1	Core fragment, light brown tuff
646	Flakes, gray basalt
13	Flakes, black basalt
2	Flakes, brown chert
5	Flakes, gray chert
53	Flakes, light gray rhyolite
3	Flakes, speckled gray rhyolite
78	Flakes, pale green tuff
39	Flakes, light green siltstone
31	Flakes, unknown lithology
12	Flakes, white chert
1	Flake, clear chalcedony
1	Flake, clear obsidian
127	Fire cracked rocks

cultural in origin because of the associated calcined bone fragments and dense flake concentration. Charcoal occurring at the lower Watana (unit 4) Oshetna (unit 5) contact which was associated with dense concentrations of basalt flakes, but lacking faunal material, is probably cultural in origin.

Faunal material was present in only one test (N104/E105) associated with Feature 1, and occurred above the Watana tephra (unit 4), in the A horizon (unit 2) and at the contact of the Devil tephra (unit 3) with the A horizon. Approximately 400 heavily calcined long bone fragments from a medium to large mammal (or mammals) were recovered (Table 59). None of these fragments were large enough for identification.

Lithic material at the site included artifacts of basalt, chert, rhyolite and tuff. Preliminary testing of the site and the surface find of a lancolate point of gray chert (UA81-252-1) are discussed under reconnaissance testing. Systematic testing of TLM 097 produced cultural material in all stratigraphic units with the exception of the organic horizon (unit 1), glacial drift (unit 6) and oxidized sand within the drift (unit 7).

Basalt (666 flakes) was by far the most common lithology at the site and was associated primarily with component I (351 flakes) at the base of the A-horizon and with component IV (224 flakes) at the Watana/Oshetna contact. Chert (20 flakes) was primarily associated with component II (14 flakes) in the Devil tephra (unit 3). Rhyolite (56 flakes) occurred primarily within the Devil tephra (unit 3) and at its lower contact with the Watana tephra (49 flakes). Pale green tuff (78 flakes) was associated primarily with the contact between the Devil and Watana tephra (65 flakes). Fire cracked rock (127 fragments) was recovered from two test squares. 118 fragments of fire cracked rock in the A-horizon (unit 2) were associated with Feature 1 in test square N104/E103 and nine fragments were recovered from the Devil/Watana (unit 3/4) contact in test square N98/E105.

TABLE 59

FAUNAL MATERIAL, TLM 097

Soil Unit	Description
	N104/E105
2	400+ Long bone fragments, heavily burned-calcined, medium-large mammal
Contact 2 and 3	30 Long bone fragments, heavily burned-calcined, medium-large mammal

Diagnostic artifacts recovered during systematic testing include the following:

<u>Component I</u> (contact between A-horizon and Devil tephra (units 2/3)

UA81-252-115 basalt endscraper with unifacial retouch along one convex margin

<u>Component II</u> Devil tephra (unit 3)

UA81-252-360 brown chert "thumb nail" endscraper with steep unifacial retouch on the distal convex margin

UA81-252-128 gray chert flake with continuous unifacial retouch along one margin (probably a fragment of a larger tool)

<u>Component IV</u> (contact between Watana and Oshetna tephra (units 4/5)

UA81-252-159 basalt projectile point base, side-notched with concave base and basal grinding

UA81-252-160 fine grained black siltstone flake core

UA81-252-253 light yellow tuff blade-like flake, retouched along one margin (probably use wear)

<u>Component IV</u> Oshetna tephra (unit 5)

UA81-252-65 black basalt decortication flake with unifacial retouch on two margins

Shovel Test N105/E96 (no provenience)

UA81-252-264 gray basalt retouched flake, possible backing

Rodent Disturbed Area N92.5/E80.5

UA81-252-363 translucent chalcedony flake, continuous retouch along one margin, possible backing (distal tip missing)

Evaluation:

The bluff overlooking Tsusena Creek, on which TLM 097 is situated, provides an excellent view to the north and south through a major valley and suggests the site functioned as a hunting camp from which game moving in the valley could be observed. The site is located at the narrowest constriction at the southern terminus of the valley where game moving either northward or southward is concentrated into an area only a few hundred meters wide. Three caribou moving north through the valley passed within 50 m of the field crew conducting testing at the site. The discovery of 14 prehistoric sites located along a 6 km stretch of Tsusena Creek in this valley attests to the intensity of the prehistoric use of concentrated game resources.

That TLM 097 functioned as more than a hunting overlook is attested to by the presence of endscrapers and by the large amount of lithic detritus indicating tool manufacture, repair, and possibly sharpening, occurred at the site. Charcoal concentrations with fire cracked rock (possibly indicative of stone boiling) and calcined bone provide further indication that the site was used as a camp. The presence of at least three and possibly four components demonstrates repeated use during the past 4000 years. Many of the basalt flakes are decortication flakes indicating that basalt was locally obtained, probably as cobbles from the nearby stream.

No evidence of permanent or semi-permanent structures was observed during testing and the site probably functioned as a seasonal hunting camp. Shovel testing indicates the site is approximately 20 m by 25 m in size and extends back at least 25 m from the bluff edge (Figure 143). It is unlikely the site extends further than 25 m from the bluff because the terrain becomes poorly drained and marshy beyond this distance.

TLM 097 is one of the most significant sites discovered and tested during the 1981 field season. It is multicomponent and stratigraphic correlations between excavation units are relatively easy to interpret. Furthermore, the preservation of charcoal in the components demonstrates the potential for dating. The oldest component not only yielded a side notched projectile point, which is the hallmark of the northern Archaic Tradition, but a radiocarbon determination which temporarily places the tradition to 2070 ± 65 B.C. This provides the first documented age for the Northern Archaic Tradition in this region of Alaska. Two, and quite probably three, subsequent occupations of the site hold critical data which may explain the transition (or lack there of) between Northern Archaic Tradition peoples and precontact Athapaskan culture, which may be represented by the material cultural remains recovered from Component I and dated to A.D. 550. Further work at this site is certainly warranted.

(r) Systematic Testing of HEA 175, Butte Lake Outlet Site

Location: See section 3.7 (a-ii).

Testing: Five 1 m test squares were excavated at locus A of the site (Figures 145, 146).

Discussion:

All test squares at the site yielded cultural material although the number of artifacts per square varied greatly. Surface material was

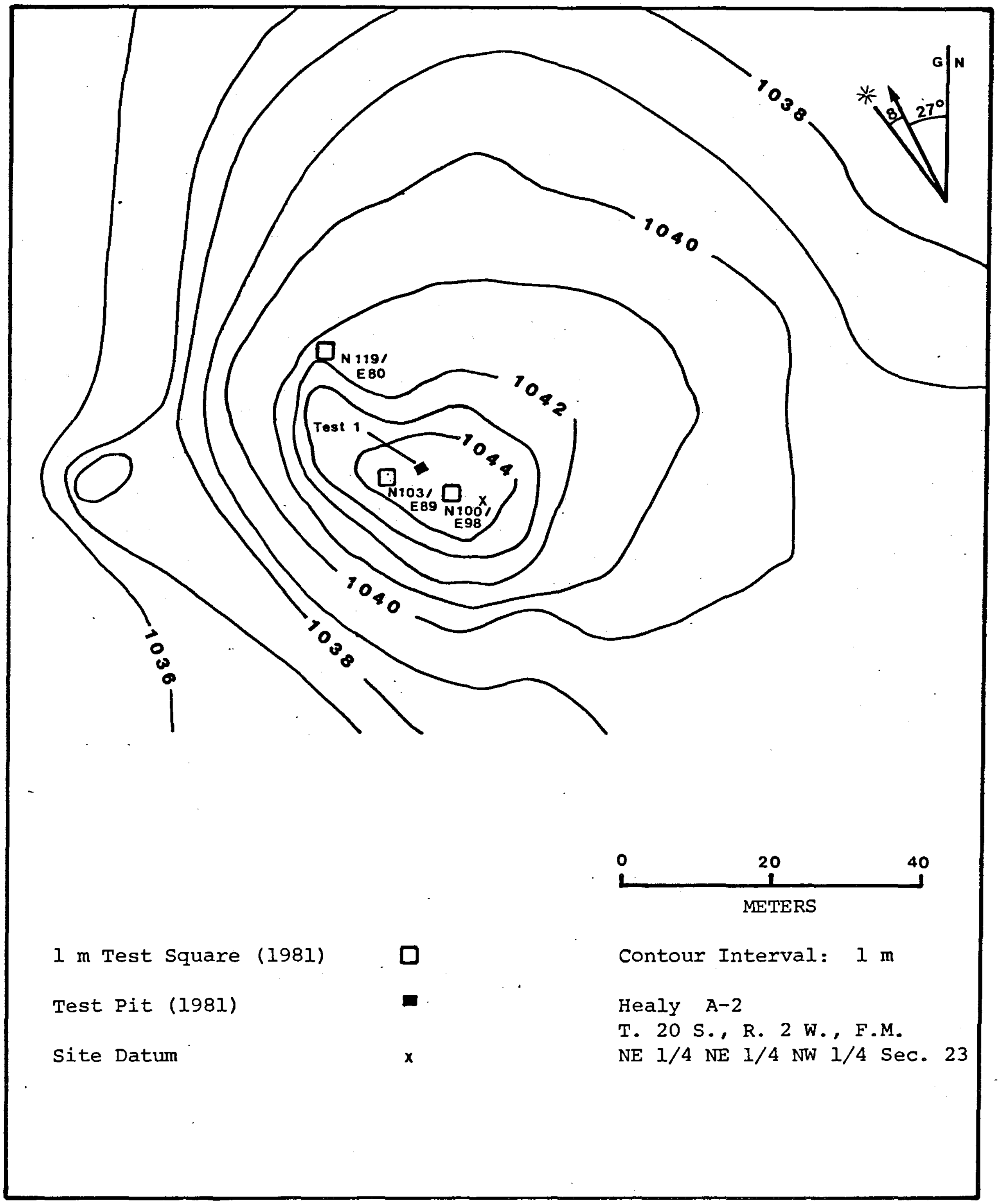


Figure 145. Site Map Locus A HEA 175.

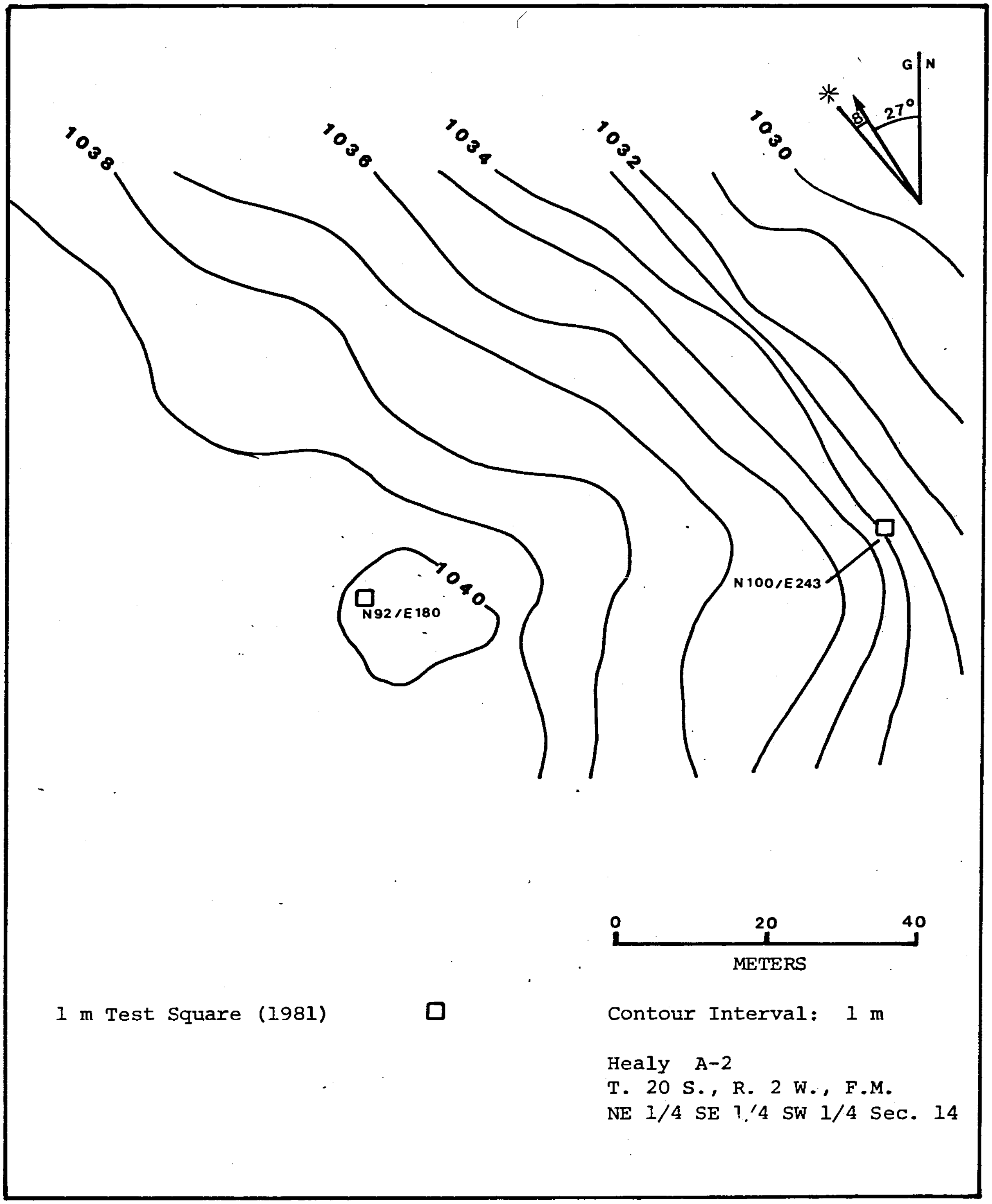


Figure 146. Site Map Locus A (continued) HEA 175.

plentiful and waste flakes of varying lithologies were the predominant artifact type. Thirteen surface artifacts were collected during the systematic testing phase: 1 lanceolate projectile point base, 1 burinated flake, 1 notched, serrated flake, 1 biface fragment, 2 fragments of a retouched blade, 3 microblade fragments, 1 flake core, and 1 questionable flake core.

A total of 336 subsurface artifacts was recovered at locus A, the only locus tested. Like the surface material, the subsurface assemblage consisted primarily of flakes. However, there were 13 artifacts that were not flakes, including 1 side-notched projectile point or knife, 1 side-notched projectile point or knife base, 1 biface fragment, 1 blade, 6 microblade fragments, 1 blade core tablet, and 1 retouched flake. Four bone fragments, one of which could be identified as a caribou metapodial (Rangifer tarandus), were also recovered.

Two types of stratigraphic profiles were evident at the site. Characteristically, in locales of higher topographic relief the stratigraphy was dominated by sand and gravel, probably fluvial in origin, while in locales of lower topographic relief the stratigraphy was characterized by what appear to be lacustrine sands and silts (Figure 147, Table 60).

Cultural material was found in most of the soil units from squares excavated in locales of higher relief. Artifacts seem to be limited to the upper disturbed zones in areas of lower relief. Of special note is the occurrence in glaciofluvial deposits of a large retouched flake and a blade. These two artifacts show evidence of transport and it is possible that they were redeposited in these lower levels through rodent activity or by ice action along the lake margin.

Locus B was not tested due to the lack of time and the meger results during reconnaissance testing. Because of the homogeneity in soil units, at locus A, the test squares could not be excavated by nature levels and consequently arbitrary 5 cm levels were excavated within soil

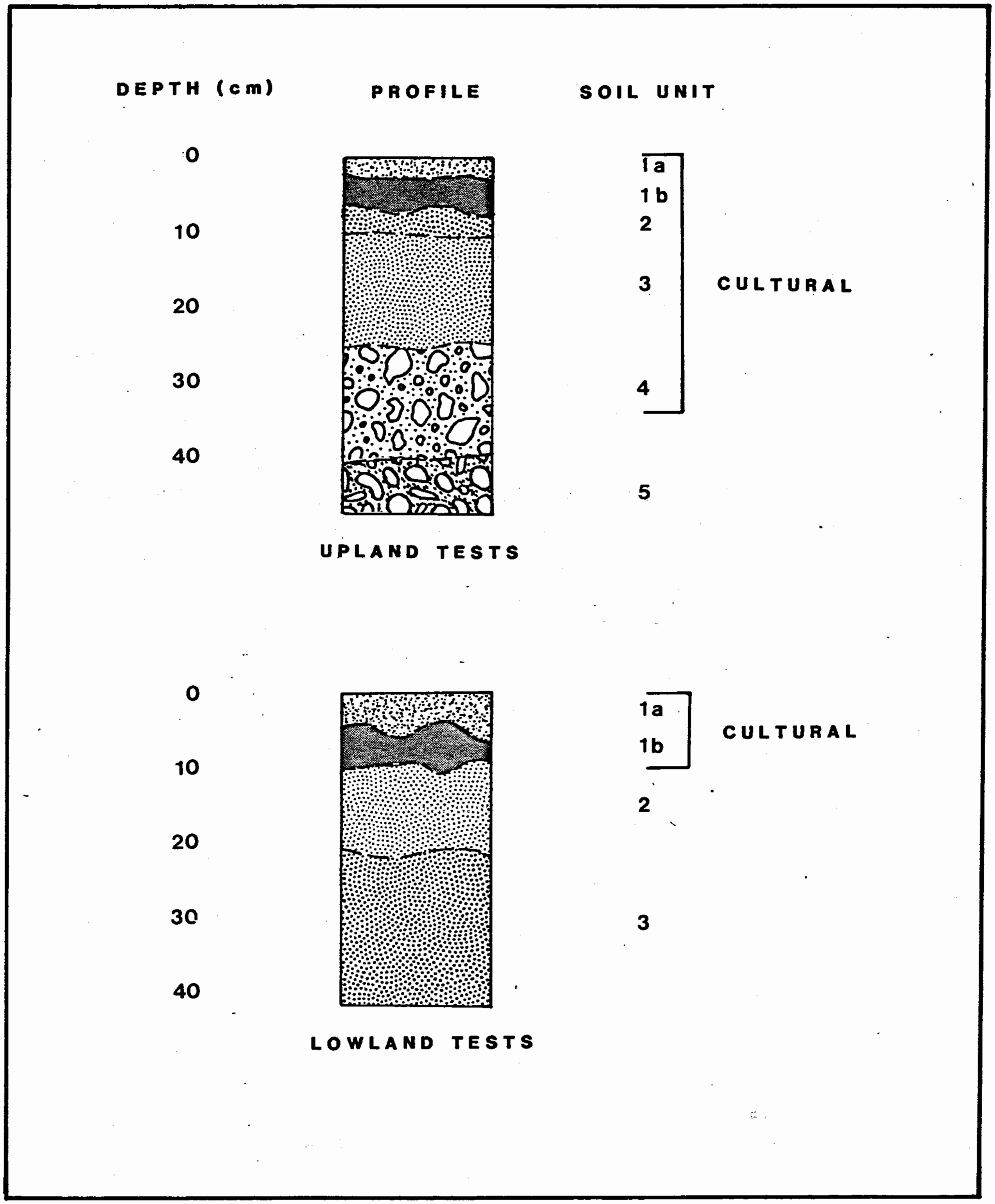


Figure 147. Composite Soil Profile HEA 175.

TABLE 60

SOIL DESCRIPTIONS FOR COMPOSITE SOIL PROFILE, HEA 175

Soil Unit	Description
Upland Profile:	
1A	Organic mat, variable in thickness though continuous in extent; include lichens, roots, and finely divided organics (i.e., both A- and O-horizons).
1B	Mixed organics, sand and silt; gradational with 1A; fairly clear but irregular contacts with unit 2; mixture of sediments probably a function of rodent activity (7.5 YR 5/2 brown).
2	Sand; discontinuous with contacts that vary from clear to indistinct; poorly sorted, medium to fine grain size, at times with significant organic content (10 YR 3/2 very dark grayish brown; if organic content 10 YR 2/2 very dark brown).
3	Sand, medium grain size; poorly sorted with granules and gravels; gradational contacts; rodent disturbance continuous to this depth (5 YR 3/3 dark reddish brown).
4	Sand, medium to coarse grain size with grains, pebbles and cobbles; gradational contacts (10 YR 3/3 dark brown).
5	Sand, coarse grain size wit pebbles and cobbles (10 YR 6/4 light yellowish brown).

TABLE 60 (Continued)

Soil Unit	Description
Lowland Profile:	
IA	Organic roots, lichen and finely divided organic material; variable in thickness and often grades into unit IB, includes both A- and O-horizons.
IB	Organic layer intermixed with sand and silt apparently old, collapsed, infilled rodent holes, variable in thickness often gradational with unit II, solifluction evident in N100/E243.
II	Silty sand (5 Y 6/3 pale olive), fairly well sorted, some bedding may be in evidence in N100/E243, some pebbles present, contacts clear and undulating.
II	Sand; grades from fine to medium grained sand, homogeneous in color; no bedding apparent, some lenses of coarse sand within it.

units. Test squares were excavated to greater depths than was usual during the field season for two reasons: 1) the unexpected appearance of artifacts in glacial deposits and 2) to obtain a complete stratigraphic profile of post glacial deposits to aid in interpretation of the sediments.

The stratigraphy at locus A is unlike that found in other sites tested in 1981. It is anomolous for three reasons: 1) apparent lack of tephra deposits, 2) presence in a single site of lacustrine and fluvial soil/sediment units and 3) extensive disturbance by ground squirrels. Two composite profiles were drawn for the site (Figure 147). One profile summarizes the soil units found on the knoll in locales of higher relief while the other illustrates the units found in the lower elevation test squares.

The ridge on which the major portion of the site is located appears to be comprised of glacial outwash deposits. The origin of the deposits in test square N119/E80 and N100/E243 is less obvious from the soil profiles. An area near N100/E243 that had been excavated by a bear provides better information on the nature of these sandy sediments. A series of parallel bedded sands and silts was exposed in the cross section of this cut and these units grade into a well sorted basal sand. It is probable that these sediments are lacustrine and of clay-rich lacustrine sediments that occur near locus B. Both these data suggest that Butte Lake may have been more extensive in the past.

The upper portion of all stratigraphic sections is disturbed by bioturbation and/or cryoturbation. In the lower sections, especially N100/E243, this disturbance is seen as a homogeneous upper sand layer that has a rather abrupt contact with lower, less disturbed, silty and sandy sediments. The sections on the knoll tops are extensively disturbed by rodent activity.

Evaluation

Located in a constricted valley which forms a major north-south corridor, HEA 175 occupies a strategic location for harvesting caribou and other animals concentrated by natural topographic constrictions. The site location also may suggest fishing and exploitation of waterfowl. The types of artifacts found indicate repeated use of this area through an extensive period of time because artifact types characteristic of a number of culture periods are represented (i.e., blades, microblades, burins and notched projectile points). Unfortunately the degree of disturbance, and relative homogeneity of most of the sediments at the site, make it extremely difficult to correlate stratigraphy from one test square to another or even to accurately define artifact association within any particular square.

No material was found suitable for radiocarbon dating and the stratigraphy appears to be so disturbed that definition of archeological components and the relative ages is problematic. Table 61 summarizes the cultural material recovered by test square. Extensive excavation is required to adequately resolve the stratigraphic problems associated with this site.

In addition to the cultural material summarized in Table 61, artifactual material was present on many surface areas of locus A. This material was comprised mostly of flakes of varying lithologies. It was decided to collect potentially diagonostic artifacts from the surface because of the amount of rodent activity that could potentially rebury this material. Table 62 summarizes this material.

The disturbed nature of the sediments, coupled with the limited testing over a large area, makes it difficult at this time to separate associated artifacts in time and/or in space. The data from this site, however, are sufficient to structure several questions concerning the prehistory of the Susitna drainage: 1) the relationship of notched

TABLE 61

ARTIFACT SUMMARY BY TEST SQUARE, HEA 175

N119/E80:	Microblade fragment (UA81-20-411) proximal end, material unknown. Flake with unifacial retouch along one edge (UA81-200-364), basalt, retouch heaviest in notched area of flake, similar to UA81-200-313 from N103/E89.
N100/E98:	Core tablet (UA81-200-253), basalt, rectangular in shape, tablet removed by blow from side. Notched point (UA81-200-348), material unknown, asymetrical, basally thinned ground notches, side notched. Notched point (UA81-200-340), chert?, resharpened, side notched, basally thinned, ground in notches.
N100/E243:	Retouched flake (UA81-200-134) siltstone minor retouch on part of one edge. Retouched flake (UA81-200-61) chert?, minor retouch on part of one edge. Microblade fragment (UA81-200-128), basalt midsection, weathered, 1 axis indistinct but clearer in cross section. Biface fragment UA81-200-373) scraper, basalt or metabasalt, bifacial retouch on flake fragment, low angle edge, wear evident with hand lens. Possible core tablet (UA81-200-363), basalt, very small (c. 1 cm), 3 potential remnant facets from microblade removal somewhat doubtful.

TABLE 61 (Continued)

N103/E89:	Flake (UA81-200-313), basalt, large and irregular with retouch along one edge, in particular on squarish protrusion of edge similar to UA81-200-364 from N119/E80. Blade fragment (UA81-200-406) unknown material, proximal end, highly battered and weathered. Microblade fragment (UA81-200-332), distal end, material unknown. Flake (UA81-200-319), unknown material possible burination on one edge.
N92/E180:	Biface fragment (UA81-200-305), gray chert. Core/uniface (UA81-200-200), unknown material but granular (igneous origin?), extremely weathered, appears that large flake was attempted to be removed from a core and fractured poorly; some retouch (?) along edges. Core/chopper (?) (UA81-200-281), unknown material similar to UA81-200-200, blocky in appearance tapering to wedge shape, interesting in terms of its rough resemblance to Tuff Creek (TLM 027) cores, if flat edge is a platform not much involved in platform preparation, flakes coming off from several directions, could be a "geofact" but other cobbles in this square were not this angular or blocky (note: N100/E98 had more angular drift material).

TABLE 62

ARTIFACT SUMMARY, SURFACE MATERIAL, HEA 175

Core (?) (UA81-200-371) N98/E103
Cryptocrystalline material, large and small flakes removed from rock to give wedge-shaped appearance in cross section.

Flake (UA81-200-370) N99/E103
Rhyolite, large fragment, hinge fractures and battering along portions of two edges.

Flake core (UA81-200-368) N133/E114
Chert

Biface fragment (UA81-200-373) N93/E179
Bifacially retouched flake unknown material.

Projectile point base (UA81-200-372) N98/E103
Banded rock, bifacially retouched, basally thinned base looks like elongated tang with point flaring at point of breakage.

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points and microblades, 2) the occurrence of retouched irregular shaped flakes that are similar to finds at Blair Lake (central Tanana Valley), 3) the appearance of what appears to be a crude uniface and chore/chopper in glacial deposits, and 4) the possible association of a blade with the uniface and chopper. Unfortunately the data is too limited to draw any conclusions about the archeological stratigraphy, or assemblages at this site.

5 - GEOARCHEOLOGY

5.1 - Geoarcheologic Terrain Unit Mapping

After regional reconnaissance mapping, the geoarcheologic units were revised and remapped twice to assist in selecting and evaluating survey locales, and archeological site unit descriptions are included as Appendix B. Unit descriptions are included as Appendix B. Units were crudely divided by age (Glacial and Holocene) into two first order categories. Second order categories include rock surfaces (R), drift (D), ice contact terrain (I), outwash (O), lacustrine (L), valley wall features (V), alluvium (A), slope deposits (S), and marshy bog areas (M). Geological units and subunits, as described in this section and in Appendix B, were mapped directly on aerial photographs. These photographs are on file at the University of Alaska Museum.

Units mapped as glacial (G) in age include all erosional or depositional surfaces modified by ice during glaciation. The highest peaks in the study area, many of which stood above the limit, are also included as glacial units because their surfaces were intensely effected by frost shattering and mass movement at that time. Units mapped as Holocene (H), include all those of non-glacial origin that clearly post-date final ice wastage in the valley bottoms.

Rock surfaces (R) include all those modified by glacier erosion. Surfaces are commonly rounded, but include some open flat areas, and some very steep slopes. Drainage is usually excellent, and soil cover minimal. Tundra vegetation is usually thin and patchy. Unit R is divided into four subunits: hills (h), surfaces (s), valley walls (b), and drift covered (d). Subunit h indicates that the rock unit described occurs as part of an isolated hill or complex of hills. Subunit s indicates where horizontal or sloping bedrock exists in varying relief from S_1 (low local relief) to S_3 (high local relief). Subunit b is used where rock occurs as part of a broadly sloping valley wall, most commonly that of an abandoned glacial trough. Subunit _d_ indicates where patchy drift occurs on rock surfaces, but where the bedrock structure still controls the local relief.

Drift surfaces (D) are those areas of low local relief thickly mantled with glacial till. Because the till is commonly dense, silt rich, and impermeable slopes are typically poorly drained and tussock covered. Subunit _t_ indicates where the drift is thick, obscuring all bedrock structures. Local relief is very low, but gullying is common. Subunit _p_ refers to patchy drift. Poorly drained areas dominate, but they are interspersed with well drained, usually high relief bedrock areas. Subunit _u_ refers to undifferentiated drift. Surfaces generally are nearly flat and poorly drained, but commonly contain irregular zones of hummocky ice contact stratified drift (icsd) that are locally well drained.

Unit (I) indicates concentrations of ice contact stratified drift, which formed over broad areas by deposition associated with stagnant ice. Surfaces are generally gravelly, windswept, free of dense vegetation, and very well drained. Ridges and mounds of irregular pattern are the most common, but elongate features such as individual glacial moraines and eskers are also included within this group because all features grade one into another. Subunit _o_ refers to open hummocky areas where the icsd has subdued local relief. Broad swales and mounds form the dominant pattern. Surfaces are only moderately well drained and generally brush-covered. Subunit _t_ indicates areas of tightly nested ridges and swales in a dense well-drained chaotic pattern. Subunit _p_ refers to patchy areas of well drained gravelly icsd overlying bedrock. Relief is generally low, but sharp.

Glacial outwash (O) mantles areas of low gradient with little surface relief. Surfaces are generally well-drained and forest- or brush-covered. Subunit _p_ indicates broad areas of continuous outwash plains. Subunit _v_ indicates valley train deposits consisting of low flat valley-bottom outwash. Subunit _f_ indicates fans of outwash, commonly at the mouths of tributaries that carried glacial meltwater.

Lacustrine (L) surfaces are generally low, very poorly drained areas mantled with fine grained lake deposits. Earthflows typically occur where slopes are greater than several degrees, but generally the surfaces are stable, and tussock-covered. The subunit m is used where lacustrine deposits mantle the underlying land forms, but not obscure them. Subunit s is used where the deposits are thick enough to obscure the underlying land forms completely.

Areas mapped as (V) indicate those steep slopes which resulted from either Holocene downcutting or from Holocene modification of existing steep slopes by colluviation. These areas are typically cut into bedrock, but thick deposits of drift form the upper parts of the valley walls in many areas. Subunit g is used where the valley walls along the Susitna River or in tributaries are densely dissected by gullies. Terrain is very steep and irregular. Subunit s indicates where steep valley walls are not greatly dissected. These areas often contain a thick mantle of colluvium at the bases of slopes.

Alluvium (A) indicates coarse gravel surfaces of low relief that formed from fluvial deposition. Surfaces are generally well drained, thickly sloping, and exhibit gentle gradients. Subunit s refers to alluvial terraces along the Susitna River. These terraces commonly exhibit well defined overflow drainage channels. Recent alluvium that forms the forested gravel bars of the Susitna River was not mapped separately. Subunit t refers to tributary floor and fan alluvium. These terraces discontinuously mantle the floors of many tributaries.

Slope deposits (S) indicate those large areas thickly mantled by or modified by slope deposits or processes, respectively. These areas are invariably poorly drained, and are mantled by non-sorted mixed deposits. Subunit c indicates colluvial slopes, commonly near the base of steep valley walls. Subunit s indicates areas overlain by solifluction deposits.

Areas mantled by organic accumulations which occur in expansive bogs are indicated by Unit (M). These areas are still essentially undrained, and contain numerous small ponds.

5.2 - Stratigraphic Framework

River bluff exposures provided an excellent opportunity to partially interpret the evolution of the Susitna Valley. A brief description of the sediments exposed in the region is followed by a more detailed discussion of those exposures that have been radiocarbon-dated.

Portage Creek was the farthest west tributary studied. The creek exposes little sediment more than 20 km upstream, but sediments were common between 5 and 15 km upstream. They consisted of dense silty till, clay-rich lacustrine sediments, and coarse outwash, and suggest that Portage Creek was at one time covered by a proglacial lake.

Between Portage and Devil Creeks the valley walls are composed almost entirely of bedrock, but significant thicknesses of glacial sediment mantle the valley bottom and are exposed at river level. Just downstream from Devil Creek 5-20 m of coarse bouldery gravel overlies glacial till and oxidized fluvial sediments. Eskers are common at the surface. Just upstream from the proposed Devil Canyon damsite 30-40 m of silty icsd and possibly till occur to river level. These sediments collectively indicate that Devil Canyon was carved some time before glaciers left the area, and that much of the valley may have been carved prior to glaciation. The valley here carried glacial meltwater westward during subsequent ice stagnation.

Between Devil Creek and Fog Creek morainal deposits and till mantle the broadened valley floor. Eskers and ice contact drift are common, but exposures are generally poor. Between Fog and Tsusena Creeks exposures are better, but generally exhibit only lacustrine and morainal icsd over a dense till and bedrock substrata. Good exposures of glacial sediment become even more rare between Tsusena and Watana Creeks, as the valley walls steepen and bedrock occurs at the surface. Near and upstream in Watana Creek significant thick masses of surficial sediment are present and excellently exposed. Lacustrine deposits typically occur above till throughout this area but large masses of icsd are also present. Between Watana Creek and the drainage of Clarence Lake, the valley is very broad, hence exposures are generally low. They exhibit lacustrine and morainal icsd, till, and outwash, and become better exposed to the east. Between the Clarence Lake drainage and the steep V-shaped canyon (Vee-Canyon) exposures of deltaic and ice contact sediments extend nearly the full height of the valley in some areas. Clearly the receding glaciers deposited much material here, much of it in proglacially ponded lakes.

Between Vee-Canyon and Goose Creek, sediments are exposed only near the base of the valley walls. There they exhibit interlayered till, lacustrine, and gravel units that suggest a complicated glacial history for this area. In the area of intense meandering of the Susitna River near the Oshetna River a number of excellent exposures are present. They contain lacustrine deposits, outwash, icsd, and till and indicate a prolonged glacial history in which outwash deposition was dominant. Deposition has been the rule here, rather than glacial erosion. East of the meander zone the valley opens up into a broad basin floored with glacial moraines and lacustrine deposits. Sandy deltaic and silty glaciolacustrine deposits are widely exposed.

Four exposures contained organic horizons that have been radiocarbon-dated (Table 5). These dated sediments provide a chronologic framework to which undated sediments and inferred events can be correlated.

Tyone Bluff is a 200 m long river bluff that exposes 53 m of deposits of variable origin (Figure 148). The oldest layer (Unit 1) is layered with rhythmically bedded silt and fine sand which is interpreted to be glaciolacustrine. Unit 2 is 13 m of ripple marked, cross bedded, and interbedded fine sand and silt that gradationally overlies Unit 1 and is interpreted as basin-margin lacustrine sediment. Detrital wood fragments from an allochthonous peat horizon in a fluvial lens near its top yielded a date of $31{,}070\,^{+860}_{-960}$ ^{14}C yr BP. Fine gravels of Unit 3 may represent continued fluvial deposition in the basin after it filled or possibly after it drained. The collagen fraction from a mammoth (?) limb bone from near the top of Unit 3 yielded a radiocarbon date of $29{,}450 \pm 610$ ^{14}C yr BP. Unit 3 grades upward into the cross-bedded sand

TABLE 5. RADIOCARBON DATES PERTAINING TO REGIONAL STRATIGRAPHY - SUSITNA VALLEY

^{14}C yr BP	MATERIAL	LOCATION	SIGNIFICANCE
2210 ± 70 (DIC-1858)	Compressed Wood	Earthflow Bluff (2 km South Fog Creek)	Minimum age for valley-floor drift.
3200 ± 195 (DIC-1860)	Woody Peat	Tyone Bluff (1 km up Tyone River)	Close minimum age for tephra.
11,535 ± 140 (BETA-1821)	Peaty Silt	Thaw Bluff (2 km upstream from Tyone River)	Close minimum age for last glaciation.
21,730 ± 390 (DIC-1861)	Woody Peat	Tyone Bluff	Maximum age for last glaciation.
24,900 ± 325 (BETA-1822)	Large Wood Fragment	Oshetna Mouth (0.5 km west Oshetna River)	Recessional ice contact stratified drift.
29,450 ± 610 (BETA-1819)	Collagen from Mammoth(?) bone	Tyone Bluff	Interstadial gravel deposition.

TABLE 5. continued

30,700 $^{+260}_{-1230}$ (DIC-1859)	Large Wood Fragments	Earthflow Bluff	Maximum age for last glaciation.
31,070 $^{+860}_{-960}$ (DIC-1862)	Detrital Wood Fragments	Tyone Bluff	Fluvial reworking of basin-margin glaciolacustrine sediments.
32,000 ± 2735 (BETA-1820)	Detrital Wood Fragments	Thaw Bluff	Fluvial reworking of basin-margin glaciolacustrine sediments.

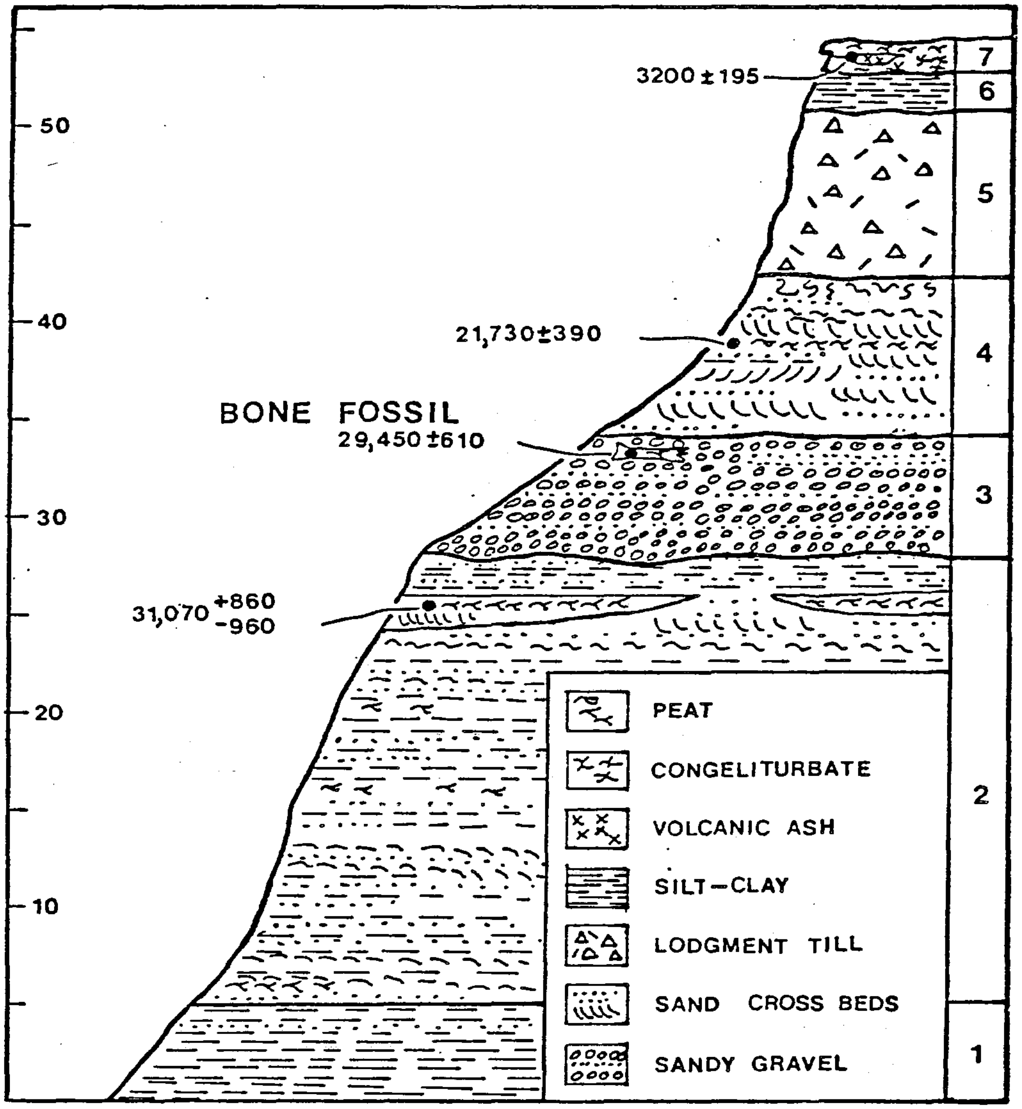

Figure 148. Generalized Stratigraphic Section of Tyone Bluff.

of Unit 4. The upper 2 m of Unit 4 is silty possibly reflecting glaciolacustrine deposition. A date of 21,730 ± 390 ^{14}C yr BP was obtained from a peat horizon in Unit 4. Unit 5 is a 9 m-thick massive dense lodgment till. Unit 6 is laminated silt and clay with dropstones, indicating a glaciolacustrine origin. Unit 7 consists of silty organic colluvium that contains a white vitric volcanic ash layer near its top. The ash is overlain by a dense surface peat which yielded a basal radiocarbon date of 3200 ± 195 ^{14}C yr BP.

These deposits are interpreted to indicate the progressive filling or draining of a large proglacial lake followed by fluvial deposition and overriding of the area by glacial ice. During deglaciation the area was submerged below a vast proglacial lake. Reworking of the older sediments and ash deposition characterized Holocene time. The four radiocarbon dates indicate that glaciation may have been initiated sometime before about 31,000 yr BP but that the Tyone lowland was not ice covered until sometime after about 21,700 yr BP. Glaciers probably occupied the area for a long time, but clearly retreated prior to 3200 yr BP.

Thaw Bluff lies along the Susitna River about 1 km north of Tyone Bluff (Figure 149). It exposes a lower massive unit of varved glaciolacustrine sediments (Unit 1), the top of which was slightly reworked and contained small wood fragments that yielded a date of 32,000 ± 2735 ^{14}C yr BP. The cross-bedded fluvial sand of Unit 2 overlies the lacustrine deposits in sharp angular unconformity. The upper unit (3) is interpreted to be thaw lake sediments or organic fluvial silt that was deposited after glaciation of the region. It yielded a date of 11,535 ± 140 ^{14}C yr BP.

The lower lacustrine sediments of Thaw Bluff are clearly correlative to similar deposits in Tyone Bluff, and indicate glaciolacustrine conditions as early as 32,000 yr BP. The fluvial sand unit probably represents reworking of the bluff area during deglaciation. The date of about 11,500 yr BP indicates that this broad area, which was covered by at least several hundred meters of ice was completely deglaciated prior to Holocene time.

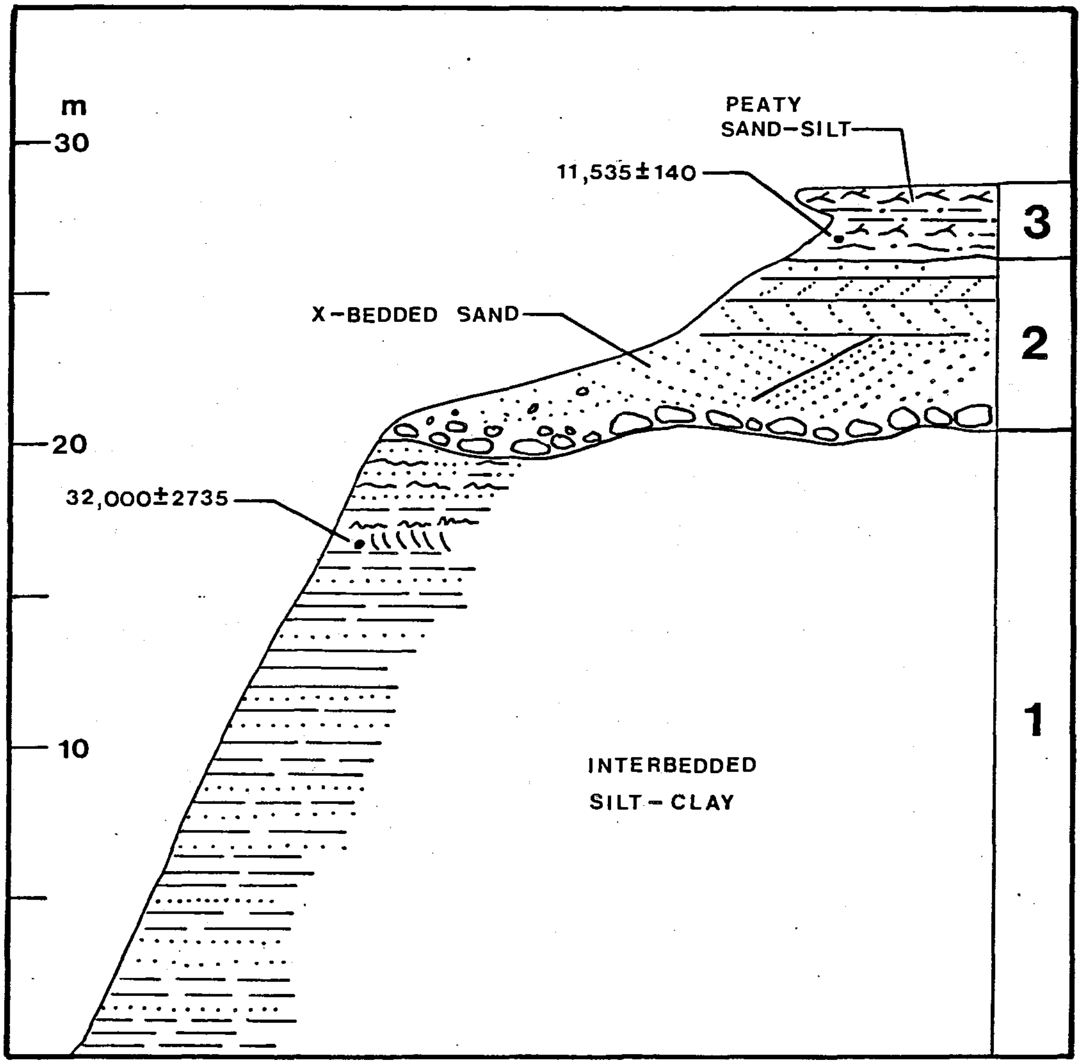

Figure 149. Generalized Stratigraphic Section of Thaw Bluff.

Oshetna-mouth Bluff, which lies along the southern Susitna Valley wall just downstream from the Oshetna River, is an enigmatic exposure (Figure 150). The bulk of the sediments to the upstream side are poorly sorted and bouldery, and are interpreted as ice contact drift deposited in a northerly direction from an active glacier. Discrete organic layers in the drift contained several large wood fragments which yielded a date of 24,900 ± 325 ^{14}C yr BP. These deposits grade downslope into sandy well washed, faulted deposits interpreted as ice-contact deltaic in origin. These sediments are underlain by a till layer interpreted as lodgment in origin, which in turn overlies clearly varved deformed glaciolacustrine deposits. A thin and poorly defined till layer occurs near the top of the bluff, but it cannot be determined whether this is a lodgment till or flow till layer. A large cut-and-fill wedge of coarse bouldery gravel to the north end of the exposure is interpreted as outwash that was deposited during deglaciation.

The drift containing the dated wood sample is interpreted as recessional in origin, yet it indicates active glaciation at a time in which non-glacial conditions were present at Tyone Bluff. It is possible that the Oshetna Valley glacier acted as a separate and out of phase glacier system with respect to glaciation of the lowland to the east. The till at the top of the exposure may be all that remains of a once more extensive till layer that may have formed when glacier ice inundated the entire area some time after 21,000 yr BP.

Earthflow Bluff is located 2 km south of the mouth of Fog Creek, about 70 km west of the other dated exposures (Figure 151). Oxidized sandy fine fluvial gravel near the base of the exposure contains abundant pieces of large wood, and is interpreted as interstadial in character. A date of 30,700 $^{+260}_{-1230}$ ^{14}C yr BP was obtained from near the base of this unit. The interstadial sediments are overlain by thin horizons of well washed medium sand and laminated clay which are interpreted as separate recessional ice contact facies. The bulk of the sediments at Earthflow Bluff are poorly sorted, bouldery and poorly washed sediments with a slight westerly dip. They are interpreted as a massive accumulation of

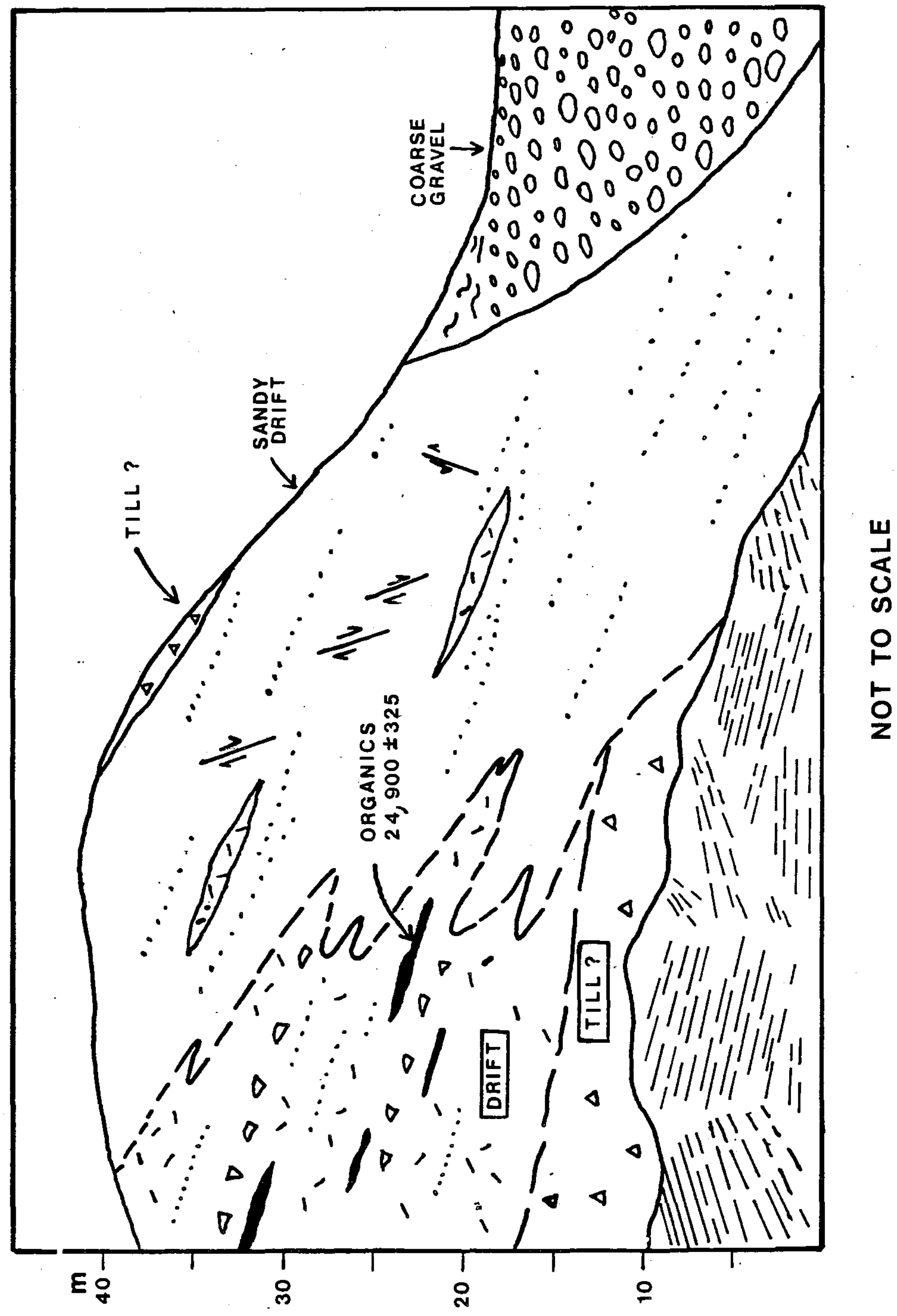

Figure 150. Generalized Stratigraphic Section of Oshetna-Mouth Bluff.

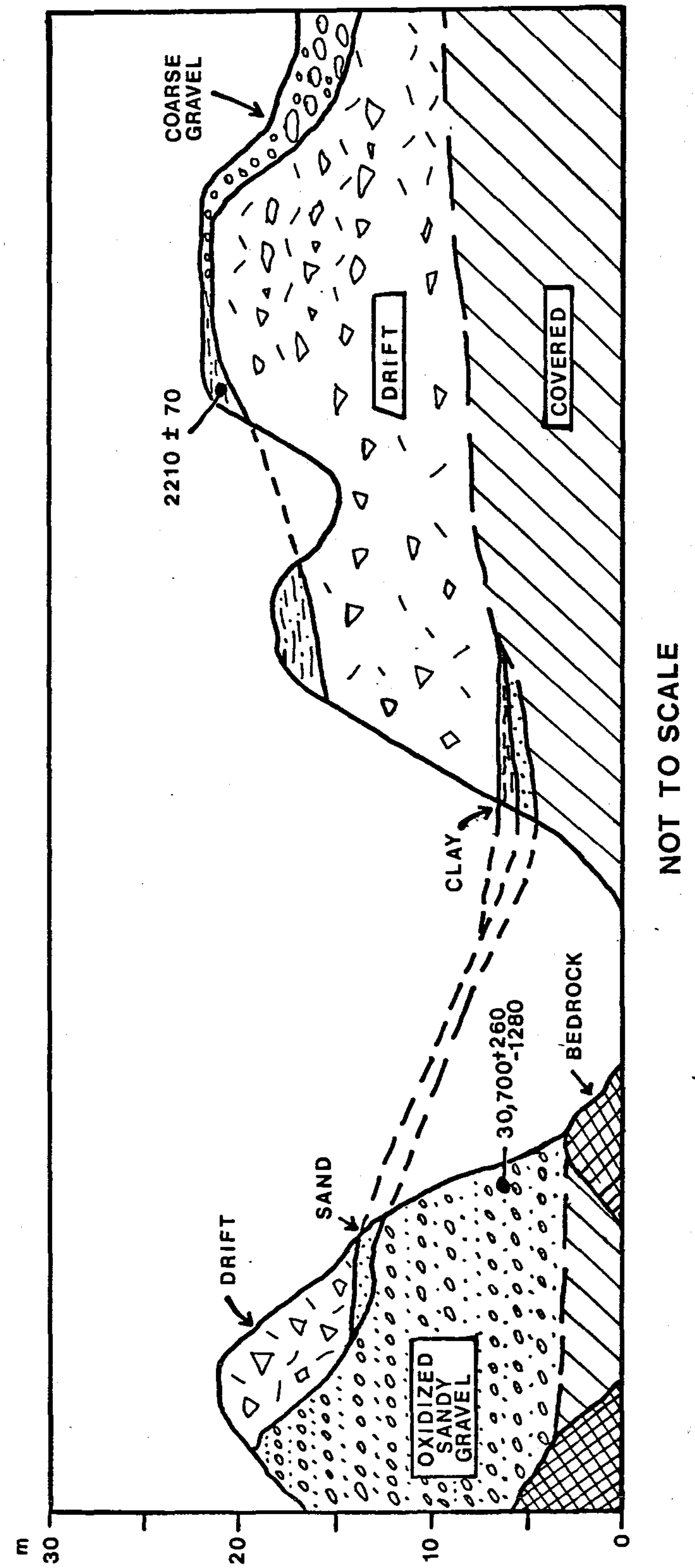

Figure 151. Generalized Stratigraphic Section of Earthflow Bluff.

ice contact drift deposited in the valley bottom during eastward glacier recession. Cut into and overlying the massive drift is an outwash terrace composed of bouldery gravel, which is interpreted to have been deposited during the final phases of glacial retreat from the valley. Overlying the gravel is a lens of organic-rich silty sand which is interpreted as pond sediments. A radiocarbon date of 2210 ± 70 ^{14}C yr BP from this horizon indicates that these sediments are late Holocene in age.

The oldest date from Earthflow Bluff indicates that nonglacial conditions there continued more recently than in the areas near the Tyone and Oshetna Rivers. Glacial conditions were not evident there until some time well after 30,700 yr BP. Glaciers advanced from the east, covering much of the valley free of interstadial sediments and depositing till on the higher slopes. Eastward glacial retreat which occurred some time prior to 2200 yr BP was probably slow, as suggested by the large volume of morainal material in the valley bottom.

5.3 - Preliminary Glacial-Geomorphologic Mapping General Comments

The location, orientation, altitude, and state of development of glacial moraines, ice marginal meltwater channels, lake shorelines, kame-deltas, eskers, and ice flow indicators can all be used to reconstruct the glacial history of the region. These features are now being mapped on the U-2 images and transferred to a 1:250,000 scale base, but the map is not yet ready to be included in this report. A complete description of all glacial-morphologic features studied is beyond the scope of this report but a brief summary of them will be presented.

Deposits of at least two and possibly four major ice advances are recorded on hills which projected above all glacial limits. In areas where slopes are not too steep, such as near the headwaters of Jay Creek, these features are particularly well preserved.

Valley floor gradients, moraines, meltwater channels, and directional indicators resulting from the last major glaciation indicate that the pattern of glacial flow was very complex. Each major valley contained its own glacier system, and these merged to form large coalesced lobes in the broad floor of the Susitna Valley between Stephan Lake and Watana Creek. A major lobe of ice which advanced southward and eastward from the headwaters of the Susitna and MacLaren Rivers, respectively, inundated the lowland near the Tyone and Oshetna Rivers. This lobe of ice built upward until it spilled westward as a tongue of ice through the narrow canyon east of Kosina Creek. This tongue of ice may have been joined by an ice tongue which occupied Jay Creek.

Another major ice source was the southeast drainage valleys of Watana, Tsusena, and Deadman Creeks, which carried local valley glaciers as well as overflow ice drainage from the north. The Talkeetna River-Fog Creek area was another major ice source. Glaciers which descended these valleys merged to build a large northeast flowing ice lobe that may have extended across much of the broad valley bottom in this area. A portion of this lobe spilled westward through the Devil Canyon area where it merged with a large southeast-flowing glacier in the valley of Portage Creek. Glaciers in the valleys of the Oshetna River and Kosina-Tsisi Creeks may not have advanced to join the main ice stream, but ice drainage from these valleys spilled over low divides to join other systems.

The pattern of deglaciation was different for each separate system and very complicated. Several readvances have been recognized for some valley glacier systems. The great bulk of recessional ice contact drift and the large number of recessional moraines indicates that retreat in many areas was progressive and systematic. In other valleys, particularly in the smaller systems, retreat must have been relatively rapid.

The widespread occurrence of eskers and other ice stagnation features over broad areas indicates that the ice may have stagnated over large areas during retreat. The gradient of eskers is commonly reverse relative to modern drainage, indicating that glaciers controlled drainage during retreat. Widespread lake deposits, particularly in the Fog Lakes-Watana Creek and Tyone-Oshetna River areas, indicate that these areas were covered by large proglacial lakes during deglaciation.

Examination of moraines fronting cirques in the Kosina Creek-Black River areas indicate that Neoglacial advances were very small, not extending more than several km beyond the present glacier margins.

5.4 - The Last Glaciation

The last major glaciation (late Wisconsin time) occurred over much of Alaska between 32,000 and 13,000 years BP. Deposits in the Susitna Canyon area can be correlated to this interval as the basis of topographic "freshness", stratigraphic relationships, and radiocarbon dating.

Glaciers are interpreted to have covered much of the lowland regions of the study area during late Wisconsinan time. At the maximum extent of glaciers the Susitna Canyon area was covered by a complex glacier system that resulted from confluent ice tongues and lobes which behaved as individual units.

During initial glaciation, major ice masses began building up in three separate locations; the southern Alaska Range, and the northern and southern Talkeetna Mountains. The largest accumulation occurred along the southern flank of the Alaska Range and the Clearwater Mountains. As ice built up vertically it advanced southward down the upper Susitna and Mclaren River valleys, forming large lobes that extended up the valley of Coal Creek and in the Tyone River region. The lobe did not extend beyond the mouth of Tyone River until about 22,000 years BP. During the southward advance of glaciers generated from the southern Alaska Range, ice also accumulated in the central Talkeetna Mountains in the headwater regions of Kosina and Tsisi Creeks and the Black and Oshetna Rivers. Following initial valley glaciation of these regions a large ice cap, centered over the southern Talkeetna Mountains formed. Large lobes in the valleys mentioned earlier advanced northward toward the Susitna Canyon. A third accumulation loci was the northwestern portion of the Talkeetna Mountains north of Devil Canyon. Major valley glaciers in this area drained down the valleys of Deadman, Tsusena and Portage Creeks from a localized ice cap.

As ice from the southern Alaska Range built up above altitudes of about 3000 feet, it spilled through the structurally controlled valleys of Coal, Jay and Butte creeks and then advanced southwest to the Susitna Canyon. The southernmost part of this ice mass built a large lobe near the Tyone lowland which was deflected west-northwest down Susitna Canyon by lobes advancing northward down the Oshetna River Valley. Ice derived from the northwest Talkeetna Mountains advanced southwest where it merged with northeast flowing ice derived from the ice cap which existed near the present upper Talkeetna River Valley, north flowing ice generated from the southern Talkeetna Mountains flowing down the valleys of Tsisi and Kosina Creeks, and west-northwest flowing ice extending down the Susitna Canyon from the Oshetna and Tyone lowland lobes. Thus, glacial drainage during the late Wisconsin glacial maximum was centripetal toward the Fog Creek--Watana Creek lowland. Ice did not cover this area until some time after 31,000 years BP.

The distribution of moraines in this area indicate that following the glacial maximum the lobes withdrew at different rates. Glaciers advanced northeast across the Fog Creek--Watana Creek lowland to a terminal position near Big Lake after the south flowing transection glaciers withdrew. Following withdrawal of this secondary lobe, west-flowing glaciers in the Susitna Canyon, fed largely by north flowing tributary glaciers, advanced to terminal positions near the mouth of Tsusena Creek. Valley glaciers draining Tsusena Creek also experienced readvance at this time.

Following these dynamically controlled readvances, glaciers may have disappeared rapidly over much of the region. The great number of convex westward recessional moraines in the Susitna Canyon between Fog Lakes and the Oshetna River indicate that active recession of "live" ice persisted in this area. Prominent moraines of nearly identical surface morphology throughout the region indicate that two final readvances or still stands occurred. The uniform distribution of moraines in various settings suggest that they were climatically controlled. Prominent outer moraines from the oldest of these two readvances are recognized in: the small unnamed valleys south of Fog Lakes, near the confluence of Tsisi and Kosina Creeks east of Watana Lake, in the Oshetna Valley west of Lone Butte, near the confluence of the Susitna and Oshetna Rivers, and in the valleys of Coal and Butte creeks.

Evidence for the younger readvance consists of a prominent moraine crossing the Susitna Valley floor near the Denali Highway, and similar moraines in many smaller valleys up valley from the most prominent moraines attributed to the early readvance. Deglaciation of the Tyone lowland region, which was covered during the second to last readvance occurred prior to 11,500 years BP. Large areas of stagnant ice were present in most of the broad lowland regions during deglaciation. These may have influenced human movements as late as 8-10,000 years BP, on the basis of studies in analagous regions.

5.5 - Archeological Stratigraphy

The numerous archeological test pits and excavation walls throughout the study area revealed a remarkably uniform sequence of sediments and soils. Sixteen major stratigraphic units can be recognized throughout the project area. No individual site contains all recognized units but many have at least ten.

Stratigraphic unit designations and cultural horizons discussed in this section (Figure 152) do not necessarily correspond to soil units and cultural horizons depicted in the text or on soil profiles in Chapters 3 & 4. The stratigraphic and cultural units discussed in this section were developed based on an evaluation of field data and were not available until after the 1981 field season. However, these units are used in the cultural chronology of the Upper Susitna River Valley as discussed in Chapter 7.

In general the stratigraphy consists of glacially scoured bedrock overlain by a discontinuous cover of weathered glacial sediments which is overlain by a series of volcanic tephra horizons interbedded with weathering horizons and buried soils. A surface organic mat overlies the older sediments. Non-volcanic eolian sediments occur both as part

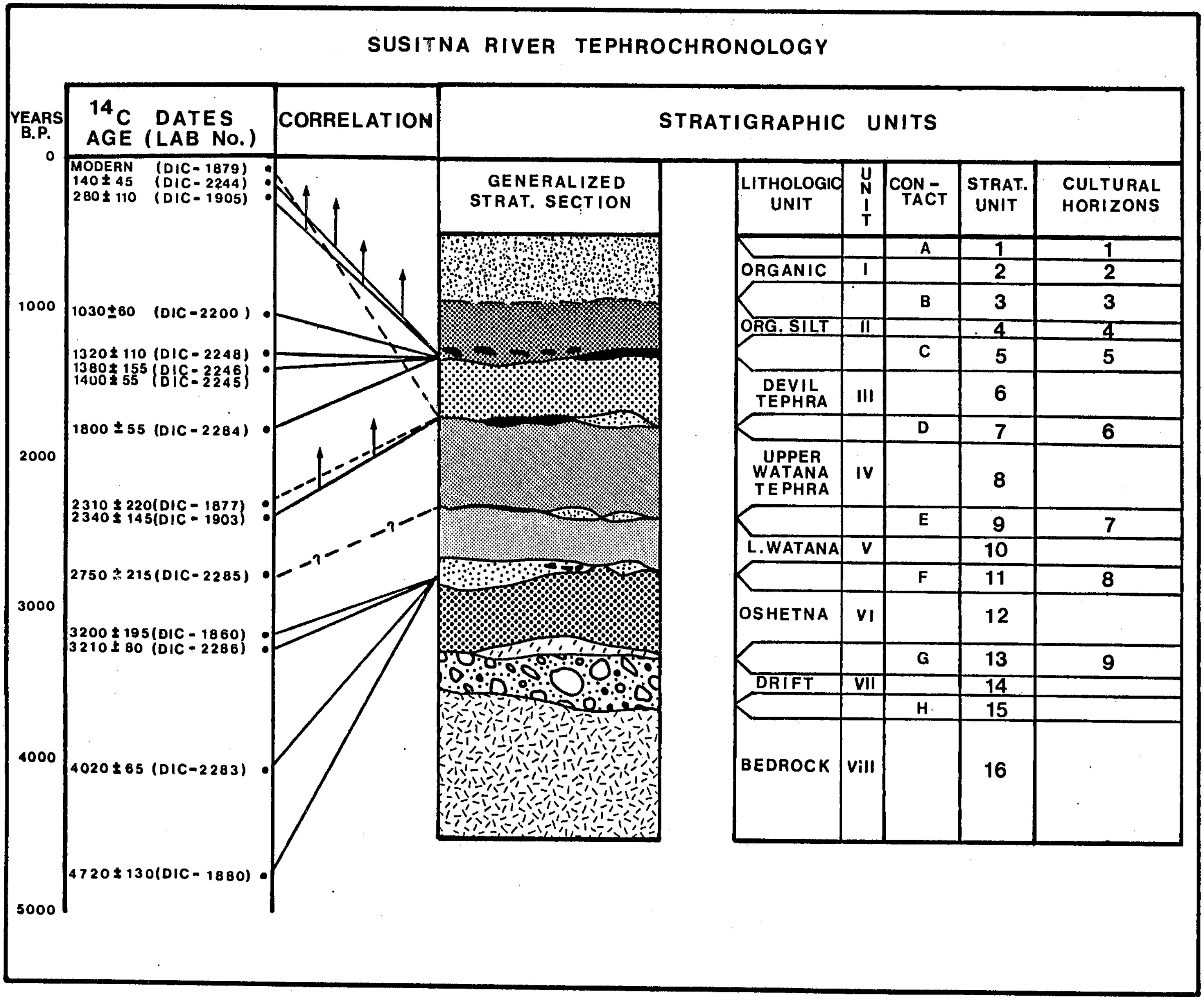

Figure 152. Upper Susitna River Tephrochronology.

of the tephra units and as separate subunits between tephra and organic horizons. Three major types of stratigraphic units are identified; lithologic units, contact units, which commonly represent modification of lithologic units, and cultural horizons; each contains one or more subunits. Each type of unit will be discussed separately in the following subsections, and within each subsection units will be discussed from oldest to youngest.

(a) Lithologic Units

The eight sediment units, designated by Roman numerals in Figure 152, represent different intervals of sediment deposition, which for our purposes, span discrete time intervals that can be correlated throughout the project.

(i) Unit VIII (Bedrock)

Consists of bedrock which varies in composition throughout the project area and is not considered further in this report. Bedrock is exposed at less than half of identified sites.

(ii) Unit VII (Drift)

Consists of glaciofluvial, glaciolacustrine, and undifferentiated glacial sediments which overlie the bedrock. Its thickness varies from a few centimeters to an unknown amount greater than 50 m. Where a significant thickness of drift is exposed at the surface, bedrock is rarely exposed. At most sites the drift consists of clearly washed sandy gravel and gravelly sand which is commonly mixed with the overlying sediments near the contact.

(iii) Unit VI (Oshetna tephra)

Consists of a uniform layer of dark gray sandy silt, typically 3-5 cm thick. Field relations and petrographic analyses indicated that this unit (and units III, IV and V) consists largely of volcanic tephra in the "ash" size range. Although typically 3-5 cm thick, maximum thicknesses of 8 cm were observed. No significant variations in thickness could be related to latitude, longitude, or local setting. Oxidation or staining of this unit was generally absent.

(iv) Unit V (Lower Watana Tephra)

Consists of light brownish gray volcanic ash, with almost no other eolian material. When field moist, the tephra exhibited a pale pink or buff color. Thicknesses ranged from 1 cm to 10 cm thick, but owing to the commonly gradational relation to overlying units, thicknesses were difficult to assess.

(v) Unit IV (Upper Watana Tephra)

Consists of volcanic tephra that is commonly strongly oxidized to a dark reddish-brown color. When unoxidized, the unit is similar to Unit V. Oxidation ranges from pale brown stain to a durable cemented layer, but most commonly consists of small granular concretions in the sand size range. Unit IV which is typically 5-10 cm thick, most commonly overlies Unit V in an apparently gradational relationship that can be recognized by the textural and color change from dark reddish-brown granules to light grayish-brown silt. In many instances however, stratigraphic arguments require their separation into different units.

(vi) Unit III (Devil Tephra)

Consists of a light gray to pinkish-gray volcanic ash which lies near the top of the stratigraphic column in the project area. On the basis of color and stratigraphic position it is the most easily recognized. It typically ranged from 3-5 cm thickness, but commonly reaches thicknesses of 8 cm.

(vii) Unit II (Organic Sandy Silt)

Consists of a relatively uniform thickness (2-8 cm) of organic sandy silt which is riddled with modern roots. The unit consists of approximately subequal amounts of fine windblown sandy silt and finely divided organic material. Delicate interbedding of mineral rich and organic rich layers in many areas indicate that this can be considered a sediment unit separate from the overlying organic unit. Much of the organic component in this unit may have been illuviated into this unit from above, and thus can be considered an "A-horizon" in typical soil nomenclature. Thus, although in part contemporaneous with the existing surface soil, the bulk of the mineral portion of this unit apparently was deposited under conditions different from those of the present.

(viii) Unit I (Surface Organics)

Consists of a dense fibrous mat of roots and decayed vegetation that constitutes the present organic duff of the modern vegetation. Though typically thicker and denser in forested settings (to 20 cm) it is remarkably similar to the surface organic layer under the modern shrub tundra.

(b) Contact Units

The units described above represent major intervals of sediment deposition which can be recognized throughout the project area. The interval between deposition of sediment units, which may span most of the time represented in the soil stratigraphy, can be treated as separate stratigraphic units. Thus, although contact units are defined by the contacts between sediment units, they are characterized largely by the soil forming processes which acted to alter the sediment units. Eolian, organic, and cultural subunits occur at the contacts. Within any given site or site loci subunits can be arranged in stratigraphic order but such correlations cannot be extended throughout the area. For example, an eolian sand subunit between Lithologic Units VI and VII in one area may not be exactly correlative with a similar deposit in the same position elsewhere. All that can be inferred in this case is that both were deposited some time during the interval between Lithologic Units VI and VII. Contact units, which are designated by capital letters A-H are described below in order of decreasing age.

(i) Unit H

Unit H represents the contact between the bedrock and the overlying drift. In all cases the bedrock is not appreciably weathered, indicating that no great time interval separates the two lithologic units. In many cases, the exposed bedrock shows evidence for glacial scour. Because the drift in nearly all cases was deposited during late Wisconsin time (32,000-12,000 years BP), the scouring must have occurred during the same interval.

(ii) Unit G

Unit G represents the contact between the undifferentiated glacial drift and the lowest volcanic ash layer (Unit VI). Weathering of the drift typically consists of shallow oxidation of the surface to a depth of 10-50 cm, depending on local conditions. Evidence for deflation, which consists of wind polished stones or a cobble-pebble pavement is present in only a few localities, thus eolian erosion at the contact has probably been negligible. In several localities evidence for cryoturbation is present. This consisted of sorted zones of sandy versus gravelly areas and of stones with a vertical orientation. Frost-cracked stones at the contact are the exception, rather than the rule.

The most common subunit at the contact is a discontinuous layer of eolian sand which indicates some degree of localized eolian deposition and erosion prior to ash deposition. In one site (TLM 065) several different silty and sandy subunits are present, indicating that an earlier interval of eolian (and possibly volcanic) activity may have occurred throughout the region, and was followed by an interval of erosian. Contact subunits and the upper part of the drift are commonly mixed with the lower portions of the Oshetna tephra, indicating that cryoturbation and/or downslope reworking postdated the first regionally recognizable tephra.

(iii) Unit F

Unit F consists of a recognized stratigraphic break between the lower-most tephra (Unit VI) and the Watana tephra (Unit V). In many areas the contact can be recognized only on the basis of a color change downward in the tephra from brown to gray. Most commonly, however, a thin zone of charcoal flecks and clumps separate the two lithologic units, sometimes thickening into a discrete charcoal layer. Occasionally a thick zone of finely divided organic matter, representing a probable immature paleosol is present. In several localities thin lenses of eolian sand lie between the tephra, suggesting partial deflation.

The absence of pronounced weathering along this contact, when combined with the typical occurrence of resistant charcoal flecks suggests that this contact is erosional. Thus the time interval represented by Contact Unit F probably includes additional sedimentation and weathering which was removed prior to subsequent deposition.

(iv) Contact E

Contace E is one of the most poorly represented. In nearly all cases the Watana tephra can be observed as an upper intensely oxidized zone (Unit IV) that gradationally overlies an unoxidized or slightly oxidized tephra (Unit V). In at least six localities however, there is good evidence for separating these tephra units into two major units; thus Contact Unit E is well expressed, but only at a few localities. Because of the nature of the units in question, being derived from some distant volcanic source, the contact must be real even where it is recognized only on the basis of weathering differences.

The best evidence for Contact Unit E is thin organic layers which clearly resulted from soil accumulation at the surface. These layers are commonly discontinuous and suggestive of downslope reworking. Other evidence consists of distinct cultural areas with associated activity areas that lie stratigraphically at two sites between the upper and lower Watana tephra (Units IV and V, respectively). Charcoal layers of possible cultural origin also separate Units IV and V at several localities. A zone of coarse-medium sand which represents local eolian activity also separate the units in a few places. Finally, in one locality Unit IV lies in an angular unconformable relationship with Unit V.

The lack of widespread evidence for this contact suggests that the time interval it represents may have been short lived.

(v) Unit D

Unit D is most commonly represented by a sharp color and textural contrast between the unweathered pinkish-white Devil tephra (Unit VI) which directly overlies the strongly oxidized concretionary upper Watana tephra (Unit IV). In many respects this contact appears as that of a leached layer (E-horizon) over a more oxidized lower layer (B-horizon). However, no independently verifiable evidence for leaching was observed anywhere in the upper soil layers within the study area. Furthermore, there appears to be no evidence for gradation above and below the Devil tephra (Unit III) which would be expected if the color horizons were geochemically controlled.

The best evidence for Contact Unit D is the infrequent, but not rare occurrence of a charcoal layer with or without associated cultural material. In some cases finely divided organic matter occurs as evidence for a paleosol separating the Devil from the Watana tephra. Thin eolian sand zones are sometimes present at the contact. Finally, Devil tephra lies unconformably over cryoturbated Unit IV.

Owing to the extent of weathering of the upper Watana tephra, this contact appears to represent an interval of weathering, more than one of deposition or erosion. It is likely, however, that the strong oxidation of the upper Watana tephra may be controlled by its lithology; it may be exceptionally reactive (or weatherable) because of its chemical composition.

(vi) Unit C

Unit C is exceptionally well defined. It is most commonly represented by a dense black layer of finely divided organic material which is discontinuous. Charcoal within this layer is common, but more commonly the charcoal has been reworked as clasts into the lowermost part of Unit II. Thus the charcoal in Unit II is a contact phenomenon, even though it is included within a lithologic unit. Minor oxidation which is commonly expressed as brownish stained tephra, typically lies within 1-2 cm below the contact.

This contact is interpreted to represent the initial organic accumulation on a stable substrata that immediately followed the final episode of volcanic ash deposition in the study area. Prior to the slow deposition of eolian dust and the coeval accumulation of finely divided organic matter that characterize Unit II, conditions must have been more stable. Limited erosion apparently occurred prior to the accumulation of Unit II.

(vii) Unit B

Unit B is commonly gradational, but represents a significant difference in the style of sedimentation that postdated the last volcanic ash. The contact is expressed as the change from a mixed mineral-finely divided organic accumulation to one characterized by the accumulation of partly decomposed macroscopic organic matter. The contact could be interpreted as pedological, representing the differing activities in the O and A soil horizons. Units I (surface organic) and II (organic sandy silt) are separated partly because they are easily observed stratigraphic units, but more so because there is evidence to suggest that some uniform change has occurred in the character of soil development within the last several hundred years. In many cases the surface organic appears to be accreting faster than organic decay can break it down suggesting that the Contact Unit B is not an equilibrium pedologic feature. In addition the interbedded mineral matter in Unit II and its absence in Unit I further supports the separation of units or lithologic grounds. Clearly, both processes are occurring. These units (I and II) are separated largely because they are workable stratigraphic units in which cultural materials are found.

(viii) Unit A

Unit A represents the present ground surface. It is assigned as a stratigraphic unit because within the time we are studying the project area it can be considered as a discrete unit of time, younger than the surface organic accumulation.

5.6 - Stratigraphic Units

As was described in the previous section, the contact units are just as, if not more, important in the archeological stratigraphy of the project area as the lithologic units. In order to conveniently describe both in the same chronology, both types have been combined into stratigraphic units. Thus, we can isolate and correlate sixteen significant intervals of time throughout the project area. Any contact unit can be subdivided at a given site, but it cannot be correlated throughout the area. The stratigraphic units, designated by arabic numbers 1-16 provide the basis for the archeological stratigraphy.

5.7 - Discussion

From the above discussion it is apparent that individual volcanic ash layers and the unconformities/soil horizons between them form the basis for the archeological stratigraphy. Four key factors regarding the ash layers are: 1) geographic extent, 2) its source or sources, 3) time necessary to accumulate, 4) post depositional history, and 5) the age of each. The first four factors discussed in this section are followed by a discussion of chronology.

Tephra is not distributed uniformly within the project area. It is nearly ubiqtuous on lowland areas of gentle to moderate slopes, but is absent on steeper slopes and in windy passes. It was not observed above an altitude of 3500 feet. Ash seemed to be more common in the central and western portions of the project area.

The thickness of each ash layer across the project area was plotted to form isopach maps. Although these derivative maps have not been examined in detail, there is no apparent significant variability in thickness for any of the four recognized tephra in the Susitna Canyon area. This indicates that the volcanic sources were all distant, probably from either the Lower Cook Inlet Aleutian Range volcanic area or from the Wrangell Mountains. No thickness variations could be used to infer the direction from which the tephra were derived.

The composition of individual tephra could hold great promise for assessing the vent responsible for tephra deposition, but this assessment requires laboratory work far exceeding the scope of this project. Index of refraction, size, morphology and shape of glass shards, the mineralogy of phenocrysts, and bulk and trace element geochemistry could allow a provenance for each tephra to be established. Each tephra was examined through a polarizing microscope. The tephra vary in composition, however no detailed studies were done to differentiate them. Collectively all tephra consist almost completely of unweathered glass shards. Prominent phenocrysts in order of decreasing abundance included plogioclase feldspar, quartz, pyroxenes, and amphiboles. Detailed studies should permit the approximate source for each tephra to be determined.

The duration of each ash fall is presently unknown, but can be inferred from the geologic relationships. The absence of internal bedding, internal textural variability, and organic material suggests that tephra deposition intervals were short lived, or nearly instantaneous from a geologic reference. Where modern ash falls have been observed, the deposition intervals are frequently on the order of hours to days, with the controlling factors being distance from the vent, how explosive the eruption, and the contemporaneous atmospheric setting.

It is possible that one or more of the identified tephra layers are the product of several separate eruptions which were spaced over the interval of days, weeks, or even years. Owing to the geologic constraints which govern explosive volcanic activity; however, this is a less common phenomenon. In addition, the absence of bedding variations within all tephra suggests that each resulted from one eruption.

Once deposited surficial variables greatly influence the preservation of tephra. Tephra deposited on deep snow (common for most of the year), may be quickly reworked into the drainage system. Although four tephra layers are presently identified, others may have occurred which have been redeposited by this mechanism. The thickness of ash preserved for observation is only a residual thickness. How much compaction and erosion occurred, by either wind or sheetwash, can be assessed only on a site-by-site basis.

The relationship between the abundant charcoal layers which are interbedded with tephra is poorly understood. Some are clearly cultural in origin, some may represent natural forest or tundra fires, but some may be related to the tephra itself, perhaps indirectly. It is possible that a thick tephra may cause plant mortality which could lead to plant dessication and ultimately to more frequent brush and forest fires. This hypothesis, however, is strictly conjectural.

Evidence for downslope reworking of tephra by sheetwash and creep is present in some localities. This may not be common on the well drained knolls and ridge crests where archeologic test pits were commonly placed. Although tephra may be eroded on ridge crests, it is unlikely that it is redeposited there.

5.8 - Cultural Horizons

Nine discrete cultural horizons can be identified at the present time from the regional archeological stratigraphy. These can all be correlated throughout the region. Each horizon can be dated within limits, but the time span represented by components varies from a few hundred years to as much as 7-8000 years. Although a horizon can be identified and correlated and can be dated within limits, there is no proof that cultural materials from the same horizon at different sites are exactly equivalent in age. The volcanic ash/soil sequence provides the framework for this relatively excellent chronology.

Cultural horizons were assigned only where there was demonstrable evidence of human occupation that can be related to the regional stratigraphy. Although artifacts were found in all of the units except bedrock, only nine horizons could be firmly documented. Downslope reworking, cryoturbation, human alteration and root disturbances all serve collectively to displace artifacts from their original contexts.

Evidence for human occupation in subunits associated with the contact units are present. Within any given site these can be arranged in stratigraphic succession, but they were not isolated as horizons, or even formal subhorizons because they cannot be correlated regionally. It is probable that many more than nine cultural horizons exist. No one site contains more than four regional cultural horizons, but site TLM 030 contains five horizons, one of which occurs in a subunit. Most sites contain one or two regional archeologic horizons. Discussion of the age of the cultural horizons is combined with a general stratigraphic chronology in the following section.

5.9 - Chronology and History

The evolution of the stratigraphic record presented in Figure 152 can be broken into four major intervals which have different implications for archeology: (1) the time prior to the last glaciation, represented by Unit 15, (2) the time during the last glaciation, represented by Unit 14, (3) the time following deglaciation but prior to deposition of the first recognized tephra, represented by Unit 13, and (4) the time representing recurrent volcanic ash deposition and soil formation, represented by Units 1-12. Eight radiocarbon dates from regional stratigraphic studies and twelve dates associated with the volcanic ash stratigraphy permit the establishment of a reasonably good chronology for the depositional history of the project area.

Interstadial dates below drift of the last glaciation range in age from 21,730 ± 390 at Tyone Bluff to 32,000 ± 2735 years BP at Thaw Bluff. During this interval glaciers were restricted and human occupation of the study area and peripheral regions may have been possible. Although interstadial conditions may have prevailed for some time earlier, the maximum age for such conditions is not known. Clearly human occupation could not have occurred during early Wisconsin time, because glaciation was even more extensive then than during late Wisconsin time and covered virtually the entire study area.

The last glaciation in the Susitna Canyon is bracketed by maximum age dates of 30,700 +260/-1230 years BP near Fog Lakes, 24,900 ± 390 years BP near Tyone Bluff and by a minimum date of 11,535 ± 140 near the Tyone Rivers. Based on these 14C determinations the last glaciation probably spanned the interval from about 25,000 years BP to about 12,000 years BP in the study area. These data correlate with those from other regions which also document the age and duration of the mid-Wisconsin interval. Owing to the extent of ice, human occupation was probably impossible or severely restricted. Furthermore, in most areas, evidence for possible interstadial human occupation would have been destroyed by advancing late Wisconsin ice. Although final deglaciation of the Susitna Canyon area probably occurred about 12,000-13,000 years BP, large areas of unstable ground underlain by stagnant ice may have persisted for several thousand years following deglaciation. Melting ice may have partly controlled human movements into Holocene time.

No dates are presently available for Unit 13, which represents the time interval between deglaciation and the first recognized tephra deposit. The oldest date associated with tephra is 4720 ± 130 years BP from the Fog Creek site (TLM 030). This indicates that Unit 13 probably represents part of late Pleistocene and most of early Holocene time which was characterized by weathering, erosion and deposition of subunits which are undated, and which cannot be correlated throughout the region. Artifactual material from this time range (Horizon 9) are therefore likely to be disturbed from their original context by as much as 7-8000 years of exposure and/or erosion and deposition. This long time span may account for the prevalence of this component in the study area.

Deposition of the tephra sequence probably occurred within the last 5000-7000 years. Four dates of 4720 ± 130, 4020 ± 65, 3210 ± 80, and 3200 ± 195 years BP were obtained from the contact of the Oshetna tephra (Unit 12) and the overlying lower subdivision of the Watana tephra (Unit 10). These dates indicate that the Oshetna tephra was deposited some time prior to 4700 years BP. The lack of weathering on the Oshetna tephra indicates that it was not deposited much earlier than 6-7000 years BP, but based on the 14C dates it may have been deposited as recently as 4700 years BP. A 14C date, with questionable association, suggests the Oshetna tephra was likely exposed for at least 1500 years prior to the subsequent Watana ash fall. Archeological horizon 8, which occurred during this interval, falls somewhere within this time range.

Two consistent minimum limiting dates on the upper Watana tephra of 2340 ± 145 and 2310 ± 130, when combined with the maximum limiting dates of the lower Watana tephra of 3200 ± 195 and 3210 ± 80 indicate that deposition of both the upper and lower Watana tephra, and the intervening Contact Unit E occurred sometime between 2300 and 3200 years. A date of 2750 +210/-220 years BP which is probably from Contact E suggests that the Watana sequence can be further subdivided by bracketing dates; 3200-2700 years BP, and 2700-2300 years BP for the lower and upper Watana tephra respectively. Cultural horizon 7 thus probably dates to about 2700 years BP and was probably short lived, accounting for its apparent rarity in the project area.

Cultural horizon 6 occurs above the Watana tephra, is not widespread, and probably dates to about 2300 years BP. Horizon 6 may predate 2300 years BP, but it cannot be older than 2700 years BP. The limited geographic distribution of Component 6 and the close coincidence between its limiting dates is puzzling because evidence of weathering at this contact is very evident. Viewed within these constraints, it is likely that the upper Watana tephra was particularly susceptible to oxidation because of its chemical constituents.

Four good minimum dates on charcoal of 1800 ± 35, 1400 ± 55, 1380 ± 55 and 1320 ± 110 indicate that Contact Unit C (Cultural Horizon 5) spans the interval between 1800 and 1300 years BP. A date of 1030 ± 60, obtained from a nonarcheological setting and related indirectly to the tephra sequence, may provide an even younger date for Horizon 5, extending its range by about 2000 years. These dates, when combined with those from Horizon 6, indicate that the Devil tephra, the youngest recognized volcanic ash layer, was deposited sometime between 1800 and 2300 years BP. As discussed in the preceeding paragraphs, the wide span of dates from 1800 to possibly 1030 years BP, an interval of 800 years, may account for the high frequency of archeological sites found within this regional stratigraphic unit.

Three dates of 280 ± 110 years BP, 140 ± 45 years BP, and modern from near the base of Unit 4 (organic sandy silt) indicate that it spans most of the last milleneum. Owing to redeposition, contamination by modern roots, and influx of modern humic material, it may not be possible to date this layer more closely. Cultural Horizon 4 thus cannot be closely dated on stratigraphic grounds. Direct dating of cultural material provides the only reliable means of dating human occupation during this inteval.

No attempt was made to date the surface organic mat (Unit 2) because of its obviously young age. Cultural Horizons 1-3 thus are quite young and differentiable in a relative sense only. Direct dating of cultural materials in this time range by the radiocarbon method may not be possible because of the contamination problems discussed earlier, and because it is near the younger limit of the method.

5.10 - Mammoth/Mastodon Fossil Discovery

One of the most exciting finds of the 1980 field season was the discovery of a mammoth/mastodon fossil found *in situ* in fluvial gravels at Tyone Bluff (Figure 87). The fossil, representing the shaft portion of a right femur, was identified by R.D. Guthrie and George S. Smith of the University of Alaska, and is the first documented occurrence for any terrestrial Pleistocene mammals in southern Alaska. It yielded a radiocarbon date of 29,450 ± 610 ^{14}C yr BP, and clearly implies nonglacial conditions at that time (Thorson et al. in press). This discovery indicates that the range of mammoth should be extended about 200 km south of its present limit. It also suggests that mountain passes in the Alaska Range may have been deglaciated during mid-Wisconsinan time, and that portions of southern Alaska may have been suitable for human habitation during this time.

5.11 - Summary of Geologic History

(a) The Susitna Valley has been repeatedly inundated with extensive valley glacier systems that coalesced to form a minor mountain ice sheet. One or more pre-Wisconsinan glaciations have been recognized.

(b) Much of the present valley was carved to the present river level prior to middle Wisconsinan time (31,000 yr BP). The direction of drainage at that time is presently unknown.

(c) The valley bottom was extensively modified during the last glaciation which began some time after about 31,000 yr BP in the Fog Creek area, and some time after about 22,000 yr BP in the Tyone River region.

(d) During deglaciation large areas were covered with stagnant ice, and meltwater drained freely below the surface, forming complex esker systems. The direction of meltwater flow, and the presence of till at river level suggests that Devil Canyon was carved prior to Holocene time. Glaciers retreated systematically over many areas leaving a number of periodically spaced massive recessional moraines.

(e) Deglaciation of the Tyone River region was complete by at least 11,500 yr BP. Because this area was covered by a large piedmont ice lobe, other areas may have been ice free even earlier. Thus, much of the Susitna Valley may have been deglaciated prior to about 12,000 yr BP. Stagnant ice may have persisted for several thousand years over much of the valley floor.

(f) During Holocene time the Susitna River has not greatly deepened its valley in most areas; rather it has widened the valley bottom slightly by lateral planation. Low-level alluvial terraces and tributary mouth alluvial fans have formed in widened portions of the valley. Many small streams tributary to the Susitna have greatly incised their channels during Holocene time, resulting in steep irregular profiles characterized by waterfalls and rapids.

(g) During the last half of Holocene time, intervals of volcanic ash deposition from distant sources alternated with intervals of weathering, soil formation and erosion.

6 - PALEONTOLOGY

6.1 - Introduction

Both federal and state of Alaska cultural resource legislation mandate that paleontological specimens found in an archeological context receive the same consideration as other cultural resources (The Archeological Resources Protection Act of 1979, 16 U.S.C. 470aa, sec. 3(1), and The Alaska Preservation Act of 1975, sec. 41.35.230(4). Paleontological studies were implemented as part of the cultural resource program in order to identify the types of paleontological specimens that might occur in association with archeological and/or historic sites therefore, assisting in recognizing them should they occur at a site. Because paleontological specimens representing animal bones (particularly Pleistocene megafauna) are readily recognizable, emphasis for paleontological investigations were centered on fossil plants and pollen.

A preliminary aerial reconnaissance of the study area and a review of the literature indicated that the area within the project study area that had the greatest potential for revealing plant fossils was the Watana Creek area. The information provided by this baseline study was incorporated into cultural resource investigations. Although no paleontological specimens, either plant or animal, were found in association with any of the 115 sites recorded for the area, a mammoth/mastodon femur was found in a non-archeological setting. This specimen is discussed in Chapter 5. The results of the plant fossil and pollen studies are discussed in the following sections.

6.2 - Plant Fossils

The assemblage of fossil leaves collected from the deposits along Watana Creek were chiefly in calcareous concretionary horizons of siltstone to fine sandstone. Outcrop locations within the section are noted on Figure 153. Plant material was characteristic of units at all locations through the section.

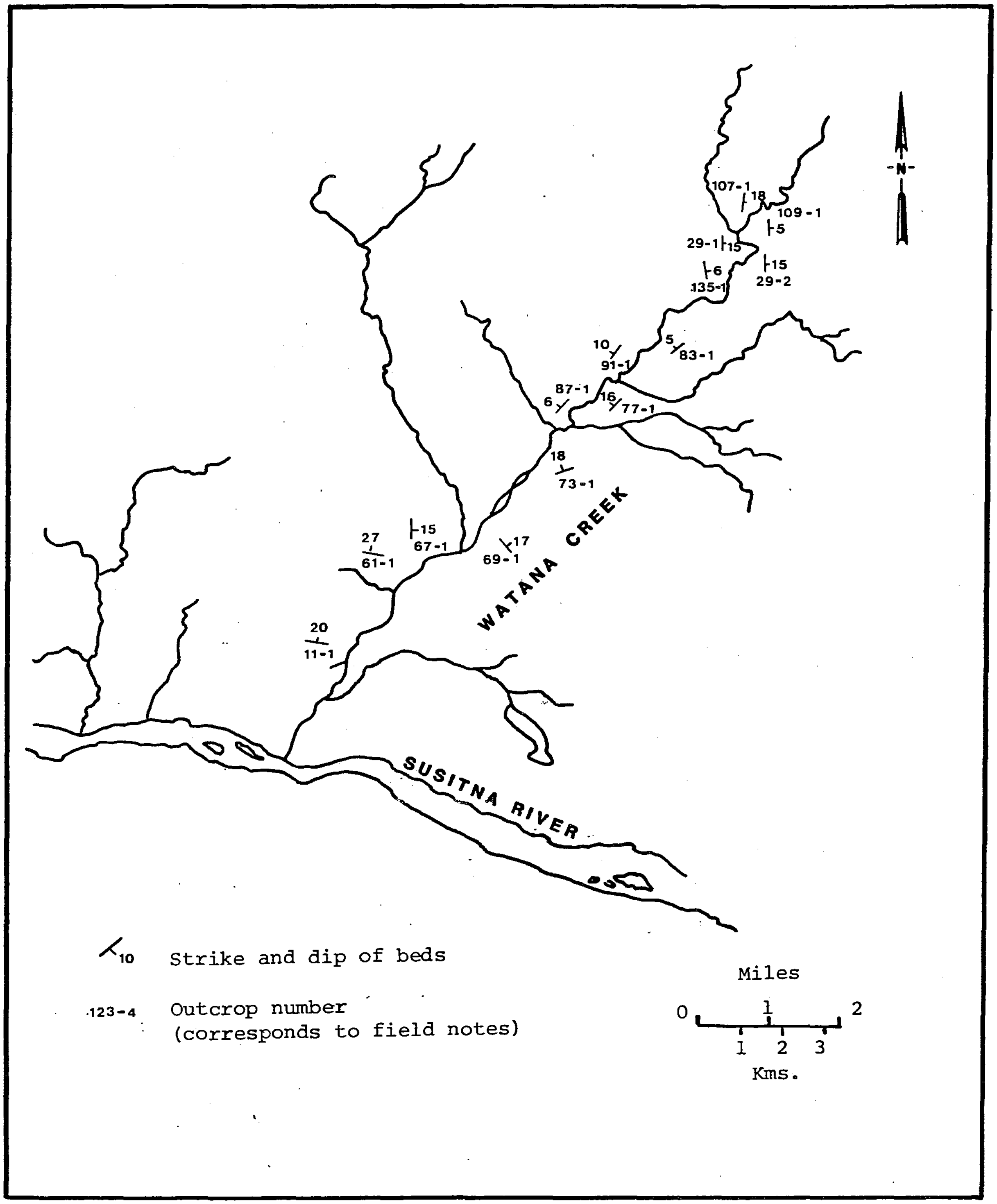

Figure 153. Location of Outcrops.

The assemblage from the sequence is extensive, but is characterized by an extremely low species diversity. The flora from the Watana Creek deposits include: Metasequoia sp., Alnus evidens (Holl.) Wolfe, Salis sp.

On the basis of the predominance of Alnus evidens and the depauperate nature of the assemblage, the plant-bearing rocks of Watana Creek are considered representative of the Angoonian Stage (Wolfe, personal communication, 1981). The type section for the Angoonian Stage is in the Kootznahoo Formation near the town of Angoon on Admiralty Island.

An Angoonian assemblage on Sitkinak Island is within beds conformably overlain by marine rocks of late Blakely (earliest Miocene) age (Wolfe, 1966), and the type Angoonian overlies an assemblage of an unnamed stage of known younger age than the Kumerian (lower Oligocene). An assemblage of Seldovian age (early and middle Miocene) is stratigraphically above the type section for the Angoonian. The Angoonian Stage is most probably of late Oligocene age (Wolfe, 1977).

Flora assemblages of Angoonian age are common in Alaska found at St. Lawrence Island, the Alaska Range, the Copper River Basin, the Matanuska Valley, the Cook Inlet Basin, and other locations (Wolfe, 1977). Rocks containing assemblages of this type were originally included within the lower Seldovian, but later excluded (Warhaftig, et al. 1969) and are now considered Angoonian (Wolfe, 1977).

Formations including assemblages of Angoonian age include the lower portion of the Healy Creek Formation in the Nenana Coal Field, the lower portion of the Tyonek Formation and probably the Hemlock Conglomerate in the Cook Inlet area, and the Tsadake Formation in the Matanuska Valley. Figure 154 depicts the stratigraphic relationship of the Watana Creek deposits with some correlative Alaskan deposits.

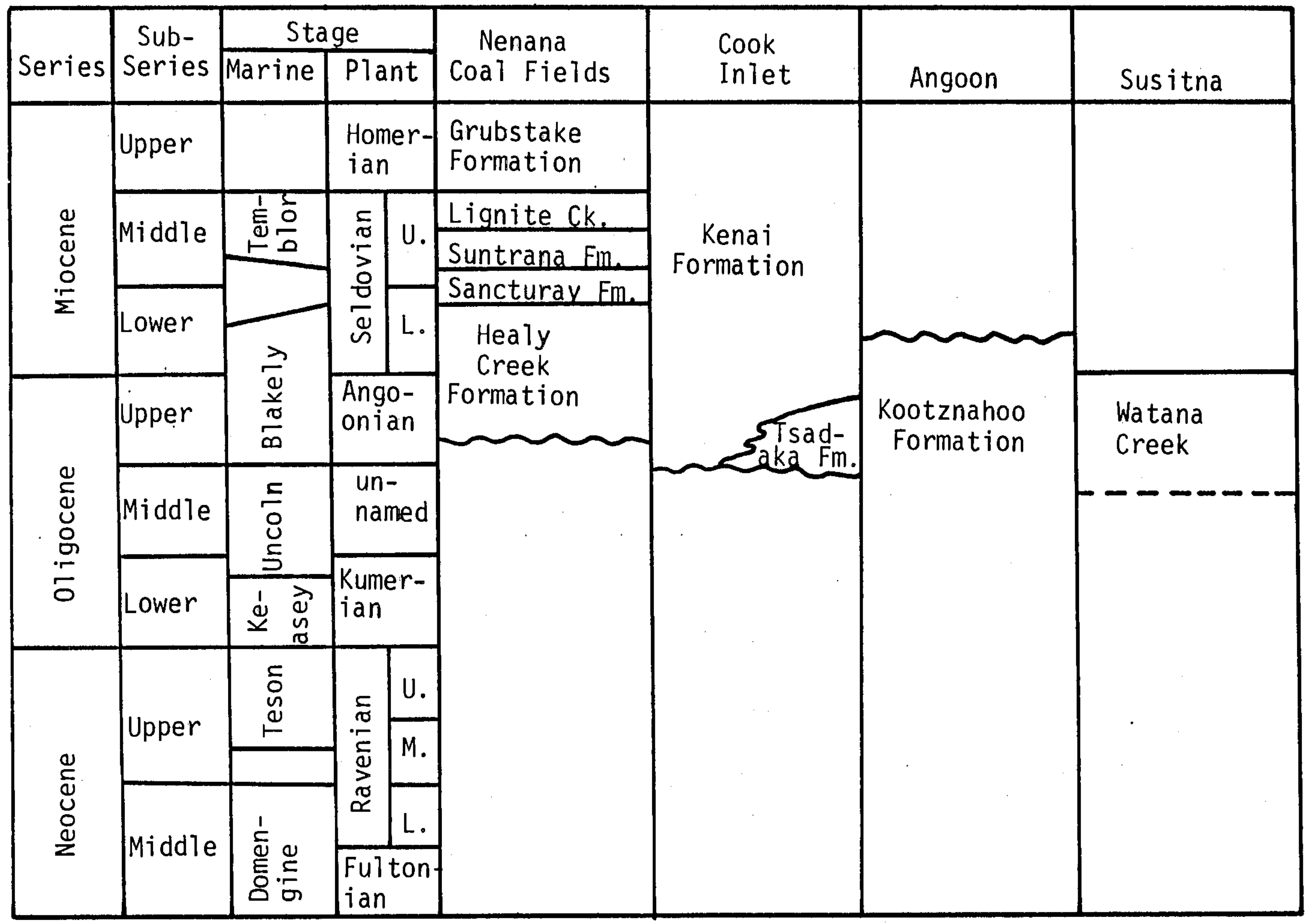

Figure 154. Correlation of the Watana Creek Sequence with Some Alaskan Tertiary Formations.

6.3 - Pollen

Pollen grains were extremely depauperate in both quantity and species. Many slides prepared for pollen analysis were found to be totally lacking in grains. A point counting technique was not considered justified to characterize the pollen assemblage of the deposits. The predominant pollen are Betula, conifer-type grains, and trilete spores.

6.4 - Paleoenvironment

Extensive reconstructions of the environment and climate in Alaska during the Tertiary, particularly Paleogene, on the basis of floristic (botanical systematics) and physiognomic (physical features) chracteristics have been done by Wolfe (1977, 1978, 1980). These studies indicate Angoonian assemblages represent a broad-leaved deciduous forest. Marginally warm temperate climates characterized the latest Oligocene; the result of a warming trend from the cooler earlier Oligocene. Latitudinal zonation of vegetation was considerable in the Angoonian in contrast to the Ravnian and Kumerian during which there was little zonation (Wolfe, 1977).

Eocene and Early and Middle Oligocene assemblages differ markedly with that of the Angoonian. The middle Ravenian (early upper Eocene) assemblage is most closely related to a notophyllous borad-leaved evergreen forest. The upper Ravenian (late upper Eocene) contains only five of the fifteen genera of the early and middle Ravenian, and probably represents a mixed broad-leaved deciduous forest ranging to a mixed mesophytic forest. The Kumerian (lower Oligocene) is indicative of a subtropical forest, persisting into middle Oligocene (see Wolfe, 1977).

The mixed broad-leaved deciduous forest of the upper Ravenian and Angoonian had temperatures of 1° to 18°C (Wolfe, 1977). Mean annual temperature dropped through the Oligocene at high latitudes (Wolfe, 1978), and the early Miocene Seldovia Point assemblages represents a mixed northern hardwood forest of cool temperate climate (Wolfe and Tanai, 1980).

7 - THE PREHISTORY AND HISTORY OF THE UPPER SUSITNA RIVER REGION

7.1 - Introduction

Based on the results of this survey, it is probable that no single archeological site in the Upper Susitna River area will provide the basis for defining the Holocene cultural chronology for the region. Because no single site preserves the cultural spectra since late Wisconsin deglaciation, it is necessary to base the culture chronology on a series of individual sites and site components throughout the study area. The 115 archeological sites discovered during the course of this survey are primarily single component sites. For the purposes of this presentation, only those sites in which the age of the site, or a component, can be documented with certainty will be used for analysis. The chronological documentation of sites and components are primarily based in two methods: 1) Radiocarbon determinations and 2) relative stratigraphic placement in relationship to the three tephra. Typological considerations relating to the chronology (not site function) have been considered secondarily, because of the uncertainty associated with this kind of dating and the differing age determinations proposed by many archeologists.

The sites discussed in this report provide only brief glimpses of prehistoric cultural development in what are, in many cases, very diverse ecological settings. In all probability the sites and their various components represent different facets of the prehistoric subsistence cycle. Consequently, what are presented as "type" sites and components for particular cultural periods, may in fact not "typify" the material cultural remains during specific cultural historical periods. While these limitations are recognized, it is still possible to begin to define the basic cultural chronological skeleton while realizing that during some periods it may contain a considerable amounts of "flesh" and during others major "anatomical" elements are missing.

7.2 - Contemporary Sites: 1945 to Present

A number of contemporary cabins are scattered throughout the study area representing modern recreational use of the project area, primarily for sports hunting and fishing. Because of the contemporary nature of these structures, they have not been included, discussed, or analyzed in this report. Suffice it to say that contemporary use of the area will ultimately be documented in the archeological record.

7.3 - Trapping Period: 1920 - 1945

Four cabins which have been documented as trapper's cabins have been reported in the project area. These cultural remains document economic use of the area for fur trapping during the 1930's and in this respect the Susitna area reflects many other areas of rural Alaska in that this was a time of relatively high fur prices during a period of international depression. The remains of four cabins dating to this period were located in the project area. However, the cabin of Elmer Simko on Kosina Creek (TLM 071) may be one of the best remaining examples from this period, because most of the household and trapping equipment are preserved intact.

7.4 - Goldrush: 1900 - 1920

Gold was discovered in the Cook Inlet region in 1895 shortly after which the first major western population expansion into the Upper Susitna occurred. No historic sites were discovered dating to the gold rush to the Upper Susitna have been discovered in the project area to date. Because Devil Canyon is not navigable, early prospectors may have been discouraged in their attempts to prospect the upper Susitna. However, an inscription near the mouth of Portage Creek documents that William Dickey and three other travelers ascended the river as far as Devil Canyon in 1897.

7.5 - Athapaskan Tradition: A.D. 1900 - A.D. 500

The Upper Susitna drainage was ocupied by Western Ahtna Athapaskans at the time of historic contact. Through implementation of the direct historic approach, it is possible to trace through time Athapaskan occupation of the study area. As Figure 155 demonstrates, several sites in addition to those discussed below may document various periods of cultural historical development throughout this period. However, the subsequent discussion only includes sites subject to systematic testing from which age determinations can be made with certainty.

The Kosina Depression Site (TLM 065) was systematically tested and best exemplifies the later phase of this period. The site consisted of the remains of at least one house and several associated cache pits. Stratigraphic profiles from this site clearly indicate that the house postdates the Devil tephra, and the glass trade beads and bottle glass fragments clearly document the structure's comparatively recent age. While precise dating of the structure is not possible at this time, western trade goods may have penetrated the area as early as the late 1700's and the site may be reasonably estimated to range in age between the late 1700's and 1900.

A pronounced material cultural trait which occurs at TLM 065 is the high frequency of fire cracked rock and fractured and burned caribou bone. The rock is characteristically uniform in that it originates from fist and slightly smaller sized smooth water worn cobbles. It is most probably that these cobbles were deliberately selected for stone boiling; a technique commonly employed by Native North Americans in the absence of ceramic cooking vessels. This material cultural trait coupled with abundant fractured long bone fregments suggests preparation of marrow "soup" and possible bone grease in birch bark cooking containers. These site attributes are commonly associated with archeological sites throughout the Alaskan Interior and through the direct historic approach have been identified as the remains of prehistoric Athapaskan culture (Plaskett, 1977).

This common association is characteristic of a number of sites located throughout the course of the archeological survey. All sites and site components which exhibit this association in a clear stratigraphic context occur above the Devil tephra and consequently are younger than A.D. 200. In addition to the Kosina Depression Site (TLM 065) discussed above, these sites are: 1) Component I, Permafrost Creek (TLM 050) ca. A.D. 1670, 2) two and possibly three components at the Tsusena Creek Site (TLM 022) which date slightly prior to and subsequent to A.D. 1500, 3) a feature at the Little Bones Ridge Site (TLM 059) ca. A.D. 740, 4) Component I at the Red Scraper Site (TLM 062) ca. A.D. 570, and 5) Component I at the Tsusena Borrow C sites (TLM 097) ca. A.D. 550. Three additional sites which have not been subject to radiometric dating but which exhibit the pronounced association of fire cracked cobbles and fractured mammal bone, all occur stratigraphically above the Devil tephra. These are: 1) the upper Watana Creek Site (TLM 038), 2) the No Name Creek site (TLM 043), and 3) Component I at the Duck Embryo North Site (TLM 048). At two of these sites, No Name Creek and Duck Embryo North, evidence for heat treatment of lithics has been recognized based on the vitrious character of the lithic debetage.

While it may appear dubious to define a cultural period primarily on the basis of the association of only two cultural traits, these sites are strikingly similar when viewed collectively and all are restricted temporally. Another striking similarity shared by these sites is the lack of diagonistic artifact types. However, this may partially reflect the comparatively small samples recovered during testing. The sites suggest intensive reliance on caribou hunting, occasionally moose hunting, intensive use of stone boiling for food preparation, and heat treatment of lithics used for tool manufacture.

The sites occur in a variety of ecological locales. Permafrost Creek, Tsusena Creek and No Name Creek all occur adjacent to the junction of clear water tributaries to the Susitna and are situated in the valley bottom. The Upper Watana Creek site occupies an overlook with a panoramic view to the north suggestive of fall caribou hunting. Duck Embryo North is situated adjacent to a lake outlet possibly indicating exploitation of fish and waterfowl. Tsusena Borrow C is adjacent to Tsusena Creek where constricting topographic features funnel large mammal movements past the site. Sites which contain structural remains are Little Bones Ridge, Kosina Depression, and probably Jay Creek (although this site was not subject to systematic testing) are located in elevated areas which seem to lack attractive ecological factors (such as proximity to significant bodies of fresh water, panoramic views, constricting land forms, etc.). It is possible that these more substantial sites containing features may reflect prehistoric distribution of caribou rather than other ecological variables traditionally associated with site occurrence. Such obscure site locales may also reflect social variables such as defense, or ostracism.

Testing and surface features suggest that all sites dating to this time period are comparatively small and probably represent groups of not more than one or two nuclear families or a few hunters. Collectively these sites represent a variety of functions and seasonal occupations, which cannot be accurately defined based on the limited results derived from the systematic testing conducted to date. It is important to reemphasize that this discussion has been limited to only those sites which can be firmly dated, and undoubtedly numerous other sites dating to the Prehistoric Athapaskan Period exist in the project area (see Figure 155 for sites and components occurring above the Devil tephra).

All the sites dating to this period contain faunal remains, and thus present the possibility for documenting the organic component of prehistoric Athapaskan material culture, which is currently poorly understood and represented at only a few archeological sites. The diverse types of sites situated in a variety of ecological locales may enable further research to document shifting subsistence and settlement patterns through time. Collectively these sites are extremely significant, for they hold the potential to define Athapaskan cultural development during the past 1500 years. This has not been accomplished in Alaska or the Yukon and Northwest Territories, largely because previous research programs have not been able to locate sites conducive to answering these questions, and have lacked the chronological controls essential for defining cultural development through time. The sites dating to this culture period in the Upper Susitna River represent the first and best opportunity in more than 50 years of archeological research in the subarctic to address these problems.

7.6 - Choris/Norton Tradition: ca. A.D. 500 - ca. 1500 B.C.

Three archeological sites have yielded artifactual material from stratigraphic contexts which suggest that they may be ascribed to the Choris/Norton tradition. These are Component III at Tsusena Borrow C and the upper component at the Fog Creek site which has been radiocarbon dated to 360 B.C. ± 220 (DIC-1877), and the Left Fork Site (TLM 069) which was probably occupied immediately prior to deposition of the Watana tephra. The flakes from the upper component at Fog Creek were unfortunately bagged in the field with those from the lower component, thus rendering definition of the lithicologic types associated with this component impossible. However, fine grained silicous rock types are represented in this sample, and were probably derived from the upper component, while the remainder of the sample is basalt and is probably derived from the lower, Northern Archaic, component. No diagonistic artifacts were recovered from Component I.

Component III at Tsusena Borrow C (TLM 097) was not subject to radiometric dating, but is clearly associated with the contact between the Watana and Devil tephras. This component contained 9 fire cracked rock fragments, 15 waste flakes of rhyolite and tuff, and 65 tuffacious flakes. Although the assemblage does not provide sufficient data to define the Choris/Norton tradition within the project area, it does, when coupled with data from a number of other sites, provide data which strongly indicate the occurrence of this tradition within the Upper Susitna region between ca. A.D. 500 and ca. 1500 B.C.

The period of occupation of the Left Fork Site (TLM 069) remains problematic, but the preliminary data suggest that it probably occurred immediately prior to the deposition of the Watana tephra. Several artifact types suggest that the material cultural remains from this site are similar to artifacts typologically associated with Choris/Norton period in other regions of Alaska. Bone preservation at this site suggests that it was occupied shortly before deposition of the Watana tephra, because bone preservation is comparatively rare in archeological components predating the Devil tephra in the Upper Susitna region.

Three additional sites (TLM 033, 034, and 053), which have only been subject to reconnaissance testing, indicate cultural components between the Watana and Devil tephras and this suggests that these sites may also be ascribed to this temporal period. In all three sites, no diagonistic artifacts were recovered, and the cultural components were defined on the basis of lithic debetage alone. It is important to note that the debetage in all three cases is fine grained cherts or rhyolite, which may be an indicator of this tradition in the Upper Susitna region.

While it has not yet been possible to unquestionably document diagnostic artifacts dating to this period, several sites in addition to the Left Fork site (TLM 069) in the project area have yielded artifacts characteristic of this tradition. Bacon (1978a:32) suggested possible Norton influence at TLM 018, based on the occurrence of a triangular trending to pentagonal end blade. Irving (1957:43, 47) reported the discovery of three obliquely pressure flaked side blades on an overlook near the Tyone River. The artifacts reported by Irving still represent the best typological indication of the Norton/Choris tradition in the Upper Susitna.

This critical interval in non-coastal Alaskan prehistory is poorly understood, and the Upper Susitna River holds excellent potential for resolving the myriad of problems associated with it. Extensive field investigation of archeological components dating to this interval is essential to: 1) document the material cultural remains dating to this period, 2) elucidate settlement and subsistence patterns, and 3) resolve the problems associated with the postulated late Denali complex.

7.7 - Northern Archaic Tradition: ca. 1500 B.C. - ca. 3000 B.C.

Component IV at the Tsusena Borrow C site best documents the stratigraphic placement of the Northern Archaic Tradition within the project area. The stratigraphic position of this component is clear and is supported by a radiocarbon determination of 2070 ± 65 B.C. (DIC-2283). This component contained the base of a black basalt side notched projectile point and black siltstone flake core along with 312 flakes of basalt and 16 of rhyolite and tuff. Because side notched projectile points are the hallmark of the Northern Archaic Tradition, it is reasonable to ascribe it to the Northern Archaic Tradition in spite of the small sample size.

The Fog Creek Site (TLM 030) was not subject to systematic testing, but did yield reliable data pertinent to defining the Northern Archaic Tradition in the project area. Two components were recognized during reconnaissance testing of the site. The lower component contained a side notched projectile point along with lithic debitage consisting primarily of black basalt. A radiocarbon determination for this component, which also occurs between the Watana and Oshetna tephra, is 2770 ± 130 B.C. (DIC-1880). While systematic testing is required to further define and clarify this site, the preliminary data is strikingly similar to that recovered from Component IV at the Tsusena Borrow C site. The Fog Creek site is significant because it not only confirms the stratigraphic placement of the Northern Archaic Tradition in the project area, but further defines the temporal span of the tradition.

Component II, which occurs between the Watana and Oshetna tephras, at Tuff Creek North (TLM 027), probably reflects a Northern Archaic use of this site. Although no diagnostic artifacts were recovered, the lithic debetage is black basalt, the most common lithologic type associated with the Northern Archaic occupation at both Fog Creek and Tsusena Borrow C. The stratigraphic placement of this component between the Watana and Oshetna tephra strongly supports this interpretation.

Although a number of sites in the project area have yielded side notched projectile points and other artifact types commonly associated with the Northern Archaic Tradition, only Fog Creek, Tsusena Borrow C and Tuff Creek North have yielded cultural horizons that can be dated with a high degree of certainty. It is probable that Component IV at Tsusena Borrow C is not the latest occurrence of this tradition within the project area and that the lowest component at Fog Creek is probably not the earliest. Additionally, no artifacts characteristic of the Northern Archaic Tradition have been found either above the Watana or below the Oshetna tephra. These data suggest a temporal span between 1500 - 3000 B.C. for this tradition in the Upper Susitna region.

These data concur with archeological data from other Alaskan archeological sites. The upper Northern Archaic component at the Dry Creek Site located near Healy, Alaska ranges in age between 2400 and 1400 B.C. (Powers and Hamilton, 1978) and data from the Tangle Lakes area suggests a similar temporal span for this tradition (West 1975). These and other sites in the Alaskan interior support Workman's (1978) hypothesis that Northern Archaic Tradition spread through the Yukon Territory and northward along the Brooks Range to the Onion Portage site by 4000 B.C. and later spread into southern Interior Alaska.

As demonstrated by the Fog Creek and Tsusena Borrow C sites, the study area holds high potential for addressing critical questions pertinent to understanding the Northern Archaic Tradition. These are: 1) closely bracketing the temporal span during which the Upper Susitna was occupied by peoples bearing this tradition, 2) the subsistence strategies and settlement patterns implemented by Northern Archaic Peoples, 3) the nature of house forms and other structures associated with this tradition, and most importantly, 4) data essential to explain the rather dramatic appearance and disappearance of this technological tradition in the archeological record. The Upper Susitna is an extremely critical region for addressing these problems, because various manifestations of this tradition, which may lack diagnostic artifacts (such as side notched projectile points) can be recognized with clarity based on their expected occurrence between the Watana and Oshetna tephras.

7.8 - American Paleoarctic Tradition: ca. 3000 B.C.? - ca. 9000 B.C.?

The lowest component at Tuff Creek North (TLM 027) best documents the stratigraphic placement of this tradition in the project area. At this site, Component III clearly rests on top of glacial drift and is capped by the Oshetna tephra. The Oshetna tephra was deposited prior to approximately 2700 B.C. and probably during the interval between 3000 - 5000 B.C. Although no organic material suitable for radiometric dating was recovered from this component, the artifactual material is considerably older than the Oshetna tephra. The lithics rest on and are intermixed with the upper portion of the glacial drift, and exhibit considerable weathering. Both these factors suggest that they were exposed on the surface for an extended period, possibly several thousand years, prior to the deposition of the Oshetna tephra.

The assemblage contains several blocky cores which result from the manufacture of blades, microblades and blade-like flakes. Core rotation is common, and no "type" core has been identified in the assemblage. In addition to the cores, the assemblage contains blade-like flakes, blades, microblades, and waste flakes. Some of the blades and flakes exhibit edge retouch along their margins, which is generally restricted to one surface of the specimens. No bifacial stone tools were recovered from Component III. Admittedly, the sample is small when compared to the estimated spacial extent of the site, but it does suggest striking technological similarities to the Ugashik Narrows Phase (Dumond 1977) on the Alaska Peninsula, Locality 1 at the Gallagher Flint Station (Dixon 1975), and possibly the Anangula site located on an islet (Ananuliak Is.) off Umnak Island in the Aleutians (Aigner, 1978). Although radiocarbon determinations are not available from this component, it is not unreasonable to estimate the period of occupation between approximately 4000 - 5000 B.C. based on its stratigraphic occurrence below the Oshetna tephra, the advanced degree of weathering exhibited by the lithics, and typological comparison with other Alaskan archeological sites which exhibit similar technological characteristics.

Two additional sites (TLM 040 and TLM 048) appear to contain microblade components which occur below the Oshetna tephra, but the results of systematic testing at these sites are not conclusive. It appears a microblade component is represented in Component II at the Duck Embryo North site (TLM 048) which is probably derived from the contact of the glacial drift and the Oshetna tephra. However, only a single microblade was recovered along with the lithic debetage, and further work is required to clarify the age, nature and extent of this component. At TLM 040, the Tephra Site, numerous obsidian microblades and microblade fragments were recovered. Although their stratigraphic position could not be defined with certainty, there is some indication that they may have been deposited below the Oshetna tephra. Although no radiocarbon determinations are available from either of these sites, future work will probably succeed in defining their stratigraphic position and hopefully provide organics suitable for radiometric dating.

The microblades from the Duck Embryo North and Tephra sites appear to be struck from prepared cores and exhibit a uniformity not reflected in the specimens from Component III at Tuff Creek. The morphological characteristics of these microblades (from TLM 040 and 048) suggest greater technological similarity with specimens commonly associated with the Denali Complex and may probably be of the same age. It is not unreasonable to postulate that all these components may be ascribed to the American Paleoarctic Tradition and probably date to the interval between 3000 and 9000 B.C. It is probable that the blockier rotated blade/microblade cores postdate the prepared cores of the Denali complex, and both assemblages appear to deemphasize the manufacture of bifacial stone tools, particularly projectile points.

The potential of the project area to yield data essential to unraveling many of the complex problems associated with the American Paleoarctic Tradition is excellent. Figure 155 lists those sites which based on limited reconnaissance testing indicate cultural occupation prior to deposition of the Oshetna tephra and which probably contain components which may be ascribed to this tradition. The potential of the Upper Susitna Basin to yield data essential to understanding the complex cultural developments associated with this tradition between the time of deglaciation (12,000 - 9000 B.C.) and ca. 3000 B.C. is excellent.

7.9 - Early Period: ca. 30,000 B.C. - ca. 20,000 B.C.

The midsection, or shaft, of the right femur of a proboscidean (probably *Mammuthus sp*.) was recovered from an exposure near the junction of the Tyone and Susitna Rivers. A single radiocarbon date run on bone collagen from the femur yielded a date of 27,500 ± 610 B.C. (DIC-1819). This age determination coupled with additional dates from the same stratigraphic section demonstrate that at least some portions of the Upper Susitna were deglaciated during mid Wisconsin times. The occurrence of the proboscidean fossil also documents that at least one of the passes through the Alaska Range was deglaciated during this time. These data indicate potential for the discovery of archeological sites in the study area, dating to mid Wisconsin times, however, no indications of cultural remains dating to this period have been recognized in the project area.

7.10 - Summary

Five major cultural traditions have been documented within the study area which span the past 11,000 years. These are: 1) Historic 1900 - present, 2) the Athapaskan Tradition ca. 500 A.D. - 1900 A.D., 3) Choris/ Norton Tradition A.D. 500 - 1500 B.C., 3) Northern Archaic Tradition ca. 1500 B.C. - ca. 3000 B.C., and 4) the American Paleoarctic Tradition ca. 3000 B.C. - 9000 B.C.? The project area was glaciated between approximately 9000 B.C. to 20,000 B.C. and at least partially deglaciated between 30,000 - 20,000 B.C.

Based on the results of the reconnaissance survey and the limited systematic testing of the select archeological sites, the project area holds excellent potential for addressing many long standing anthropological questions. Three tephras permit stratigraphic correlation between many sites and site components. This presents a uniquely significant opportunity to define the development of these archeological traditions which has not been possible elsewhere in interior or south-central Alaska. No single archeological site has been found which preserves the cultural chronology from deglaciation to historic times, but the tephra enable cultural development to be traced through time based on comparisons of a series of sites which can be clearly documented to be temporally discrete.

Because the first goal of archeology is to define cultural chronology, the work conducted thus far has been focused primarily toward this objective. Substantial progress has been made, but clearly considerable additional work is essential if this goal is to be fully realized; particularly during the Choris/Norton and American Paleoarctic Tradition periods. Systematic excavation will not only resolve many of the problems relevant to defining cultural chronology, but concurrently will provide extremely valuable data essential to interpreting the past lifeways of the cultural groups which occupied the region prior to historic contact. Better understanding of subsistence, settlement patterns, and social/cultural phenomena will result as a complementary product of developing the cultural chronology, and future research strategies should attempt to address these problems.

It is already possible to glimpse some of the larger questions which may be addressed as mitigation of adverse impact to cultural resources progresses throughout the project area. Some are: 1) defining and explaining the interrelationship between cultural succession, vulcanism and environmental change, 2) resolution of as yet unresolved questions relevant to firmly documenting, or rejecting, the occurrence of a Late Denali phase, and 3) definition and interpretation of the nature of cultural contacts, or rapid technological change, which occurred during the periods of transition between cultural traditions. Future mitigation of adverse impact to cultural resources must address these and other problems. The legal requirements mandating the preservation of sites is founded in the knowledge that they hold data which may enable potential explanation of such problems. The Upper Susitna River region may be one of the best locales known in Alaska to preserve such information and address these significant scientific and humanistic questions.

Figure 155 Archeological Components in Relation to Stratigraphic Units

AHRS Number	In Drift	Contact Oshetna & Drift	In Oshetna	Contact Oshetna & Watana	In Lower Watana	Contact Upper & Lower Watana	In Upper Watana	Contact Watana & Devil	In Devil	Finely Divided Organics	Organic Silt	Decomposing Macroscopic Organics	Surface Organics	Ground Surface	Comments
Stratigraphic Units	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
TLM 007															No soil profile
TLM 015															Undetermined
TLM 016															Undetermined
TLM 017					X-------	X									
TLM 018+		X?	X							X		X		X	Contact of the Watana and drift
TLM 020															Dickey inscription
TLM 021															Surface
TLM 022+										X		X			
TLM 023															Cabin
TLM 024		X--------	X												
TLM 025															No tephra noted
TLM 026										X-------	X----------	X			
TLM 027+		X		X					X						Cultural material on drift
TLM 028															Surface
TLM 029						X									
TLM 030		X		X		X				X					
TLM 031															Surface
TLM 032															Surface

AHRS Number	In Drift	Contact Oshetna & Drift	In Oshetna	Contact Oshetna & Watana	In Lower Watana	Contact Upper & Lower Watana	In Upper Watana	Contact Watana & Devil	In Devil	Finely Divided Organics	Organic Silt	Decomposing Macroscopic Organics	Surface Organics	Ground Surface	
	14	13	12	11	10	9	8	7	6	5	4	3	2	1	Stratigraphic Units
															Comments
TLM 033+								X							Only one artifact recovered
TLM 034					X------	X									
TLM 035										X					
TLM 036															Surface
TLM 037															Surface
TLM 038+									X?						Mixed silt and tephra
TLM 039+		X	X	X	X------	X-------	X	X	X						
TLM 040+			X	X	X	X	X	X	X	X					Cryoturbation
TLM 041															Surface
TLM 042+					X------	X-------	X								
TLM 043+											X----------	X----------	X		Solifluction
TLM 044										X-------	X----------	X			
TLM 045							X-------	X---------	X--------	X					
TLM 046+			X		X------	X-------	X			X					
TLM 047															Surface
TLM 048+										X- - --	X- - --	X			
TLM 049												X			

Figure 155 Continued

AHRS Number	In Drift	Contact Oshetna & Drift	In Oshetna	Contact Oshetna & Watana	In Lower Watana	Contact Upper & Lower Watana	In Upper Watana	Contact Watana & Devil	In Devil.	Finely Divided Organics	Organic Silt	Decomposing Macroscopic Organics	Surface Organics	Ground Surface	Comments
Stratigraphic Units	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
TLM 050+										X					Possible mixed tephra
TLM 051				X											Could be older
TLM 052										X					
TLM 053								X							Mixing
TLM 054								X	X	X	X				
TLM 055										X	X				
TLM 056															Surface
TLM 057															Surface
TLM 058										X					
TLM 059+										X					
TLM 060										X					
TLM 061										X					
TLM 062+			X	X	X	X	X		X	X					
TLM 063															No tephra noted
TLM 064										X					
TLM 065+										X					
TLM 066															Surface
TLM 067										X	X	X			
TLM 068															Surface

Figure 155 Continued

Figure 155 Continued

	In Drift	Contact Oshetna & Drift	In Oshetna	Contact Oshetna & Watana	In Lower Watana	Contact Upper & Lower Watana	In Upper Watana	Contact Watana & Devil	In Devil	Finely Divided Organics	Organic Silt	Decomposing Macroscopic Organics	Surface Organics	Ground Surface	
	14	13	12	11	10	9	8	7	6	5	4	3	2	1	Stratigraphic Units
AHRS Number															Comments
TLM 069+	X				X	X	X		X	X	X				Tephra units mixed
TLM 070															Surface
TLM 071															Cabin
TLM 072										X	X				
TLM 073		X	X	X	X	X				X	X	X			
TLM 074								X	X	X					
TLM 075										X					
TLM 076															Surface
TLM 077		X													
TLM 078					X	X	X								
TLM 079															Cabin
TLM 080															Cabin
TLM 081					X										
TLM 082															Surface
TLM 083															Undetermined
TLM 084										X					
TLM 085					X	X	X	X	X	X					
TLM 086															Surface
TLM 087										X					Solifluction
TLM 088		X	X	X						X					

AHRS Number	14 In Drift	13 Contact Oshetna & Drift	12 In Oshetna	11 Contact Oshetna & Watana	10 In Lower Watana	9 Contact Upper & Lower Watana	8 In Upper Watana	7 Contact Watana & Devil	6 In Devil	5 Finely Divided Organics	4 Organic Silt	3 Decomposing Macroscopic Organics	2 Surface Organics	1 Ground Surface	Comments
TLM 089										X		X	X	X	
TLM 090															Surface
TLM 091															Surface
TLM 092															Surface
TLM 093				X						X	X	X			
TLM 094				X	X	X	X	X	X	X	X				Poor stratigraphy
TLM 095		X	X	X	X	X	X	X							
TLM 096									X	X	X				
TLM 097				X				X	X	X					
TLM 098															Surface
TLM 099															Surface
TLM 100															No testing
TLM 101															Surface
TLM 102						X				X					
TLM 103															Surface
TLM 104										X					
TLM 105		X	X	X											
TLM 106															Surface
TLM 107															Surface
TLM 108															Surface
TLM 109															Surface

Figure 155 Continued

Figure 155 Continued

AHRS Number	In Drift (14)	Contact Oshetna & Drift (13)	In Oshetna (12)	Contact Oshetna & Watana (11)	In Lower Watana (10)	Contact Upper & Lower Watana (9)	In Upper Watana (8)	Contact Watana & Devil (7)	In Devil (6)	Finely Divided Organics (5)	Organic Silt (4)	Decomposing Macroscopic Organics (3)	Surface Organics (2)	Ground Surface (1)	Comments
TLM 110					X	X	X	X	X	X	X	X	X	X	Midden
TLM 111															Surface
TLM 112															Surface
TLM 113															Surface
TLM 114															Surface
TLM 116															Rock carin
TLM 117															Surface
HEA 174															Surface
HEA 175+	X														Stratigraphy dominated by silt, sand and gravel. No tephra noted. Cryoturbation
HEA 176		X	X	X											No Oshetna. Present contact of Watana and Drift
HEA 177															No tephra noted
HEA 178															Surface
HEA 179															Surface
HEA 180															Surface

AHRS Number	In Drift	Contact Oshetna & Drift	In Oshetna	Contact Oshetna & Watana	In Lower Watana	Contact Upper & Lower Watana	In Upper Watana	Contact Watana & Devil	In Devil	Finely Divided Organics	Organic Silt	Decomposing Macroscopic Organics	Surface Organics	Ground Surface	
	14	13	12	11	10	9	8	7	6	5	4	3	2	1	Stratigraphic Units•
															Comments
HEA 181		X--------	X---------	X--------	X------	X-------	X								
HEA 182															Surface
HEA 183															Surface
HEA 184															Surface
HEA 185															No testing
HEA 186															No tephra noted

*Three tephra units have been identified in the study area: Oshetna (greater than 4700 B.P.), Watana (2300-3200 B.P.) and Devil (1800-2300 B.P.) These are regional names. The correlation of these ash falls to known ash falls remains to be determined. Association of cultural components with tephra units for sites receiving only reconnaissance testing is preliminary.

+Systematically tested site (1981).

•Correspond to stratigraphic units on Figure 152, Chapter 5.

--- indicates that cultural material could not be attributed to a specific unit.

Figure 155 Continued

8 - IMPACT ON HISTORIC AND ARCHEOLOGICAL SITES

8.1 - Introduction

The level of impact the Susitna Hydroelectric Project will have on specific sites or groups of sites depends on the location of these cultural resources in relation to areas affected by construction, operation, maintenance, overall land modification, and ancillary development of the Susitna Hydroelectric Project and the type of activities which will occur in these areas. Sites directly impacted are those sites which are immediately affected by ground disturbing activities associated with preconstruction, construction or operation of the project. These include, but are not limited to, dam construction, access roads, borrow areas, camps, transmission lines, staging areas, airstrips, and reservoirs behind the Devil Canyon and Watana dams. Indirect impact will result from adverse effects that are secondary but clearly brought about by the project and which would not occur if the project were not undertaken. Indirect impact will occur on sites affected by altered drainage patterns (erosion) associated with filling of the reservoirs, secondary land modifications such as altered drainage and accelerated erosional processes associated with dam and spillway construction, greater access to remote areas, increased number of project personnel in the area during and after construction, and impacts related to project maintenance. Potential impact is connected with ancillary development which can be predicted to occur as a result of the project, but which depend on other variables which are not known at this time, including possible engineering changes in the project. Although the specific impact agent or specific sites that would be impacted are not presently known, impact to sites or groups of sites can be predicted to occur as a result of expected recreational use of the area and increased development associated with this activity. Potential impact could become direct impact, indirect impact or no impact depending on how these activities affect the areas containing cultural resources. For the FERC license application the location of all project facilities and recreational development will likely be known. It will then be possible to identify sites in the potential category that will receive direct, indirect, or no impact.

8.2 - Significance

To comply with FERC regulations, impact analysis of cultural resource sites need only be conducted on those sites "either listed in, or recommended as eligible for, the National Register of Historic Places." Therefore, prior to determining whether the Susitna Hydroelectric Project will have any adverse effect on a site or group of sites it is first necessary to determine if the site or group of sites is significant. Determination of significance is based on the application of National Register of Historic Places criteria which define significance "in American history, architecture, archeology, and culture present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, and association and/or that are associated with events that have made significant contributions to the broad patterns of history; or are associated with the lives of persons significant in our past; or that embody the distinctive characteristics of a type, period, or method of construction, or that represents the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or have yielded or may likely yield information important in prehistory and history" (36 CFR 60).

A determination of significance must be based on adequate information, otherwise it is premature. For this project a program of reconnaissance level testing was implemented to locate and document sites. In order to generate sufficient data on which to base an evaluation of significance, systematic testing was employed. In most cases (a notable exception being historic cabins), systematic testing is necessary to assess significance. The 18 sites systematically tested all provided sufficient data to address the question of significance.

On one level all sites are significant because each one represents a portion of the thread of human prehistory in the Upper Susitna River region. Regardless of the yardstick applied, significance implies a frame of reference, problem orientation, geographic, temporal, or other context against which significance is evaluated. Sites can be significant on several levels of interpretation. Through application of National Register Criteria, a site may be evaluated as a single entity or in terms of its relationship to a group of sites (relative significance). If all of the sites within a drainage system such as the Upper Susitna were known and the region itself well studied (which it is not), relative significance of sites or group of sites could be established with some degree of confidence. However, when a site or group of sites are located in an area such as the Susitna Valley that is relatively unknown archeologically, it is difficult to establish relative significance.

Significance itself is a relative term which is used in an historic context dependent on the current state of knowledge, method and theory employed, and research questions asked. New techniques and methods have enabled archeologists to collect new and different types of data which allow new questions to be formulated and addressed. Although National Register Criteria are subject to ongoing modification, significance pertaining to archeological sites generally emphasize research potential, site integrity and/or public appreciation.

Although all sites located as a result of this study are related geographically, and many no doubt temporally, the exact relationships await further study. Many of the sites were found associated with one or more of three tephras which provide limiting dates in a restricted geographic context and provide a unique and scientifically important opportunity to construct the first cultural chronology for the Upper Susitna River Valley. Armed with all this information it is possible to state that all sites found to date in the study area are likely significant and could collectively hold the potential for defining the prehistory for this region of Alaska and, therefore, may be eligible for inclusion in the National Register of Historic Places. Based on all data collected to date, a preliminary cultural chronology has been developed (see Chapter 7).

Significance must be assessed on adequate data. Only 18 of the sites located and documented during the two field seasons have been systematically tested (due to time and budgetary constraints) and adequate data are available from these 18. Evaluation of specific site significance for the remaining sites must await systematic testing. However, because many of the sites occur in relation to three tephras it is possible to consider the collective significance of all sites for delineating the prehistory and history of the Upper Susitna River Valley. From this perspective all sites located to date appear to qualify for the National Register of Historic Places.

Given this level of significance it may be appropriate to nominate these sites to the National Register as an archeological district because of the unique opportunity the known sites in this area (as well as yet undiscovered sites) have for addressing questions concerning the prehistory of a large portion of Interior Alaska which is presently not well defined. If a nomination of this type is made, it should be done in concert with the State Historic Preservation Officer.

8.3 - Watana Dam and Impoundment

Two historic sites and 26 archeological sites were located and documented in areas to be impacted by the Watana Dam and its impoundment. The two historic sites (TLM 079, TLM 080) will be directly impacted. Twenty-four of the archeological sites will be directly impacted (TLM 017, TLM 018, TLM 026, TLM 033, TLM 039, TLM 040, TLM 042, TLM 043, TLM 048, TLM 050, TLM 058, TLM 059, TLM 060, TLM 061, TLM 062, TLM 063, TLM 064, TLM 065, TLM 072, TLM 073, TLM 075, TLM 077, TLM 102, TLM 104) and two indirectly impacted (TLM 015, TLM 016).

8.4 - Devil Canyon Dam and Impoundment

One historic site and six archeological sites are presently known in areas to be impacted by the Devil Canyon Dam and its impoundment. The one known historic site (TLM 023) and the six archeological sites (TLM 022, TLM 024, TLM 027, TLM 029, TLM 030, TLM 034) will all be directly impacted.

8.5 - Proposed Borrow Areas, Associated Facilities, and Areas Disturbed by Geotechnical Testing

Proposed borrow area C, which was examined during the 1981 field season, has been eliminated from consideration as a potential borrow source. The sixteen sites located in this area are not included under this heading, but are included in section 8.8.

Eight archeological sites are presently known in the portions of the proposed borrow areas examined to date (A, B, D, E, F, G), and areas disturbed by geo-technical testing. Two sites will be directly impacted (TLM 035, TLM 051), and six sites have the potential of being impacted (TLM 068, TLM 070, TLM 082, HEA 177, HEA 178, HEA 179). Additional potential borrow areas have been identified (H, I, J, K) and another expanded (F) which remain to be examined for cultural resources. Sites that fall within both an impoundment area and a potential borrow source are included under the appropriate impoundment section. Proposed borrow areas I and J are located within expected impoundment areas.

8.6 - Proposed Access Route

Alternative access corridors were examined at the reconnaissance level during the 1981 field season. Since that investigation a proposed corridor from the dam sites west to the Parks Highway has been selected as the access corridor which will receive further investigation. The 14 sites located along the alternative corridor from the Watana dam site to the Denali Highway are not included in this section but are included in Section 8.8.

Eleven archeological sites are presently known along the selected access corridor. Four will be directly impacted (TLM 108, TLM 109, TLM 110, TLM 113), five indirectly impacted (TLM 101, TLM 103, TLM 111, TLM 112, TLM 114) and two have the potential of being impacted (TLM 106, TLM 107).

8.7 - Transmission Lines

The one possible site found during the very cursory four-hour aerial reconnaissance of the transmission lines remains to be documented, therefore it is not possible to evaluate impact at this time. It may be necessary to return to the site and conduct further testing. As previously noted transmission lines were not part of the scope of work for subtask 7.06, Cultural Resource Investigations, it is recommended that more indepth reconnaissance and followup systematic testing along the proposed transmission lines be conducted when the locations of transmission rights-of-way, roads, towers, etc. are being chosen. Then the impact to cultural resources can be evaluated and a mitigation plan developed.

8.8 - Other Areas (areas outside the above categories but within the study area)

Sites previously included in proposed borrow area C and sites along the alternative access corridor from the Watana dam site to the Denali Highway are included in this section along with other sites located during field investigations.

Two historic sites and 59 archeological sites are known in this area. The two historic sites presently known in this area (TLM 056, TLM 071) both have the potential of being impacted by the project. Fifty-two of the archeological sites have the potential of being impacted by the project (TLM 007, TLM 025, TLM 028, TLM 031, TLM 032, TLM 036, TLM 037, TLM 041, TLM 044, TLM 045, TLM 046, TLM 052, TLM 053, TLM 054, TLM 055, TLM 057, TLM 066, TLM 067, TLM 069, TLM 078, TLM 081, TLM 083, TLM 084, TLM 085, TLM 086, TLM 087, TLM 088, TLM 089, TLM 090, TLM 091, TLM 092, TLM 093, TLM 094, TLM 095, TLM 096, TLM 097, TLM 098, TLM 099, TLM 100, TLM 105, TLM 116, TLM 117, HEA 174, HEA 175, HEA 176, HEA 180, HEA 181, HEA 182, HEA 183, HEA 184, HEA 185, HEA 186). The remaining seven archeological sites will be indirectly impacted by the project (TLM 020, TLM 021, TLM 038, TLM 047, TLM 049, TLM 074, TLM 076).

Although 52 sites in this category are presently located outside expected direct and indirect areas, they could be impacted depending on future developments associated with the Susitna Hydroelectric Project. At present, they should be avoided. However, if and when it is determined that these sites will be either directly or indirectly impacted, it will then be necessary to mitigate this impact. When final plans for the project, including recreational activities, are available it may then be possible to determine specific sites which will not be impacted by the Susitna Hydroelectric Project.

9 - MITIGATION OF IMPACT ON HISTORIC AND ARCHEOLOGICAL SITES

9.1 - Mitigation Policy and Approach

It is mandated by federal law that the effect of any federal project or federally licensed project on cultural resources must be assessed and mitigation measures developed to lessen or avoid the impact on these resources. Mitigation is a basic management tool providing options to be considered during the overall decision making process. Although the concept has and is presently undergoing refinement it clearly consists of three options: avoidance, preservation and investigation.

(a) Avoidance

Avoidance consists of any measures that avoid adverse effects of a project on cultural resources. Avoidance in and of itself may not be totally effective if not coupled with a preservation program that will ensure that a historic or archeological site protected from the immediate adverse effect (direct and indirect impact) of the project is not inadvertently damaged in the future as a result of the project (potential impact). For the Susitna Hydroelectric Project, potential damage may result from, but is not limited to, operation of the facilities, increased access to remote areas, recreational activities, private development, and the transfer of lands from federal and state governments to corporate or private parties. Therefore, avoidance must be considered in terms of long range and short range goals aimed at protecting cultural resources beyond the immediate construction phase of the dam and its ancillary facilities.

(b) Preservation

Preservation is any measure that results in the reduction or avoidance of impact on cultural resources through physical maintenance or protection aimed at preventing further deterioration or destruction. Preservation, as with avoidance, implies both short term and long term measures. Preservation may consist of stabilization, reconstruction, as well as preservation of a site by constructing a barrier around the site, patrolling and monitoring the site, public education, or the establishment of an archeological preserve. Of all the preservation options available for the Susitna Project, public education may have the greatest potential for long term preservation of not only a particular site or group of sites but for cultural resources in general.

(c) Investigation

Investigation refers to a problem orientated data recovery program aimed at collecting and conserving archeological data in a scientific manner. A program of this type means that data recovery procedures are developed for each site or group of sites, analysis of materials is undertaken, and the results are disseminated to professional and public audiences. In addition to investigation as a method of avoiding adverse impact, a site(s) could be investigated (excavated), either partially or in whole, if a site(s) appears to fit the research needs of the overall cultural resource management program; if a site(s) may contain information critical to the larger mitigation program; or if a site(s) can not be protected from indirect or potential impact such as increased off the road traffic, increased recreational use, an increase in the number of people in the area or increased site visibility.

9.2 - Mitigation Plan

Any mitigation plan must be based on an evaluation of project impact on the total resource, including known and undiscovered sites. Therefore, because only a portion of the area to be impacted by the Susitna Hydroelectric Project has been surveyed and investigated, any mitigation plan must include a program to examine the entire area and mitigate adverse effects on all sites on or eligible for the National Register of Historic Places.

(a) Details of Plan

For all sites that will be adversely impacted by the Susitna Hydroelectric Project, either directly or indirectly, investigation is recommended. For those sites that could be potentially damaged, avoidance with an accompanying protection plan is recommended. Preliminary analysis of the sites presently known indicates that 7 sites will be directly impacted in the Devil Canyon area. Investigation is recommended for all 7 sites. In the Watana Dam area, 26 sites will be directly impacted and 2 sites indirectly impacted. For these 28 sites investigation is recommended. Within the proposed borrow areas (not including I, J, K, L or the extension of F which were identified after the 1981 field season or C which has been eliminated as a potential borrow source) 2 sites will be directly impacted and should be investigated. The 6 sites that could be potentially damaged should be avoided and a preservation plan developed. To date, the proposed access corridor actually selected after the 1981 field season contains 9 sites that will be directly or indirectly impacted and should be investigated. If realignment of the proposed access route can be accomplished in certain areas, mitigation of direct impact by avoidance may be possible. The 2 sites in this area that could be potentially damaged should be avoided and a protection plan developed. Sixty-one sites fall outside of any of the above mentioned categories but within the study area. Seven sites will be impacted by the project and should be investigated. The remaining 54 sites could potentially be impacted and should be avoided and an accompanying protection plan developed.

It is assumed that once a transmission route is surveyed, a reconnaissance-level survey will be conducted. Since the transmission line right-of-way can, in most cases, be aligned to skirt any cultural resources located, mitigation of known sites can be accomplished primarily by avoidance and preservation. The effects on those sites that cannot be avoided by aligning tower locations and/or access roads could be mitigated by investigation.

Of the sites presently known, 56 archeological sites and 3 historic sites will definitely be adversely effected by the Susitna Hydroelectric Project and should be investigated. Fifty-six sites could potentially be impacted and should be avoided and a protection plan developed.

(b) State and Federal Agency Recommendations and Applicant's Variation from these Recommendations

The recommendations as presented in this report should be submitted to the Alaska State Historic Preservation Officer, as well as the Advisory Council on Historic Preservation, for review and comment. Comments on this report, the Feasibility Report, and draft License Application should be discussed with the SHPO and the final mitigation plan submitted as part of the FERC license application. Prior to the implementation of any mitigation plan, the Advisory Council on Historic Preservation must be afforded the opportunity to comment on the plan. Compliance with (or justification for variation from) recommendations to mitigate the effect of the Susitna Hydroelectric Project on cultural resources is the responsibility of the applicant, the Alaska Power Authority.

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11 - AUTHORITIES CONTACTED

State Agencies

Division of Parks, Anchorage, Alaska

Mr. Doug Reger - State Archeologist
- Letter from E. James Dixon, Jr., January 10, 1980, requesting State of Alaska Antiquities Permit for 1980 field season.

Mr. Doug Reger - State Archeologist
- Letter from E. James Dixon, Jr., requesting State of Alaska Antiquities Permit for 1981 field season.

Mr. Robert Shaw - State Historic Preservation Officer, and
Mr. Ty Dilliplane - acting State Archeologist
- Discussion with E. James Dixon, Jr., George S. Smith, Jim Gill and Bob Krogseng, January 22, 1982, concerning the general mitigation plan and approaches to mitigating adverse impact to cultural resources located and documented during the 1980 and 1981 field seasons.

Federal Agencies

Heritage Conservation and Recreation Service

Mr. Charles McKinney - Departmental Consulting Archeologist
- Letter from E. James Dixon, Jr., December 29, 1979, requesting Federal Antiquities Permit for 1980 field season.

National Park Service

Ms. Gail Russell - Staff, Interagency Service Division
- Letter from E. James Dixon, Jr., November 22, 1980, requesting Federal Antiquities Permit for 1981 field season.

Bureau of Land Management

Dr. Ray Leicht - Archeologist
- Discussion with E. James Dixon and George S. Smith, March 26, 1980, concerning the process necessary to conduct archeological excavations on BLM lands should it become necessary to do so during the 1980 or 1981 field seasons.

APPENDIX A

1 - LITERATURE REVIEW--ARCHEOLOGY, ETHNOLOGY, AND HISTORY

1.1 - Previous Archeological Research

Scientific archeological investigation of the upper Susitna River Valley began over 27 years ago; however, research during the intervening years has been sporadic. In 1953, Ivar Skarland conducted an aerial reconnaissance of the region in preparation for a survey conducted by William Irving in that same year. This work was done under contract to the National Park Service. Irving's survey was designed to investigate impoundment areas of dams proposed for the Susitna River (Irving 1957:37). His efforts were focused on the proposed Devil Canyon Dam, and near Lakes Susitna, Louise, and Tyone. The lakes were investigated because the proposed Vee and Denali dams were to be located above the present Watana dam site and expected to inundate these areas (Irving 1957).

Eleven sites were found on the lakes and a twelfth site was discovered approximately three miles above the confluence of Tyone Creek and the Tyone River (Irving 1957). Five of the sites contained remains of semi-subterranean houses which Irving thought resembled houses that Rainey (1939) found along tributaries of the upper Copper River. Both post-contact and early pre-contact sites were reported by Irving. A multicomponent site, site 9, was found north of the outlet of Lake Susitna and was reported to contain late prehistoric Athapaskan, Arctic Small Tool Tradition, Northern Archaic Tradition, and Denali Complex components (Irving 1957).

Frederick Hadleigh-West conducted a brief survey in the study area during the summer of 1971 and located five sites adjacent to Stephan Lake (West 1971). Survey for the proposed Denali State Park was the reason for this survey and consequently the report contains little data on the Stephan Lake sites. The files of the Alaska State Archeologist contain information which indicate that one site (TLM-007) is multicomponent and has been radiocarbon dated to 4,000 B.C.

A recent study, Bacon (1975a), utilized an aerial reconnaissance of the study area to delineate several locales of high archeological potential along the upper Susitna utilizing an ecotone model to predict probable site locations. Most recently, Bacon (1978a; 1978b) conducted surveys near the Devil Canyon and the Watana Dam sites. No sites were found at the proposed Devil Canyon Dam site but in the vicinity of the Watana Dam site prehistoric sites were discovered. Site TLM-016 was radiocarbon dated to 3,675 ± 160 B.P.: ca. 1,725 B.C. Bacon (1978a:23) suggests occupation as early as 8,000 to 10,000 years ago at site TLM-015 and a possible Norton influence at site TLM-018.

Fifteen historic and prehistoric archeological sites are known from surveys in the study area conducted prior to the present study. Preliminary geologic analysis of the study area suggests that it has been ice free for approximately the last 13,000-11,000 years. Archeological sites dating from late Pleistocene to historic times have been found within the project area. The earliest C14 dates from the immediate project area document human occupation as early as 4,000 B.C.

1.2 - Regional Prehistory

Data available from the study area prior to 1980 and 1981 was inadequate to accurately define the cultural historical sequence. Consequently, it was necessary to draw on data from adjacent areas to construct a speculative prehistory for the upper Susitna River. Past studies of this type have proven to be fairly reliable indicators of cultural periods within a given area (Dixon, Smith, and Plaskett 1980a). The following regions adjacent to the study area will be considered: the Tanana Valley, Nenana River, the areas near Lakes Susitna, Louise, Tyone, and Tangle Lakes, the upper Copper River Valley, and the upper Cook Inlet region.

It is not necessary to discuss all sites within each area to project a probable cultural chronology for the upper Susitna because many sites within each area represent similar temporal and cultural periods and others lack diagnostic artifacts or have not been subject to absolute or relative dating techniques.

(a) Central Alaska Range

(i) Dry Creek

The Dry Creek site is located 10 miles north of Mt. McKinley National Park. It is a multicomponent site representing exploitation of a shrub tundra environment prior to 9,000 B.C. (Powers and Hamilton 1978:72). The latest component dates between 2,400 and 1,400 B.C. and may provide the best known temporal documentation for a notched projectile point horizon in Interior Alaska (Dixon, Smith and Plaskett 1980b). The projectile points together with end scraper forms, and time of occupation are suggestive of the Northern Archaic Tradition. This and other notched point sites in the Interior support Workman's (1978) hypothesis that Northern Archaic groups spread through the Yukon Territory and northward along the Brooks Range to the Onion Portage site by 4,000 B.C. and later spread into southern Interior Alaska. These data suggest that notched points and Northern Archaic Tradition artifact material could be found within the Susitna study area. Several sites representing this period were located during the first half of the 1980 field season.

An older component at Dry Creek dates to ca. 8,600 B.C. and contains a microblade core and microblade industry which is comparable to the Denali Complex of Interior Alaska (West 1967) and the Akmak level at Onion Portage on the Kobuk River (Anderson 1968a). The similarity of these assemblages with the late Pleistocene Diuktai culture of northeastern Siberia has been noted by Powers and Hamilton (1978:76).

(ii) Carlo Creek

The Carlo Creek site is just east of Mt. McKinley National Park, and dates to ca. 8,500 years ago (Bowers 1978a:14). The oldest of two components produced percussion-flaked elongate bifaces, biface fragments, retouched flakes, several thousand waste flakes and a possible bone awl (Bowers 1978a:1). Component II consists of a few rhyolite waste flakes and is older than ca. 3,700 B.C.

Granulometric analysis of Component I sediment "indicates that human occupation occurred on a former sandbar/levee of the Nenana River, during a period of early postglacial downcutting and terrace formation" (Bowers 1978a:16). Analysis of Component I faunal remains suggests that this site may have been a fall/winter hunting camp. Component I may contain evidence of heat-treatment of lithic material to improve flaking (Bowers 1978a:6).

Although Component I tools are nondiagnostic and the sample size small, Bowers (1978a) compared this material with assemblages from other sites. He suggests that Component I at Carlo Creek may have some affinity with Component II at the Dry Creek site (ca. 8,600 B.C.) (Powers and Hamilton 1978:74), and the McKinley Park Teklanika River sites (West 1965) on the basis of similar morphology of bifacial industries (Bowers 1978a:14). General similarities were also noted with the "early horizon" at Healy Lake (Cook 1969), various Denali Complex sites (West 1965, 1967) and possibly with the Akmak assemblage from Onion Portage (Anderson 1970; Bowers 1978a:14).

(iii) Teklanika Sites

Sites, Teklanika 1 and 2, were excavated by Frederick Hadleigh-West in Mt. McKinley National Park in 1961, and are located within a half mile of each other. Teklanika 1 occupies a knob overlooking the Teklanika River and is west-northwest of Teklanika 2, which is on a nearby ridge. They produced sufficient cultural material to support the supposition that these were habitation sites (West 1965:5). It appears that they functioned as game lookouts and flaking stations, a point confirmed by Traganza (1964). Teklanika 1 and 2 contain projectile points (mainly tips), leaf-shaped knives, end scrapers, side scrapers, tabular blade cores, microblade cores (similar to Campus cores), microblades (prismatic blades), burins, scrapers or end blade tools, one polished adze blade (Teklanika 2) and a pebble hammer (Teklanika 2).

West interprets this material as coeval with Anangula (ca. 8,500 B.C.) or slightly earlier than the Campus site (West 1971:73). He suggests that they date between 8,000 and 10,000 B.C. In light of recent work and the cultural chronology suggested by this report, it would appear that these dates are not unreasonable, although, the oldest known site in Alaska, Moose Creek, is 9,700 years B.C. (Hoeffecker 1979). The dating of the Moose Creek site is based on a single C14 determination and may be subject to reinterpretation as additional dates become available. Moose Creek appears to lack microblade and blade or microblade core technology and these are associated with both Teklanika sites. These forms indicate affiliation with the Denali Complex which dates as early as 8,600 B.C. at Dry Creek. The Teklanika sites may be closer in age to West's 8,000 B.C. projection than 10,000 B.C. However, microblade sites may extend into the Christian era from 500 A.D. to 1,000 A.D. (Cook 1969; Holmes 1976) and the Teklanika sites could be quite recent in age, as may possibly be suggested by the polished adze blade.

(iv) Nenana River Gorge Site

The Nenana River Gorge Site is located at the northwest boundary of Mt. McKinley National Park. The prehistoric component at the site represents a seasonal hunting campsite of Athapaskan Indians and has been radiocarbon dated to approximately 1,600 A.D. (Plaskett 1977). It is not certain which Athapaskan subgroup occupied the site. Prehistoric archeological material found includes obsidian and pottery thought to have originated north of the Alaska Range and copper and chalcedony from south of the Alaska Range; suggesting that trade and communication among different Athapaskan groups occurred prehistorically.

(b) Tanana Valley

(i) Lake Minchumina

Several sites on the shores of Lake Minchumina in the western Tanana Valley document human occupation spanning approximately the past 2,500 years (Holmes 1976, Hosley 1967, West 1978). The oldest site known is MMK-004 where a lower level was dated to ca. 500 B.C. and an upper level dated to ca. 1,000 A.D. (Holmes 1976:2). The site is thought to represent a continuous sequence between these dates (Holmes 1976:2). Noteworthy is an apparent late persistence of microblade core and burin technology which dates to between 800 A.D. to 1,000 A.D. Notched points were recovered in addition to microblades in Holmes' level one, but the exact association of these artifacts is not clear and late persistence of microcore technology and affiliations with the earlier Denali Complex of Interior Alaska are unresolved questions. Until further research is conducted it may be prudent to consider that two traditions, i.e., Northern Archaic and Late Denali, may have coexisted during this time.

Holmes (1978) presents some comparative data on the assemblage from MMK-004. Point/knives from the lowest level resemble Choris points, and have been equated with the Norton period (Holmes 1976:5). A relationship between MMK-004 and forest adapted Ipiutak/Norton cultures similar to those from Onion Portage and Hahanudan Lake has also been suggested (Holmes 1976:8; Dumond 1978:14).

The majority of obsidian from MMK-004 is from the Batza Tena source near the Koyukuk River to the north and indicates trade over considerable distance in Interior Alaska. The obsidian is also present at Gulkana in the Copper River Valley and suggests widespread trade in that direction as well. Several other sites, the Birches site with a date of ca. 520 A.D. (West 1978), and MMK-012 dating to ca. 50 A.D. (Holmes 1976:8), demonstrate more recent occupations at Lake Minchumina.

(ii) Campus Site

The Campus site on the Fairbanks campus of the University of Alaska appears to contain a Denali Complex component of microblades, microblade cores and burins. Also present are notched points and other materials characteristic of the Northern Archaic Tradition. Stratigraphic control at the site is poor and dating has not been established.

(iii) Healy Lake

The Village site at Healy Lake has yielded evidence for human occupation of Interior Alaska by ca. 9,000 B.C. (Cook 1969). Five components have been identified at the site. The upper level, just below the sod, contained stemmed and notched points, and microblades, a situation similar to the Minchumina site MMK-004 and suggestive of both the Northern Archaic and Denali peoples. Below this level are two components similar to the Denali Complex defined by West (1967). The lowest level named the Chindadn complex was characterized by triangular projectile points, tear-dropped shaped knives, and possibly an absence of microblades.

(iv) Dixthada

The Dixthada site on Mansfield Lake consists of nine housepits, an associated midden, several storage pits, and 11 tent rings. The site was originally excavated by Rainey (1939:364-371) who interpreted the site as an Athapaskan settlement of the last few hundred years, although, based on presence of a microblade industry, he suggested a relationship with the Campus Site. In 1953 Rainey amended his original evaluation of site age by assigning the microcores and microblades to an earlier component based on comparison with sites of known age (Rainey 1953). Additional excavations by Cook and McKennan in 1970 indicate that a yellow silt horizon located under the middens at Dixthada contained the core and microblade industry (Shinkwin 1975:149-150). These excavations supported the conclusion that the site was multicomponent, as suspected by Rainey.

Shinkwin (1975) studied materials from both components at Dixthada. The upper component, although mixed, contains an array of copper implements, bone and antler artifacts, bifacial knives, scrapers, whetstones, hammerstones, grinding stones, an adze and two axes (Shinkwin 1975:151-152) and represents a late prehistoric/early historic Athapaskan group as suggested by Rainey (Shinkwin 1974:153). Shinkwin notes similarity of the upper level lithic and bone industries to the Klo-kut site in the Yukon Territory. The lower component contains a microcore and microblade industry dating 470 ± 60 B.C.

(v) <u>Donnelly Ridge</u>

The Donnelly Ridge site is located over 2,600 feet above sea level in the northern foothills of the Alaska Range. The site is situated on one of the highest points in the area and provides an excellent view of the myriad of lakes and ponds which surround it (West 1967:15). A total of 1,512 stone artifacts were recovered, of which 533 show various degrees of use (West 1967:15). Stone artifacts recovered include bifacial biconvex knives, end scrapers, large blades and blade-like flakes, prepared cores, core tablets, microblades, burins, burin spalls, and worked flakes (West 1967: 17-25)

West interprets the site as a seasonal hunting camp used for a short period of time, possibly only one season (West 1967:27). The age of the site is uncertain although two radiocarbon dates (1,830 ± 200 B.P. (120 A.D. ± 200) (B-649) and 1,790 ± 300 B.P. (160 A.D. ± 300) (B-650) have been recorded. However, West feels that these actually date a later tundra fire and not the cultural material (1967:32). Based on comparison of the Donnelly Ridge material with other Denali Complex sites, West suggests an age of at least 10,000 B.C. The Minchumina site, the Village site at Healy Lake, and Dixthada have produced Denali Complex components with dates much more recent than West's projections.

(vi) Ft. Wainwright

A 1979 archeological survey of Ft. Wainwright Reservation in the Tanana Valley led to the discovery of 48 prehistoric and four historic sites (Dixon, Smith, and Plaskett 1980a). Sampling areas for this project, delineated by the research design, corresponded to most of the major elevations within the military reservation. Site locations included: lake shores (Blair Lakes), outlets of streams draining lakes, knolls near streams and rivers, and high bluffs and buttes. Several of the sites were more than 300 m above the Tanana flats and provided excellent views of the surrounding area.

Three sites on the north shore of Blair Lake South were systematically tested: FAI-044, FAI-045, and FAI-048. Site FAI-044 contained historic, late prehistoric Athapaskan, Northern Archaic and possible Denali components. Site FAI-045 contained the same recent historic component documented at FAI-044, and possible Denali component. Samples of radiometric dating were not recovered but the Denali component was inferred from the recovery of microblades and microcores. Only one of four squares tested produced Denali material and two occupations are suggested. In addition to these sites, 10 Denali, 10 Northern Archaic, and 3 historic period sites were documented on the military reservation (Dixon, Smith, and Plaskett 1980a).

(c) Denali Highway Area

(i) Tangle Lakes

The Tangle Lakes are 80 km northeast of the study area and accessible from the Susitna via the McLaren River. Over 220 sites spanning the past 12,000 years have been documented in this area (West 1973). The sites represent several periods including late Athapaskan belonging to the last 3,000 years and an early period which West divides into groups. Denali Complex sites are located on or near old lake shorelines which are about 100 feet above present lake levels (West 1975:79). The Denali occupation at Tangle Lakes may have occurred as early as 10,000 B.C. but radiocarbon dates suggest a more recent date of 8,200 B.C. with the occupation ending about ca. 6,200 B.C. Denali hunters appear to have abandoned the area after that time. There is a hiatus in the Tangle Lakes archeological record until the appearance of the Northern Archaic Tradition (West 1973). The Northern Archaic Tradition was originally defined as a boreal forest adapted culture (Anderson 1968a); however, it may have thrived along the forest edge or even within the tundra forest ecotone (Hickey 1976). Appearance of the Northern Archaic peoples may be associated with a warming trend ca. 5,000 years ago (Anderson 1968b) and raised tree line elevation (Hopkins 1967). The most recent cultural period represented at Tangle Lakes was that of protohistoric Athapaskans (West 1975:20).

(ii) Ratekin Site

The Ratekin site, near the Denali Highway, is located about 75 miles west of Paxson Lake. Although few artifacts have been recovered *in situ*, several surface collections have been made. Based on the collections by Skarland and Keim (1958), it is difficult to assess the significance of the site. Notched points suggestive of the Northern Archaic Tradition are present. Based on the type of notching and comparison with the notched point sequence developed by Anderson (1968a), an age of ca. 2,900 to 2,600 B.C. seems a reasonable inference since side notched, stemmed, and lanceolate forms are present.

The site appears to consist of a number of flaking stations and Skarland and Keim (1958:80) suggest that it functioned as a kill site rather than a camp because of the large number of unbroken arrowheads which they think were lost during the hunt. They also suggest that caribou were funnelled through a narrow corridor near the site created by muskeg to the south and steep hills to the north. Photographs on file at the University of Alaska Museum show a low rock wall at or near the site which may have functioned as a hunting blind. Age of this structure and its association with the Ratekin site have not been determined.

(d) Talkeetna Mountains - Long Lake

The Long Lake site is in the Southern Talkeetna Mountains and contains a microblade and microcore industry which is similar to that of the Denali Complex. Bacon suggests that the site represents "a displacement of the Denali technology to the southern highlands of southern Interior Alaska", a region which "represented a sort of tundra refugium that was pushed southward (but higher in elevation) by invading Taiga Forests" (1975b:4).

(e) Copper River Valley

Archeological investigations in the Copper River Valley began with Rainey's survey of the region in 1936. Most recently a number of historic and prehistoric sites have been located and several excavated (VanStone 1955; Shinkwin 1974; Workman 1976; Clark 1974; Arndt 1977; and others). Workman (1976:8) has synthesized the available data into a four period sequence for the area: historic (1850-present), proto-historic (1770-1850), late prehistoric (1000 A.D.-1770 A.D.), and early prehistoric (? to 1000 A.D.).

The following sites, some which were previously discussed in this report, can be placed within Workman's (1977:9-30) categories, Historic Period: Taral (VanStone 1955), site on Taral Creek (VanStone 1955:121), Susitna site 3A and 6C (Irving 1957:40), village near Batzulnetas (Rainey 1939:362). Protohistoric Period: Dakah D'nin's Village (Shinkwin 1974), VAL 146 (State of Alaska, Division of Parks), feature 77-3-4 at the BUL 077 site (Workman 1976:26-28), Paxson Lake site (Workman 1976:14), Gakona Airstrip Site (Rainey 1939:350), Slana Site (Rainey 1939:361). Late Prehistoric Period: GUL 077 (Workman 1976), MS 23-0 (Clark 1974, 1976), Gulkana River site (Rainey 1939:360), Susitna 3A (Irving 1957:41), Susitna 3B and 3C (Irving 1957:41), Susitna 3D (Irving 1957:41-42), Susitna 6A (Irving 1957:42), Susitna 6B (Irving 1957:42), caches near Batzulnetas (Rainey 1939:361-362), Tangle Lakes caches (Workman 1976:28), Portage site upper component (Workman 1976:28). Early Prehistoric Period: no sites representing this time period have been positively documented in the Copper River Valley, although the Copper River Basin would have been free of ice dammed lakes and available for human occupation by ca. 9,000 years ago (Workman 1976:31). Workman suggests that, when documented, the prehistory of the Coppr River Basin will probably span most of the Holocene times (1976:31). At present, however, there are only traces of occupations predating 1,000 A.D. (Workman 1976:31).

(f) Cook Inlet

(i) Beluga Point

Beluga Point is a multicomponent site composed of two localities on the northern shore of Turnagain Arm in upper Cook Inlet. Beluga Point North contains three components. Component I includes a microblade and core industry associated with the Denali Complex. Comparative data from Denali sites in Interior Alaska and the Alaska Peninsula suggest a tentative date between 4,500 and 7,000 years B.C. for this component (Reger 1977). Component II contains stemmed points and points with tapering bases (Reger 1977). An estimated age is 1,000 to 2,000 years B.C. based on typological comparisons (Reger 1977:9). Components IIIa and IIIb from Beluga Point North are similar to the third period of the Kachemak Bay Sequence as evidenced by ground slate points and stone ringed hearths filled with gravel (Reger 1977). A radiocarbon date for IIIa indicates an age of 790 ± 120 B.P. (960 ± 120 A.D.) while IIIb is estimated to be 1,000 years older (Reger 1977).

Beluga Point South, Component I, includes a few nondiagnostic specimens and dates to 4,155 ± 160 B.P. (2,205 ± 160 B.C.). Reger notes similarities between Beluga Point South Component II and Norton collections from the Iyatayet site. Similarities include steeply retouched end-scrapers, end blades, burin-like scrapers and ground slate points (Reger 1977).

(ii) Kachemak Bay Sequence

Little is known about prehistory of Cook Inlet during the late Pleistocene, ca. 10,000 years ago. The Kachemak Bay Sequence provides an organized data base which can be applied to this study.

The Kachemak Bay tradition first appears in the second millenium B.C. and continues until just before historic contact. Kachemak settlements were usually along rugged coasts with deep water offshore and mountains inland (Reger 1977). Houses were semi-subterranean and made of whalebone, stone, or wood. Economic exploitation concentrated on sea resources, although inland resources were also utilized.

Kachemak I is a poorly defind phase (Workman 1977:35) and absence of reliable dates makes it difficult to place it in a specific time frame. However, relationships with Alaskan Peninsula material and the Takli Beach Phase places it in the second millenium B.C. (Workman 1977:35). Manifestations are known only on Yukon Island and are characterized by a predominance of flaked stone tools, grooved stone weights, and both toggle and dart harpoon heads.

Kachemak II dates from 400 B.C. to as late as 1200 A.D. Typically the assemblage contains large notched stones, grooved stone weights, primarily a flaked stone industry, houses of wood and whalebone and the possible beginnings of grave goods (Workman 1977:35).

A transitional phase called Kachemak Sub III (Workman 1977:35) existed from approximately 400 B.C. to A.D. 0 and flaking was still the primary lithic technology. Stone saws appeared and there was a continuation of elaborate burial practices with the embellishments in later periods. This phase is known from Chugachik Island (SEL-033) and Yukon Island in Kachemak Bay.

Kachemak II began about 800 A.D. (Workman 1977:35). Considering the climax of the tradition, this phase is characterized by an elaborate burial cult indicating dismemberment of the dead, a predominance of ground slate and a florescence of artists' skills. This phase is found at Cottonwood Creek and the Great Midden on Yukon Island.

The Kachemak sequence terminated in a poorly understood Kachemak IV phase during the second millenium A.D. and what is known comes from the upper level of the Great Midden on Yukon Island and the upper component at Cottonwood Creek (Workman 1977:33). Some pottery and native copper has been recovered from Yukon Island, while from Cottonwood Creek (KEN-029) come triangular stemless slate end-blades, an intricate bone knife handle, a barbed bone point and evidence of cannibalism (Workman 1977:33).

The Merrill site, KEN-029, near the Kenai River about 25 miles from the present river channel is on a former meander channel (Reger 1977:37). The lowest level dates to 2,245 ± 115 radiocarbon years or 295 B.C. Reger (1977:50) notes similarities of adze blades, straight based lanceolate points, and stemmed points to the Norton component at the Iyatayet site. Applicable to this study is the fact that the site conforms to locational data from other Norton period sites, i.e., riverine (Reger 1977:51). The riverine adaptation is suggested by evidence for fishing in nearly every Norton period site reported (Reger 1977:51).

1.3 - Ethnographic Information

Ethnographic data suggest that the study area was inhabited by bands of Northern Athapaskan Indians during late prehistoric, protohistoric and historic times. Several subgroups speaking variant dialects of the Athapaskan language may have been present in the area at various times. The immediate study area falls within known historical geographic limits of the region exploited by Tanaina Athapaskans; however, the present area is near other regions occupied by the Ahtna and Tanana Athapaskan groups. Since the known geographic and linguistic distribution of these groups at the time of historic contact cannot be inferred to extend very far backward in time, ethnographic information relevant to all three groups will be included here.

Of importance in developing the research design is ethnographic information concerning subsistence activities of Athapaskans, and how they affect site location and distribution.

For most non-coastal Athapaskan groups, the annual subsistence cycle largely depended on the availability of resources. Major animal resources available throughout the yearly cycle to the groups considered here were moose, caribou, sheep, fish, and waterfowl (McKennan 1959; Guedon 1975; Andrews 1975). During the summer months, fishing was the most important economic activity. Villages would move to fish camps, generally located on clear water tributaries, to catch and dry salmon, much of which was cached for winter use (VanStone 1974; McKennan 1959; Helm 1975; Guedon 1975). Moose and sheep were also hunted in upland and alpine regions during summer months. Spring activities involved muskrat, beaver, and waterfowl hunting and trapping from camps usually located along lake margins or slow-moving streams (McKennan 1959). Small hunting parties also pursued large game during the winter months (Guedon 1975).

Caribou drives took place mainly in the fall or early winter. During this time, long "caribou fences" were constructed to guide them to enclosures where they were snared and killed. Smaller game such as hares were taken throughout the year (VanStone 1974; Nelson 1973). The annual subsistence cycle kept populations mobile within a given territory or range, while focusing them at specific geographic locales at specific points in time to harvest seasonally abundant animal resources. The seasonal round thus created a variety of settlement locales of varying size, function, and duration.

A number of accounts have described interior Athapaskan material culture (McKennan 1959; Guedon 1975; Nelson 1973; Pitts 1972; Vitt 1973). House construction, as it applies to both permanent and temporary structures, would indicate the location of winter settlements. Several types of houses have been described for the early historic period (McKennan 1959; Pitts 1972; Guedon 1975; Shinkwin 1974). One type of winter house was a dome-shaped structure covered with moose or caribou skins. Another form was a rectangular, semi-subterranean log structure covered with bark and sod. Temporary structures consisted of simple brush shelters or lean-tos. The caches used for storing food were of two types--underground, and elevated with logs. Many of these features should be identifiable archeologically, if present in the project area.

The upper Susitna drainage was occupied by Western Ahtna at the time of historic contact. Their subsistence pattern differed in important respects from that of the Ahtna groups whose seasonal round was centered more to the east where fishing on the Copper River and its major tributaries was a primary subsistence activity and winter villages were located at the river (Workman 1976). The absence of the salmon resource base in the upper Susitna drainage resulted in a greater emphasis on hunting of caribou and moose (Irving 1957). Mid-summer through December was primarily devoted to fishing from lakes, their outlets or larger rivers. In late summer and early fall caribou and moose were hunted using fences, snares and surrounds. At mid-winter extensive hunting of moose, bear, and beaver occurred and was possibly accompanied by dispersal into family units from larger multi-family fall villages (Irving 1957). In spring, hunting moved into the hill country south as far as the Talkeetna Mountains where caribou were hunted until mid-summer when fishing resumed. Contacts between the upper Susitna/Lake Louise Ahtna and villages on the Tanana side of the Alaska Range were frequent but the nature of contacts is unknown (Irving 1957). The seasonal round and subsistence strategy of the Western Ahtna appears to have more closely resembled that of interior Tanana Athapaskans then that for most Ahtna centered on the central Copper River.

The Tanaina Athapaskans may have been the first Athapaskan group to come in contact with Europeans and Russians who began to heavily influence their culture by the late eighteenth century (Osgood 1937). Tanaina groups were concentrated on or near the shores of Cook Inlet and in the Iliamna-Lake Clark area as well as inland and are known to have occupied permanant villages containing semi-subterranean houses (Smith and Shields 1977), an atypical settlement pattern for Northern Athapaskans. Richness of salmon runs in the area probably had much to do with the unusual subsistence and settlement pattern (Osgood 1937; VanStone 1974). Some Tanaina groups were also heavily dependent upon coastal, tidal and sea mammal resources for their subsistence, a pattern more closely resembling Eskimo rather than other Athapaskan groups (Townsend 1973).

The Tanaina are known to have traveled widely throughout their territory and trade, as well as warfare, resulted in contact with other Interior Alaskan Athapaskan groups (Townsend 1973; Hosley 1966; Plaskett 1977). However, little is known concerning aboriginal Tanaina exploitation of the more interior portions of their territory which included the upper Susitna, Talkeetna Mountains and the Alaska Range. It is probable that at certain times of the year, i.e., fall and spring/early summer, hunting parties moved into these regions to hunt sheep, caribou and bear. Moose would appear to have been rarely present, at least in the mid-nineteenth century (Osgood 1937; VanStone 1973). Camps of hunting parties would probably have consisted of temporary shelters of skins over a wood frame, simple brush shelters or lean-tos.

During the early historic period, it appears that a gradual shift in subsistence activity occurred as a result of increased contact with non-Natives, and led to a general shift in the settlement pattern (VanStone 1970; Townsend 1973). Therefore, site locations which reflect late prehistoric subsistence activities may differ significantly from those activity-related sites of the historic period. Settlements and camps of late prehistoric and protohistoric times often were located near the mouths of clear water streams and rivers, as well as along lake margins and locations strategically suited for resource exploitation (McKennan 1959; Andrews 1975; VanStone 1974; Workman 1976; Irving 1957). Early historic Tanaina settlements were reported at several locations near the study area including Talkeetna (Townsend 1973), Valdez Creek (McKennan 1959), and on the shores of Lakes Susitna, Louise, Tyone and Grayling (Irving 1957).

1.4 - History

It is probable that late prehistoric and historic sites in the upper Susitna area date to as early as 1770 and may contain evidence of Western trade materials and influences. Historic, ethnohistoric and archeological data suggest that a widespread network of Native trade routes existed prior to Western contact. Western trade goods doubtless penetrated the upper Susitna region soon after the first exchanges occurred in coastal areas. Following 1900, gold discoveries in the region produced a flurry of exploration and mining activity which probably resulted in historic sites containing associated material in the upper Susitna study area. The chronology of Western man's exploration and penetration into the study area is summarized below.

Shortly after Bering's 1741 voyage, Russian fur traders began exchanging Western goods for pelts. Glass beads and iron were traded for fox and sea otter pelts by Glattov on Kodiak Island as early as 1762 (Bancroft 1886) and although such trade occurred far from the study area, Native trade networks soon dispersed such goods widely to Natives who had no direct contact with Europeans. The first explorer in Cook Inlet, Captain James Cook, observed metal and glass beads among the Tanaina during his visit in 1778 (Cook 1785). By 1786 a Russian trading settlement had been established at St. George (Kasilof) in Tanaina territory and trade contacts soon expanded rapidly with the Tanaina.

Increased dependence upon trade and the wealth provided by Western luxury goods resulted in changes in the aboriginal settlement and hunting patterns (Townsend 1970). The Tanaina began to be drawn more intensively into the Russian fur trade, occasionally as hunters but also as middlemen in the fur trade with peoples in the interior of Alaska. There was increased hunting of certain desirable fur bearers and modification of the subsistence cycle to accomodate such hunting and subsequent travel to trade for Western goods. Thus, it is probable that the location of hunting and trapping sites as well as times of seasonal movements known from the ethnographic present differ from those of slightly older late prehistoric times.

The first explorations of the Susitna River country did not occur until 1834 when Malakoff ascended the river. It is believed that he also explored the Susitna in 1843 but little is known of his work (Bacon 1975a). In any event, it is certain that by 1845 the Russians had better knowledge of the upper Susitna region than could have been obtained via Native informants (Brooks 1973). During the next 50 years very little exploration or other activity by Westerners appears to have occurred in the upper Susitna River country which was virtually unexplored until nearly 1900 (Cole 1979). During this time one exploration of note occurred to the east of the study area. In 1885, Lt. Henry Allen and his party ascended the Copper River, crossed the Alaska Range and descended the Tanana River to the Yukon. Allen's observations of Native lifeways, villages and their locations provide data regarding Ahtna and Tanana Athapaskans at the time of early direct contact with White men (Allen 1887).

The discovery of gold in Cook Inlet in 1895 precipitated the first extensive and lasting movements of White men into the upper Susitna study area. In the summer of 1896, over 2,000 prospectors swarmed the shores of Cook Inlet and over 100 parties entered the Susitna River but only five continued any distance up the river (Cole 1979). William Dickey and Allen Monks ascended the river as far as Devil Canyon in 1886 and encountered Natives at a fish camp at the mouth of Portage Creek. W.A. Jack and eight others ascended the Susitna to the "head of boating" on the upper Susitna in 1897 and became the first recorded party to explore nearly the entire river. The Jack party avoided Devil Canyon by ascending Portage Creek, crossing a divide to Devil Creek, and descending the latter to the Susitna (Cole 1979). Jack guided George Eldridge of the USGS, up the Susitna, over Broad Pass and down the Nenana River in 1898 but their route avoided the upper Susitna area (Eldridge 1900). In 1901, H. Jack Pamo and Al Campbell tried to make an overland trip from the mouth of the Tanana River to Valdez. They descended the Susitna from its "headwaters" and Campbell apparently starved to death at an Indian hunting cabin some 50 miles above Devil Canyon (Valdez News, 7/20/01). On the south side of the Susitna other overland routes which by-passed Devil Canyon existed. One route went up the Talkeetna River to Prairie Creek, past Stephen Lake to the Susitna, while another crossed low passes at the headwaters of Kosina Creek and descended the latter to the Susitna (Cole 1979).

The difficult passage around Devil Canyon greatly reduced gold prospector traffic on the upper Susitna River and it was not until 1903 that a more feasible route from the Copper River drainage was pioneered. In that year, Pete Monahan and four others from Valdez reached the upper Susitna headwaters area. Their route took them over Valdez Glacier, down Klutina River, across Klutina Lake, along St. Anne River and thence up the Susitna. They prospected for gold along several creeks in the upper Susitna drainage and struck pay gravel on a small stream the Indians called "Galina" and later renamed Valdez Creek (Moffit 1912). The next year numerous claims were staked along this creek and its tributaries. These diggings in later years had as many as 150 men (Bacon 1975a) and continued to attract miners until the 1930's. Other, later routes, to these gold fields roughly paralleled the modern Denali Highway from Cantwell in the west and Paxson on the east. Another route followed the West Fork of the Gulkana from the Copper River to the MacLaren and thence up the Susitna (Cole 1979).

Mining equipment and supplies utilized all of these routes to the gold fields on Valdez Creek. It is possible that historic structures and features related to these gold mining activities may be present along any or all of the routes used by miners during prospecting and subsequent mining in the Valdez Creek area. Additionally, Indian hunting cabins were reported at several localities on the upper Susitna drainage by the first gold prospectors and explorers, i.e., Jack, Eldridge, Pamo, and others. It is possible that remains of these log structures may be encountered during cultural resource survey of the study area as well.

APPENDIX B

1 - LITERATURE REVIEW, GEOARCHEOLOGY

1.1 - Glacial-Climatic History

During the last glaciation, southcentral and central Alaska were inundated with glacier ice (Karlstrom 1964; Wahrhaftig 1958; Coulter et al. 1965) in response to climatic cooling and a drop in snowline on the order of 250-300 m (Pewe and Reger 1972). Snowline in the vicinity of the western Talkeetna Mountains probably lay at about 1050-1200 m (Pewe and Reger 1972) or about 600 feet near the east flank of the Susitna lowland (Karlstrom 1964). All flat upland surfaces above that altitude, which includes much of the Talkeetna Mountains, was probably glacier covered. Below that altitude cirque and valley glaciers coalesced to form a broad inland ice sheet which drained southward via the Susitna Valley when it merged with other south-flowing trunk glaciers. Ice extended southward to the vicinity of Montana Creek, forming a prominent terminal moraine which became confluent with an east-flowing and northeast-flowing ice lobe draining the Matanuska and Knik Valleys. The southward gradient of the last glacial snowline and the progressively less extensive glaciation northward strongly suggests a southern moisture source (Karlstrom 1964; Pewe 1975). Glaciation apparently was caused by a decrease in mean summer temperatures, and an increase in summer cloudiness (Pewe 1975). Pewe (1975) estimates that, in the vicinity of Anchorage, the mean annual temperature dropped to 12.1°C in comparison to the present mean annual temperature of 13.8°C. Following expansion of glaciers to their maximum limits, they stagnated over a broad area of the Susitna lowland, then apparently retreated more rapidly. Climates warmed to a postglacial thermal maximum, then re-expanded intermittently within the past several thousand years (Williams and Ferrians 1961).

1.2 - Late Wisconsinan Time

(a) Initiation

The globally significant change from interstadial mid-Wisconsinan conditions to full glacial late Wisconsinan conditions is dated at about 32,000 yr BP in the marine isotope record (Shackleton and Opdyke 1973) and at about 32,000 yr. B.P. in the Camp Century Ice Core (Langway et al. 1973). Glaciers in south central Alaska expanded in response to the climate change. The date of 29,600 ± 460 from organic material beneath till of the last glaciation near the inferred mid-Wisconsinan terminal position in the White River Valley, provides the youngest maximum limiting dates in Alaska for late Wisconsinan glacier expansion. Maximum limiting dates from identical stratigraphic position in the nearby Klutlan Glacier are all beyond the range of radiocarbon dating (Rampton 1971). Karlstrom (1964) reports that late Wisconsinan glaciation began sometime after about 37,000 yr BP in the Kenai lowland. The Copper River Basin began filling with glaciolacustrine deposits sometime after a date of 38,000 yr BP (Ferrians and Schmoll 1957). Maximum dates for initial late Wisconsinan time from the southern Brooks Range are more closely limiting, ranging from 28,500-31,000 ^{14}C yr BP, closely corresponding to the global climates changes (Hamilton 1976). The youngest dates on mid-Wisconsinan muck near Fairbanks range up to about 30,700 to 33,700 yr BP (Sellman 1967).

(b) Termination

A pronounced global climate change around 13,000-14,000 yr BP which, from a climatological standpoint ended the Wisconsinan Stage, was accompanied by rapid warming (Shackleton and Opdyke 1973; Langway et al 1973; Denton 1974). Evidence for rapid response of Alaskan glaciers and vegetation to this climate change is widespread and surprisingly uniform in age. An abrupt change in vegetation from tundra steppe to shrub tundra occurred about 13,500-14,000 years ago in the Tanana lowland (Ager 1975). Similarly, a rapid change from a dominance of nonarboreal pollen to arboreal pollen occurred shortly after 13,960 ± 360 yr BP in the Ogilvie Mountains, Yukon Territory (Terasmae and Hughes 1966). Heusser (1965) and Terasmae (1974) recognized a major vegetation change indicating warming sometime between 13,000 and 14,000 yr BP, respectively.

Glacier response to terminal Wisconsinan climate change was also rapid. Glaciers began rapid wastage about 14,000 BP in the White River-Skolai Pass area (Denton 1974). The abrupt halt in loess deposition about 13,500 ± 300 yr BP in Antifreeze Pond is interpreted by Rampton (1971) as having formed immediately after moraine formation. Retransported bone material in the Fairbanks area that dates 13,470 ± 420 yr BP and 14,280 ± 230 yr BP directly overlies a late Wisconsinan unconformity (Sellman 1967) and may suggest thawing at about this time.

Other minimum age dates for the late Wisconsinan time in Alaska are less closely limiting than dates from the St. Elias Range. Glaciers began a fluctuating retreat in the Kenai lowland sometime after 12,900-13,500 yr BP (Karlstrom, 1964). Moraine formation and rapid retreat of glaciers from the Anchorage area probably occurred shortly after 14,160 ± 1400 yr BP (Schmoll et al. 1972). Basal peat dates in the Susitna lowland extend back to about 12,500 yr BP (Richard Reger, personal communication). Late Wisconsinan glaciers began receding from their maximum positions sometime prior to 10,565 ± 225 yr BP and 10,560 ± 200 yr BP in the Amphitheater Moutains (Pewe 1964) and the Nenana Valley 10,560 ± 200 yr BP (Wahrhaftig 1958), respectively. Wisconsinan age dunes began stabilizing in the Tanana lowland sometime prior to 12,400 ± 450 yr BP (Fernald, 1965). Glaciolacustrine sedimentation in the Copper River Basin ceased sometime prior to 9400 yr BP.

(c) Maximum Extent of Ice

Full glacier conditions affected the entire globe about 17,000-22,000 yr BP, culminating in full glacial conditions in the northern hemisphere at about 18,000 yr BP (CLIMAP 1976). At this time the southern sectors of the Laurentide, Scandinavian, and Cordilleran ice sheets had reached their maximum extents (Denton 1974). Following a period of ice recession these ice sheets all readvanced to nearly their maximum positions between about 15,000 and 14,000 years ago and then underwent rapid retreat.

Dates from glacier sequences in Alaska are incomplete, but generally support the concept of a two-fold late Wisconsinan Stade. Intervals of alluviation in the Southern Brooks Range between about 16,000-25,000 yr BP (Kobuk Valley) and 17,000-29,000 yr BP (Koyukuk Valley) may correspond to the earliest advances (Hamilton et al. 1980). A maximum limiting date from the McKinley River (Thorson unpub. ms.) suggests that glaciers in north Alaska Range had not yet reached their maximum extents by about 20,000 yr BP.

Support for the younger advance is more common. Late Wisconsinan glaciers readvanced in the Alaska Range sometime after 15,000 yr BP (Hamilton 1976). Glaciers in the upper Cook Inlet advanced to their terminal late Wisconsinan positions sometime shortly after 14,160 ± 400 yr BP (Schmoll et al. 1972; Kachadoorian et al. 1977). The Russell and Kaskawulsh glaciers advanced to near their maximum extents in the White River Valley and Shakwak Valley just prior to about 14,000 yr BP (Denton 1974). In the southern Brooks Range, glaciers readvanced between about 13,000 and 12,500 yr BP (Hamilton et al. 1979).

(d) Rates of Deglaciation

The rapid and nearly synchronous climate change about 13,000-14,000 yr BP can well be documented for most parts of Alaska. Subsequent rates of glacier retreat were generally rapid, with valleys largely ice free by 10,000 yr BP. The Kaskawulsh glacier (Yukon Territory) retreated to within 17 km of its present terminus by 12,500 ± 200 yr BP, suggesting extremely rapid deglaciation for this large glacier (Denton and Stuiver 1967). In the White River Valley, ice had receded to a position within 2 km of its terminus by 11,270 ± 200 yr BP (Denton 1974). The nearby Klutlan Glacier retreated to a position upstream from the present terminus by 9780 ± 80 yr BP (Rampton 1971). The Muldrow Glacier retreated to a position upstream from its Neoglacial limit by 9580 ± 100 yr BP (Thorson unpub. ms.).

Valleys elsewhere in Alaska and the Yukon Territory were largely deglaciated by 11,500-12,000 yr BP (Hamilton 1976; Denton 1974). The valley bottom of the Susitna River near Willow Creek was deglaciated prior to 11,930 ± 250 yr BP (Karlstrom 1964). The nearby Matanuska Valley was also rapidly deglaciated following a period of initial ice stagnation (Williams and Ferrians 1961; Miller and Dobrovolny 1959). Dates of 11,250 ± 160 yr BP and 12,120 ± 140 yr BP from the North Fork Pass and Hart Lake areas in the Olgilvie Mountains, Yukon Territory, respectively, indicate nearly complete deglaciation by this time (Hughes et al. 1969). On the south flank of the Alaska Range, the Tangle Lakes area was deglaciated 11,800 ± 740 yr BP (Schweger 1973) and the Nenana Glacier had retreated well upstream from the Carlo Creek archeologic site by 9000-10,000 yr BP (Bowers 1979). The Nelchina Glacier, in the North Chugach Mountains, retreated to a position within 8-15 mi of the terminus by 8,400 ± 200 yr BP (Olson and Broecker 1959). Adams Inlet in Glacier Bay was largely deglaciated by about 11,000 yr BP (McKenzie and Goldthwait 1971). Dunes are largely stabilized on the floor of the Tanana lowland by about 11,250 yr BP (Fernald 1965).

1.3 - Holocene Time

(a) Early Holocene Readvance

Evidence for an early Holocene glacier readvance which lasted between about 8500 and 9500 yr BP and culminated about 9000 yr BP, is widespread in south coastal Alaska. Cirque glaciers advanced in the lower Copper River Valley and built moraines about 8800 yr BP (Sirkin and Tuthill 1971). On Prince of Wales Island, two moraines were formed by advancing glaciers between 8000 and 9510 yr BP (Swanston 1969). Goldthwait (1966) interprets the stratigraphy in Muir Inlet to indicate a prominent readvance between 9100 and 10,000 yr BP. Till near Cold Bay is bracketed between dates of 6700 and 9700 yr BP (Funk 1973). Glacier advances and stillstands and a pronounced cooling suggested by pollen trends occurred in the Boundary ranges of Canada between 9000 and 10,000 yr BP (Miller and Anderson 1974). Pollen data from south coastal Alaska (Heusser 1965) also suggest an early Holocene cooling between 8500 and 9000 yr BP. An earlier possible readvance sometime between 10,500-13,000 yr BP may have occurred in the large coastal glaciers (Terasmae 1974; Miller and Anderson 1974; Goldthwait 1966).

Evidence for glacial readvances in interior south central Alaska is conspicuously absent, perhaps suggesting that most glaciers had retreated upvalley from their Neoglacial limits prior to about 9000 yr BP. The Matanuska glacier, which experienced a prominent early Holocene readvance sometime prior to 8000 ± 300 yr BP (Williams and Ferrians 1961), is the only well documented occurrence of this readvance away from Alaska's southern coast. A pronounced unconformity in the permafrost tunnel near Fairbanks (Sellman 1967), which occurs between 8400 and 11,000 yr BP, may represent an interval of greatly reduced muck deposition.

(b) Hypsithermal

Postglacial Holocene warming culminated during Hypsithermal time, an interval of increased warmth (and possible dryness) and glacier contraction. Glacier contraction and inferred warming occurred in south Alaska during the interval between 4500-6800 yr BP in Cool Inlet (Karlstrom 1964), 4700-9100 yr BP in Muir Inlet (Goldthwait 1966), 3200-5500 yr BP in Boundary Ranges (Miller and Anderson 1974), 4150-7050 yr BP in Glacier Bay (McKenzie and Goldthwait 1971), and 4500-6500 yr BP in the north Pacific (Huesser 1960). Inland from the coast, pollen and treeline data suggest that the thermal maximum occurred between 5000 and 8400 yr BP (Terasmae 1974; Ager 1975), peaking at about 5200 yr BP (Denton and Karlen 1976).

(c) Neoglaciation

Following Hypsithermal warmth and dryness, climates cooled and possibly moistened during the last several thousand years, causing renewed glacier expansions during Neoglacial time. The Neoglaciation probably began between about 3500-3700 yr BP in interior Alaska and Yukon Territory (Hamilton 1976; Miller and Anderson 1974), reaching a culmination in the White River Valley area between about 2675 and 2780 yr BP (Denton and Karlen 1973) and terminating by 2000 yr BP (Terasmae 1974) or possibly as early as 2640 yr BP in the Kluane area (Borns and Goldthwait 1966). The Tanana River began actively aggrading by 3000 yr BP (Fernald 1965), presumably in response to Neoglacial conditions.

In coastal southern Alaska, the Neoglaciation may have begun earlier than in areas farther north. McKenzie and Goldthwait (1971) document glacier expansion in Glacier Bay as early as 4150 ^{14}C yr BP, and Huesser (1965) inferred a change to cooler, wetter climates beginning about 4500 yr BP. Karlstrom (1964) dated the earliest of multiple glacier advances into the Kenai lowland at about 4500 yr BP. The termination of Neoglacial time in southern Alaska is inferred from glacial retractions and/or vegetation change beginning 2200 yr BP (Glacier Bay, McKenzie and Goldthwait 1971), 2100-2200 yr BP (Lituya Bay, Post and Streveler 1976), and 2500 yr BP (N. Pacific, Heusser 1965). Though evidence for multiple Neoglacial advances in south central Alaska is present in many areas (Thorson unpub. ms.; Reger and Pewe 1969; Karlstrom 1964; Wahrhaftig and Cox 1959), only in the White River Valley are they firmly bracketed by closely limiting radiocarbon or lichenometric dates. Culminations of glacier advances in the White River Valley occurred between 3000-2675 and 1230-1050 ^{14}C yr BP (Denton and Karlen 1973). An earlier advance, for which there is no direct evidence, may have occurred sometime between 5250 ± 130 and 3600 ^{14}C yr BP (Denton and Karlen 1973).

(d) Little Ice Age

Renewed glacier advances of the "Little Ice Age" (last 1000 yr) brought an end to the interval of warming that followed Neoglacial time. Glaciers throughout central and southern Alaska advanced and retracted intermittently during the Little Ice Age, but no consistent pattern can be easily inferred, especially for central Alaska. Little Ice Age moraines were built sometime after AD 1500 in the White River Valley

(Denton and Karlen 1973). Glaciers in central and southern Alaska have generally retreated during the 20th Century (Denton and Karlen 1973; Goldthwait 1966; Reid 1970).

1.4 - Inferred Regional Chronology of the Susitna Valley

The upper Susitna Valley was largely ice-covered during most of late Wisconsinan time between about 30,000-14,000 ^{14}C yr BP. Coalesced valley glaciers extended from the valley bottoms to altitudes as high as 3500-4000 feet, and the snowline may have dropped to nearly that altitude as well. Glaciers were probably widening and deepening their valleys at this time, probably destroying most pre-Late Wisconsinan deposits. Within the Susitna and Tyone River lowlands, however, considerable pre-Late Wisconsinan stratigraphy may exist.

Advances of Late Wisconsinan time in the Susitna Valley probably remained near, but some distance upvalley from their maximum extents between about 25,000-17,000 yr BP. Following the marine transgression which deposited the Bootlegger Cove Clay about 14,100 yr BP, coalesced glaciers in the Cook Inlet lowland readvanced about 14,000 yr BP reaching their maximum Late Wisconsinan extents. Following a period of inferred stagnation and downwasting in the terminal zone, which may have continued long after retreat began, ice probably receded rapidly northward. Thinning of the ice in the upper Susitna River Valley accompanied northward retreat in the lowland. Glaciers retreated north of Willow Creek by about 12,000 yr BP, and much of the Susitna Canyon area may have been deglaciated by 11,000 yr BP. Rapid ice recession probably continued with the ice tongues receding upvalley from their present terminii by 9000 yr BP. Ice retreat was almost certainly complete by 8000 yr BP. Glaciers may have experienced a minor early Holocene readvance prior to 8500 yr BP, but if so, they probably did not extend more than several km beyond their present termini.

During the Middle Holocene, between about 4000-8000 yr BP, the Susitna Valley may have been slightly warmer and possibly drier than present. Maximum glacier retraction, and the culmination of warmth may have occurred about 5000-6000 yr BP.

Cooler conditions returned during Neoglacial time, which spans the last 3500 years. Glaciers probably expanded slightly at this time reaching terminal positions only several kilometers from their present termini. At least three episodes of cooling and glacier expansion are thought to have occurred since about 3500 yr BP. Present climates occur within the framework of the Little Ice Age. The general ice retreat and warming of the 20th Century may be followed in the future by more severe climates and a return to minor glacier advances.

2 - DESCRIPTIONS FOR GEOARCHEOLOGIC TERRAIN UNITS IN THE MIDDLE SUSITNA RIVER VALLEY*

Age Geology-terrain character Relief

Glacial

(Refers to all of those units that were modified during the last glaciation. The highest hills of unit Rh_3 may have stood above the glacial limit, but frost shattering and mass movement during the last glaciation caused their surfaces to be essentially equivalent or younger in age than other glacial units)

R Rock surfaces - modified by erosion by glacier ice. Usually rounded surfaces, but may include some very steep terrain in the highest peaks. Drainage is excellent, soil cover is usually minimal. Surface usually covered by patchy or complete tundra cover, but may be bouldery at high altitudes. Contains rare isolated patches of drift, but not enough to obscure rock surfaces. Bedrock structure is responsible for much of the topography.

*These units were mapped on aerial photographs which are on file at the University of Alaska Museum.

h Hills - rock occurs as part of a hill or complex of hills. Slopes are usually irregular, but continuous.

s Surfaces - rock occurs as a surface of varying relief (rather than as a steadily inclined surface such as a hill). Surfaces can exhibit very high relief.

1 Low local relief
2 Medium local relief
3 High local relief

b Rock valley walls - rock occurs as part of a broad sloping, often gradual surface without secondary relief (walls of glacial valleys). A thin mantle of drift may be present. Drainage is very good in most places.

d Rock with thin or patchy drift - bedrock structure is evident throughout, and surface has most of the character of a bedrock slope. Can be rough in some areas or smooth, depending on the nature of the underlying rock. Typically poorly drained where drift reaches sufficient thickness.

D Drift - dominantly till with some ice contact stratified drift. Generally forms poorly drained slopes because of the clay-rich nature of the till.

t Thick - drift obscures all bedrock structure. Slopes generally gentle and poorly drained. Local relief generally low, but some significant gullying can occur due to the erodable nature of the till.

p Patchy - poorly drained areas interspersed with well drained, usually high relief rocky areas. Similar to unit R_d but more poorly drained areas.

u Undifferentiated - generally includes much till and low relief, poorly drained areas, but also contains boggy areas, irregular ice contact stratified drift areas, and broad open surfaces.

I Ice contact stratified drift - hummocky irregular, commonly gravelly mounds and ridges. Commonly occurs in chaotic pattern, but ridges can be continuous for about 1 km.

o Open hummocks - generally broad swales and mounds in irregular pattern. Surface only moderately well drained, usually very brushy.

t Tightly nested hummocks - very well drained gravelly ridges tightly clustered to provide much well drained areas. Terrain very irregular and discontinuous. Contains numerous small lakes and ponds, commonly with gravelly edges.

p Patchy - mounds and ridges occur thinly over bedrock. Relief generally very low, but sharp.

O Outwash - broad, extremely low gradient, surface without relief.

p Outwash plain - broad open area of continuous outwash - shows some primary relief as surface channels.

v Valley train - flat outwash surface in valley bottom. Surfaces flat, but commonly terraced.

f Fan - occurs downstream from tributary mouths in some localities. Forms flat well drained sloping bench.

L Lacustrine - surfaces generally low relief, and extremely poorly drained. Underlain by silts and clays. Earthflows common where water is available and slopes are sufficiently steep. Can occur as thin mantle over broad areas.

m Mantle - lacustrine deposits subdue, but not obscure the underlying topography. Very poorly drained, with widespread solifluction.

s Surface - lake plain. Deposits thick enough to obscure the underlying topography. Very poorly drained, with silts and clays to surface.

Holocene

(Deposits and features formed since deglaciation. In some places a steep valley wall, which is either modified by Holocene erosion or covered by Holocene deposits, may have been largely formed during glaciation.)

V Valley slide slopes - steep slopes which represent Holocene erosion or modification. Slopes generally provide good exposures of bedrock, with till and other surficial units at the surface. Much of the valley walls may have formed prior to Holocene time, but there is enough modern or recently past activity to justify use of this age category.

g Gullied - either deep rocky gullies in tributaries, or badlands-like dissection on the valley sides. Extremely difficult terrain to traverse.

s Smooth - valley walls are not highly gullied, but still quite steep. May contain a great degree of colluvium in some places.

A Alluvium - coarse gravel surfaces which are generally of low relief. Can occur in the upper reaches of tributaries, but generally occurs in the Susitna Valley bottom. Surfaces are generally well drained, thickly forested, and slightly sloping. Recent alluvium (as island in the river) not mapped separately.

s Susitna Valley bottom alluvium - occurs a gravelly alluvium derived from and deposited by the Susitna River. Often has numerous drainage channels which are parallel to the river, and may have small terraces.

t Tributary floor and fan alluvium - sloping surfaces which occur at the mouth and within tributary valleys. Generally well drained, but steep fans may show poorly drained surfaces.

S Slope deposits - nonsorted, poorly drained, often steeply sloping mixed deposits.

c Colluvium - poorly drained, steeply sloping irregular surfaces which commonly parallel the steep valley walls.

s Solifluction - broad, open areas of slope deposits. Rubbly and silty deposits. Surfaces poorly drained.

M Bog sediments - highly organic and presently wet.

APPENDIX C

FORMS - 1. SITE FORM

2. SURVEY LOCALE EVALUATION FORM

3. ALASKA HERITAGE RESOURCES SITE SURVEY FORM

ARCHEOLOGY
UNIVERSITY MUSEUM
UNIVERSITY OF ALASKA

FIELD SITE NO.:__________
SURVEY LOCALE NO.:__________
AHRS NO.:__________

SUSITNA HYDROPOWER PROJECT

I. SITE LOCATION

A. USGS QUAD: Talkeetna Mountains ________ Scale: 1:63,360

B. AIR PHOTO REFERENCE: Roll ________ Frames ________

C. TWP ________, RNG ________, Seward Meridian
________ ¼ of the ________ ½ of the ________ of Section ________

D. UTM: Zone 6 Easting ________ Northing ________

E. LATITUDE: ____ ° ____ ' ____ " LONGITUDE: ____ ° ____ ' ____ "

F. GEOLOGICAL UNIT: ________ No. ________

G. REGION: Devil Canyon ________ Watana ________ Other: ________

II. ENVIRONMENT:

A. Site morphology. (See back of form for information required.)

B. Surrounding terrain morphology. (See back of form for information required.)

FIELD SITE NO.:________________

C. Ecosystem. (See back of sheet for descriptions.)

1. _______ Moist Tundra _______ High Brush _______ Other: ________________

   _______ Lowland spruce-hardwood _______ Upland spruce-hardwood

2. Site vegetation and surface description:

3. Vegetation in surrounding area and surface description:

FIELD SITE NO.:___________________

III. SITE:

A. Description:

1. Characteristics. (lithic scatter, stratified site, cabin, etc.)

number of shovel tests ______

number of test pits ______

(indicate on map)

2. Number, size and spatial relationship of features, etc.

3. Stratigraphy (if relevant):

FIELD SITE NO.:__________

B. Artifact inventory.

1. Surface:

a. Artifacts collected:

____

____

____

b. Artifacts observed but not collected:

____

____

____

____

2. Systematically excavated artifacts:

____

____

____

____

C. Period: _____ Unknown _____ Precontact

_____ Historic: Native _____ Non-Native _____

D. Size:

1. Observed Size: _____ x _____ meters

Justification for boundaries:

____

____

____

2. Estimated Size: _____ x _____ meters

Justification for boundaries:

____

____

____

E. Site disturbance (current and anticipated). Indicate expected effect of the hydroelectric project on the site.

1. Natural:__________________________________

____

____

____

2. Human:____________________________________

____

____

____

FIELD SITE NO.______________

F. What prompted you to survey this location?

____
____
____
____

G. Draw and attach map(s) of site with location of tests and surface features; soil profile(s); and general location and vegetation map.

IV. PHOTOGRAPHIC RECORD:

Frame #	Direction	Content
		Site ID with date and Crew

V. CREW: (include relevant pages in fieldbook)

A. Names: ________, ________, ________
________, ________, ________
________, ________, ________

B. Date(s) visited: ______________

VI. Field Recommendation for further testing:

____
____
____
____

II. A. Site morphology.

1. What terrain feature is the site on: flat plain, sloping plain, continuous ridge, hill, point, shoreline, terrace, valley, etc.
2. What is the topographic context:
   a. no topographic relief relative to surrounding terrain, higher topographic relief than surrounding terrain, lower topographic relief than surrounding terrain.
   b. give elevation: 1) above sea level; 2) Relative to surrounding terrain.
3. Is the terrain feature continuous or discrete?
4. What is the size, shape and direction of this feature?
5. What is the relative position of the site on this feature?
6. Field of view:
   a. direction and range of view;
   b. what is in view?
   c. would a change in the present vegetation increase or decrease view? How?
7. Describe any special attributes that make this site location unique.
8. Are there other settings similar to that of this site in the unit? Where?

II. B. Surrounding terrain morphology.

Describe surrounding landforms and water features in relation to the site. What is the direction, distance and difference in elevation of surrounding features? The following characteristics should provide a guide:

1. Streams and rivers:
   a. proximity to site
   b. access from site
   c. are any in view from site?
   d. has downcutting created valley wall constriction in this area?
   e. is stream or river (1) shallow with rapids and sandbars, or (2) deep and smooth in this vicinity, etc.
   f. is water clear or turbid?
   g. what is the general width in this vicinity?
   h. is terracing present?
   i. in this area is the river course:
      1. straight;
      2. bending;
      3. serpentine.
   j. are confluences with other streams or rivers nearby? How far?
   k. what kind of terrain does this stream or river drain? (lakes, hills, marsh)

2. Lakes:
   a. size in hectares using template.
   b. inlet present? outlet present?
   c. single lake or part of lake system?
   d. characterize terrain surrounding lake (low, wet, steep, etc.)
   e. is there any evidence that lake size is changing (vegetation overgrowth, old shorelines, etc.)
   f. characteristics of shoreline. Old shorelines present?

ECOSYSTEMS LIKELY TO BE ENCOUNTERED IN PROJECT AREA

MOIST TUNDRA: Moist tundra ecosystems usually form a complete ground cover and are extremely productive during the growing season. They vary from almost continuous and uniformly developed cottongrass tussocks with sparse growth of other sedges and dwarf shrubs to stands where tussocks are scarce or lacking and dwarf shrubs are dominant. Associated species are arctagrostis, bluejoint, tufted hairgrass, mosses, alpine azalea, wood rush, mountain-avens, bistort, low-growing willows, dwarf birch, Labrador tea, green alder, Lapland rosebay, blueberry and mountain cranberry.

HIGH BRUSH: These are dense to open deciduous brush systems. Floodplain thickets: The subsystem is similar from the rivers of the southern coastal areas to the broad-braided rivers north of the Brooks Range. It develops quickly on newly exposed alluvial deposits that are periodically flooded. The dominant shrubs are willows and alders. Associated shrubs are dogwood, prickly rose, raspberry, buffaloberry and high bush cranberry. Birch-alder-willow thickets: This subsystem is found near timberline in interior Alaska. It consists of resin birch, American green alder, thinleaf alder and several willow species. Thickets may be extremely dense, or open and interspersed with reindeer lichens, low heath type shrubs, or patches of alpine tundra ecosystems. Other associated species are Sitka alder, bearberry, crowberry, Labrador tea, spirea, blueberry and mountain cranberry.

UPLAND SPRUCE-HARDWOOD FOREST: This ecosystem is a fairly dense interior forest composed of white spruce, birch, aspen and poplar. Black spruce typically grows on north slopes and poorly drained flat areas. Root depths are shallow. Fire scars are common. White spruce averaging 40 to 80 feet in height and up to 16 inches in diameter occurs in mixed stands on south facing slopes and well drained soils; forms pure stands near streams. Aspen and birch average 50 feet in height. Poplar averaging 80 feet in height and 24 inches in diameter occurs in scattered stands along streams. Undergrowth consists of mosses with grasses on drier sites and with brush on moist slopes. Typical plants are willow, alder, ferns, rose, high and low bush cranberry, raspberry, current and horsetail.

LOWLAND SPRUCE-HARDWOOD FOREST: This ecosystem is a dense to open interior lowland forest of evergreen and deciduous trees, including extensive pure stands of black spruce. Black spruce are slow growing and seldom exceed 8 inches in diameter or 50 feet in height. Cones of this tree open after fire and spread abundant seed, enabling black spruce to quickly invade burned areas. The slow-growing stunted tamarack is associated with black spruce in the wet lowlands. It seldom reaches a diameter of more than 6 inches. Rolling basins and knolls in the lowlands have a varied mixture of white spruce, black spruce, paper birch, aspen and poplar. Small bogs and muskegs are found in the depressions. Undergrowth species include willow, dwarf birch, low bush cranberry, blueberry, Labrador tea, crowberry, bearberry, cottongrass, ferns, horsetail, lichens and a thick cover of sphagnum and other mosses. Large areas burned since 1900 are covered by willow brush and very dense black spruce sapling stands.

AFTER: Major Ecosystems of Alaska. Joint Federal-State Land Use Planning Commission for Alaska. July 1973.

SURVEY LOCALE:____________________

Museum Archeology
University of Alaska
Fairbanks, Alaska 99701

SUSITNA HYDROPOWER PROJECT
SURVEY LOCALE EVALUATION FORM

This form is intended to insure that three kinds of data for each locale are recorded. These data will guide additional survey, evaluation of areas that may need no further work, and document areas surveyed and tested on-the-ground. If supplementary information to this form is included in fieldnotes, please note this on the form along with your name(s) and field book page number(s).

I. A field description of the locale is needed. The field description of the locale should include the uniformity and variability of surface morphology. The information which you record will be used to compare this locale with other locales to determine similarity and aid in future locale selection and testing.

a. Describe the surface morphology noting topographic features, drainage, soils, variation in surface slope, etc.

b. What, if any, are the discrepancies between the definition of the geological unit (based on air photo interpretation) and the field observation of the unit? Would you characterize the total area as a single unit based on the homogeneity of surface morphology?

II. Identify areas within the locale that potentially may be eliminated from further archeological survey. Please provide objective criteria in your evaluation such as: 1) areas where testing is not feasible using standard archeological field techniques (areas of standing water, talus rubble); 2) areas where the substrata have been removed by natural erosion (indicate whether these areas have been surface examined for archeological materials); and 3) overly steep slopes. This would include slopes of greater than 15° to horizontal which you deem unlikely for site occurrence (describe and measure slope angle).

III. Identify areas within the locale which may have high archeological potential, based on known site locales from other areas and your field experience, including overlooks, river terrace and bluff edges, lake and stream margins, etc. Describe the location, extent, salient features, and tests (if applicable) for these locales, record these locations on USGS maps.

High archeological potential areas that should be investigated --

IV. Locate on maps where the survey team actually went on-the-ground, and location, number, size, and depth of test pits excavated and natural exposures examined. Describe the topographic setting, and relation to other physical features, such as lakes, streams, rivers, bluff, edges, nearby hills, elevation, etc., for sterile test pits.

Number of shovel tests --

NAMES OF FIELD TEAM: (include relevant pages in fieldbook)

	Date		Date
	Date		Date
	Date		Date
	Date		Date
	Date		Date
	Date		Date

DEFINITIONS OF GEOLOGICAL UNITS

G=Glacial L=Late Glacial R=Recent M=Modern

b. Surfaces mapped as "b" are sloping bedrock surfaces that formed the valley walls of glacial troughs. In most cases slopes are very steep, and usually bedrock is exposed directly underneath the thin recent soil mantle. In some places patchy thin drift may be present within the boundaries of areas mapped with the subscript "b". This unit commonly grades both upward and downward in elevation to rock slopes above the glacial trough (r) or to drift mantle slopes (d, d/b). Minor windblown sedimentation and solifluction processes have occurred, but in most cases the glacial trough is relatively unmodified.

d. Surfaces mapped as "d" include those areas thickly mantled with glacial drift. Relief is generally very low and the unit can have a monotonous gradually sloping undulating expression. Drainage is typically poor, with small ponds forming in a few places. The surface character is controlled largely by the varying thickness and composition of the till mantle. Most of the sediment underlying the surfaces mapped "d" is probably stony, clayey, dense till, which may be overlain by a thin gravel cap.

d/b. Surfaces mapped as "d/b" are underlain by thin or patchy drift which overlies bedrock. Both ice-scoured bedrock and a mantle of poorly drained drift can occur locally. The topographic relief is usually lower than "r" surfaces because the drift fills in the original depressions. It is higher than "d" surfaces because the surface irregularities are not completely masked by a drift mantle. Locally, this unit can be well drained (as in the gravelly areas), but usually well drained bedrock areas are randomly interspersed with poorly drained drift areas. Minor areas of subdued morainal topography can be present locally.

m. Surfaces mapped as "m" are underlain by hummocky irregular, commonly gravelly drift which extends to some depth. The surface expression is morainal. Topographic relief is generally less than 100 feet, but numerous chaotic small ridges (morainal) or isolated mounds (kames) typically less than 100' relief may be present. In most areas, the surfaces mapped as "m" are well drained and gravelly. Small lakes are commonly present, and large irregular poorly drained areas may be present as well. Very little morainal topography is present west of the Watana Dam Site. Extensive areas near the Tyone River, although morainal in form (m), are more subdued and poorly drained, possibly because they are partly buried by eolian sediments.

m2. Surfaces mapped as "m2" are similar to "m" surfaces and grade directly into them. They are, however, more irregular in form, with more prominent ridges, and better drained topography. In the vicinity of Tsisi Creek and the Oshetna River, "m2" surfaces include some prominent valley lateral moraines.

v. Surfaces mapped as "v" include all bedrock surfaces that were formed by recent incision of tributaries and the Susitna River. The surfaces are very steep, commonly gullied, and are still commonly in the process of being eroded. The country between "v" surfaces and the next higher surface is usually sharp. "v" surface also includes some colluvium, small talus cones, and a few possible landslides.

a. Surfaces mapped as "a" include all alluvium of modern or relatively recent age. The alluvium is generally well drained and vegetation covered, especially in the Susitna Canyon. Alluvium in the tributaries may contain minor colluvial debris and some fine material, but along the Susitna and Chulitna River "a" is indistinguishable from outwash. The alluvium is derived largely from reworked outwash, hence the similarity. The contact between alluvium (a) and steep gullied slopes (v) is usually abrupt, but difficult to map because of the narrow outcrop pattern.

ALASKA HERITAGE RESOURCES SITE SURVEY FORM (ARCHEOLOGY) OH&A 5/76 Page 1
(Attach continuation sheets as needed.)

RECORDER:

1. Name(s) ______________________ 2. Date ____________
3. Address ______________________
4. Project ______________________ 5. Permit Number ________

SITE REFERENCE/LOCATION:

1. Field Designation ____________ 2. (AHRS) Designation ____________
3. Name(s) of Site ______________________
4. Map Name ______________________, Map Scale ____________
5. Latitude ____ Deg. ____ Min. ____ Sec. / Longitude ____ Deg. ____ Min. ____ Sec. ____
6. Legal Description ______________________
7. Aerial Photo Reference ______________________, Photo Scale ____________
8. UTM Grid Reference ______________________
9. Bibliographic References (manuscripts, etc.) ______________________

____

LAND USE CONDITIONS:

1. Present Land Use ______________________
2. Recent Surface Modifications ______________________
3. Natural Erosion: Kind ______________________ Extent ____________
4. Vandalism: No _____ Yes _____; Heavy _____ Medium _____ Light _____
5. Past Surface Modifications ______________________
6. Future Surface Modifications ______________________
7. Property Owner/Manager ______________________

ENVIRONMENTAL DESCRIPTION:

1. Vegetation at Site ______________________
2. Surrounding Vegetation ______________________
3. Topography at Site ______________________
4. Surrounding Topography ______________________
5. Geology (surface/bedrock) ______________________
6. Nearest Water to Site: Distance __________ Direction __________ Type __________

(Attach continuation sheets as needed.)

Site Reference ____________

From Page 1

SOIL MATRIX:

1. Thickness (sod) ____________, (soil) ____________, Description ______________

____

____

3. Samples Taken: No _____ Yes _____; Number/Description ______________________

____

1. Field Book(s) ________________________________ Pages ____________________

2. Photographs Taken: B&W _____ Color Slides _____ Color Prints _____, Description of Subject(s) ____

____

ARCHAEOLOGICAL OBSERVATIONS/DATA COLLECTED:

1. Estimated Extent of Site (use sketch map) ______________________________

2. Number of Cultural Components ______________________________________

3. Stratigraphy: No _____ Yes _____ (attach profile)

4. Number of Test Pits Dug _____ (indicate their relative positions on sketch map)

5. Organic Preservation: No ______ Yes ______; Good _____ Moderate _____ Poor _____

6. Faunal: No _____ Yes _____; Description ________________________________

7. Human Remains: No _____ Yes _____; Description ___________________________

8. Charcoal: No _____ Yes _____ Collected _____; Description/Provenience __________

____

9. Other Features ____

____

10. Artifacts: No _____ Yes _____ Collected _____; Description ________________

____

____

11. Repository ____

SKETCH MAP ATTACHED:

1. Indicate North, give scale, provide appropriate labels, and include landmarks.

APPENDIX D

CORRESPONDENCE

STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF PARKS

JAY S. HAMMOND, GOVERNOR

274-4676

619 Warehouse Dr., Suite 210
Anchorage, Alaska 99501

May 15, 1980

Re: 3420-1980

Dr. E. James Dixon, Jr.
Curator of Archaeology
University of Alaska Museum
University of Alaska
College, Alaska 99701

Dear Jim:

Please find enclosed your approved State of Alaska Field Archaeology Permit. Please note that your permit expires on 30 September 1980. We will appreciate receiving two copies of the final report.

We wish you the best of luck in your upcoming fieldwork.

Sincerely,

Chip Dennerlein
Director

By: Ty L. Dilliplane
Archaeologist

enclosure

TLD:clk

)-J11LH

United States Department of the Interior

HERITAGE CONSERVATION AND RECREATION SERVICE
WASHINGTON, D. C. 20243

IN REPLY REFER TO: W510

Control No: 114-AK/79-002
Permit No: 80-AK-023

FEB 8 1980

Dr. John Bligh
Division of Life Sciences
University of Alaska
Fairbanks, Alaska 99701

Dear Dr. Bligh:

Enclosed is a Federal Antiquities permi which authorizes the University of Alaska (Division of Life Sciences) to conduct archeological investigations (professional consultation services/ including limited testing) on certain public lands owned and controlled by the Department of the Interior and administered by the Bureau of Land Management in the State of Alaska.

Please note the special conditions and stipulations appended to this permit. Note also that the permit number must appear on the title page of any report prepared under this authority.

Should you have any questions regarding the permit, please refer to the permit number indicated in the upper right hand corner of the form and address correspondence to:

Departmental Consulting Archeologist
Heritage Conservation and Recreation Service
Department of the Interior
440 G. Street, N.W.
Washington, D.C. 20243

This permit is issued under the authority of the Archaeological Resources Protection Act of 1979 (Public Law 96-95; 93 Stat. 721).

Sincerely,

/s/ Charles M. McKinney
Charles M. McKinney
Departmental Consulting
Archeologist

United States Department of the Interior

NATIONAL PARK SERVICE
WASHINGTON, D.C. 20240

29

IN REPLY REFER TO:

Mr. George S. Smith
Research Associate
University of Alaska
College, Alaska 99701

Dear Mr. Smith:

This will acknowledge receipt and acceptance of a preliminary report entitled, "Preliminary Report on the Archeological Survey of the Upper Susitna River Valley, Alaska in connection with the Susitna Hydropower Project, 1980" by E. James Dixon, George S. Smith and Robert M. Thorson, submitted in accordance with the terms and conditions of Federal Antiquities permit 80-AK-023.

This permit was issued on February 8, 1980, to the University of Alaska (Division of Life Science) for archeological investigations on public lands controlled by the Department of the Interior and administered by the Bureau of Land Management in the State of Alaska.

Sincerely,

Charles M. McKinney
Manager, Federal Antiquities
Program

United States Department of the Interior

NATIONAL PARK SERVICE
WASHINGTON, D.C. 20240

IN REPLY REFER TO: 720

JUN 24 1981

Control #065-AK/81-002
Permit #81-AK-209

Dr. E. James Dixon, Jr.
University of Alaska Museum
Division of Life Sciences
Fairbanks, AK 99701

Dear Dr. Dixon:

Enclosed is a Federal Antiquities permit which authorizes the University of Alaska Museum to conduct archeological investigations (consultation services/limited testing) on certain public lands owned and controlled by the Department of the Interior and administered by the Bureau of Land Management and the U.S. Fish and Wildlife Service in the State of Alaska.

Please note the special conditions and stipulations appended to this permit. Note also that the permit number must appear on the title page of any report prepared under this authority.

Should you have any questions regarding the permit, please refer to the permit number indicated in the upper right hand corner of the form and address correspondence to:

Departmental Consulting Archeologist
National Park Service
Department of the Interior
440 G Street, N.W.
Washington, D.C. 20240

This permit is issued under the authority of the Archaeological Resources Protection Act of 1979 (Public Law 96-95, 93 Stat 721).

Sincerely,

Bennie C. Keel

Bennie C. Keel
Departmental Consulting
Archeologist

STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF PARKS

JAY S. HAMMOND, GOVERNOR

619 WAREHOUSE DR., SUITE 210
ANCHORAGE, ALASKA 99501

PHONE: 274-4676

December 4, 1981

Re: 1130-13

John D. Lawrence
Project Manager
Acres American, Inc.
The Liberty Bank Building, Main at Court
Buffalo, New York 14202

Dear Mr. Lawrence:

We have reviewed the 1980 reports by the University of Alaska Museum dealing with the cultural resources of the Susitna Hydroelectric project area. The report documents the survey activities conducted during 1980 which adequately accomplish the tasks outlined in the proposed work plan. The sampling plan designed on the basis of geomorphic features and known use areas seems to have surpassed our expectations of site incidence in the area. The report shows that the first level inventory was very competently conducted and recorded. The second year activities as outlined in the procedures manual was accomplished in the 1981 field season according to information gained through verbal communication with the principle archaeological investigators. We understand that the field research strategy was changed slightly from that expected due to information gained during 1980. These changes appear to have more directly addressed problems which surfaced during the course of analysis of the 1980 data. A final review of the 1981 results and reports will have to await receipt of that document.

We feel that the steps taken thus far in the cultural resource management of the project have been excellent and one of the few instances of adequate lead time. We would like to make the observation that the work thus far is only preliminary to the work yet needed for the Susitna Hydroelectric project. Reconnaissance and testing of yet to be examined areas should continue. The clearances of specific areas of disturbance provided as additional survey by the Museum should indicate the continued need for clearances of ancillary projects which could affect cultural resources. Also, a formal mitigation plan for those sites to be affected by the project must be formulated. Once definite decisions on the route of access to the project area from existing road systems are made, those access routes and material sites must be examined for conflicts and needs for mitigation. Issuance of a permit by the Federal Energy Regulatory Commission should and probably will include provisions specifying under federal law the need for such protection.

If you have any questions regarding our comments contained here, please call us. We look forward to receiving the report on 1981 field work.

Sincerely,

Chip Dennelein
Director

By: for Douglas Reger
Robert D. Shaw
State Historic Preservation Officer

cc: Dr. E. James Dixon
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DR:clk