



SUSITNA HYDROELECTRIC PROJECT

1982 CULTURAL RESOURCES SURVEY

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MARCH 1983

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FINAL REPORT 1982 FIELD SEASON
SUB-TASK 7.06 CULTURAL RESOURCES INVESTIGATION
FOR THE SUSITNA HYDROELECTRIC PROJECT

CULTURAL RESOURCE SURVEY IN THE
MIDDLE SUSITNA RIVER VALLEY

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1 - INTRODUCTION

This document presents the results of the reconnaissance level survey and systematic testing conducted during the 1982 field season. Results of the previous two field seasons (1980 and 1981) are presented in "Final Report, Subtask 7.06, Cultural Resources Investigation for the Susitna Hydroelectric Project" (Dixon et al. 1982).

For the 1982 field season the research design and strategy developed for the overall cultural resource program was applied, a summary of which is presented in Chapter 2. Surface reconnaissance and subsurface testing was conducted in 15 survey locales, along the proposed access route, along the Fairbanks to Healy portion of the proposed transmission corridor, as well as areas associated with geotechnical testing. Aerial reconnaissance was conducted along the proposed access route and the transmission corridor including the section between Willow and Anchorage. A total of 52 sites was documented in these areas, bringing the total sites documented to date to 167. These sites are discussed in Chapter 3.

In addition to reconnaissance level survey and testing, three sites were systematically tested, bringing the total sites systematically tested to date to 21. Twenty of the 21 sites tested at this level appear to be eligible for inclusion in the National Register of Historic Places.

Analyses of tephra samples, discussed in Chapter 4, indicate that three of the four tephra can be distinguished based on petrographic study. The petrographic analysis largely agrees with the field evidence that there are three and probably four tephra units in the Upper and Middle Susitna River area. This analysis will aid in the correlation of components at different sites which are found between the same tephra units.

Because not all surveyable portions of the study have been examined, continued archeological investigation is necessary in order to complete the cultural resource inventory. In addition, continued systematic testing required to evaluate site significance and eligibility to the National Register of Historic Places.

Correspondence relating to the cultural resource portion of the Susitna Hydroelectric Project is included in Chapter 5 and a bibliography is included in Chapter 6. The confidential appendix includes site location maps, and survey locale maps.

Sections concerning impacts and mitigation were originally included in this report. Three sections have been deleted; the reader is referred to Chapter 4 of Exhibit E of the FERC license application dated February 1983.

2 - METHODOLOGY

2.1 - Archeology and History

(a) Research Design and Strategy

For 1982 field studies the research design and strategy developed for the overall cultural resource program was applied, a summary of which is provided here. The research design integrates the current archeological, historical, ethnological, and geological data into a cultural chronological framework and develops a research strategy that is structured to predict site occurrence in relation to physical and topographic features within the limits of contemporary archeological method and theory. For a more detailed discussion of the research design and strategy see Dixon et al. (1982), Chapter 2.

Based on the delineated cultural chronology, documented site locales for each culture period, and geoarcheologic evaluations, survey locales were identified as exhibiting potential for site occurrence. These locales are then subject to on-the-ground reconnaissance level survey aimed at locating cultural resources representing various periods of Alaskan prehistory and history. In addition to survey locales, areas subject to ground disturbing activities associated with the project are also examined.

Based on an analysis of site locational data from regions adjacent to, and within the study area, the features characteristically associated with site occurrence are overlooks (areas of higher topographic relief than much of the surrounding terrain) lake margins, stream and river margins, and natural constructions (areas where the topographic setting and surrounding terrain form natural constrictions which tend to funnel game animals using the area) (Dixon et al. 1982).

In addition to identifying areas having archeological potential (survey locales), areas that have no or very low potential for containing cultural resources and/or are not surveyable given present testing

methods were also identified. These areas include steep canyon walls, areas of standing water, and exposed gravel bars. These areas were eliminated from survey unless they were subject to specific activities associated with the hydroelectric project such as: auger holes, bore holes, seismic lines, test trenches, helicopter landing pads, or other ground disturbing activities. In these cases the area was examined using standard reconnaissance level survey techniques, when possible.

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.

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. One objective of the research design is to attempt to obtain more precise data relevant to prehistoric settlement patterns and the juxtaposition of individual sites in relation to the natural environment. Survey locale forms were completed for each locale examined to assist in refining site location information. This form is presented in Appendix C of the 1982 report (Dixon et al. 1982). Data collected during the 1980 and 1981 field season was incorporated into survey locale selection in 1982.

Detailed site specific information such as, 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 was gathered during field studies. 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 used on this project which outlines the specific kinds of information mentioned above (Dixon et al. 1982, 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 design and strategy developed was based on a plan designed to provide feedback data throughout the project so that new data could be used to modify, refine and further develop the cultural resource investigation. A two-fold increase (25% to 53%) in the number of survey locales producing sites during the 1982 field season is directly attributable to the refinement of site locational data made possible by the analysis of data collected during the 1980 and 1981 field seasons.

(b) Data Collection and Field Procedures

(i) Reconnaissance Testing

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 (Dixon et al. 1982, 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 conducted during the 1982 field season by the six-person field crew.

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.

Daily field notes were kept by each crew member. Field notebooks for reconnaissance 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, 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). 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 shovel tests were excavated, when possible, 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 site as well as to locate additional cultural material. In an effort to keep site 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 recovered during reconnaissance level survey were bagged by arbitrary 5 cm levels, unless natural stratification was encountered. Radiometric samples collected were double wrapped in aluminum foil and placed in ziplock bags. 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.

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. Photographs are on file at the University of Alaska Museum.

Detailed soil profiles were drawn of soil deposits exposed during testing. 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. Pertinent data was recorded for each specimen.

The reconnaissance level survey was directed toward on-the-ground evaluation of preselected survey locales that have been identified for the study 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.

(ii) Systematic Testing

Prior to systematic testing, horizontal and vertical site datums were established and a topographic map prepared. 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.

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.

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.

After the site was mapped and gridded systematic testing began. Frequently systematic testing was initiated adjacent to the test which produced cultural material during reconnaissance level testing. Subsequent 1 m by 1 m squares were laid out to assist in determining the spatial 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 by 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 tephra 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 $\frac{1}{4}$ -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 alluminum 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.

The thickness of soil units sometimes varies greatly even between adjacent squares, as does the occasional 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 units and contact between soil units are accurate for each site.

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 4.

2.2 - Geoarcheology

Geoarcheological field studies were confined to examination of the three sites systematically tested (TLM 130, TLM 128, TLM 143). In addition continued research on the tephra defined in the Upper Susitna River Region was undertaken. Geoarcheological field examination was aimed at defining the stratigraphy at each of the systematically tested sites in order to delineate tephra and cultural horizons (see Chapter 4).

Tephrochronological studies were aimed at establishing criteria for distinguishing the various tephra including mineralogical and morphological differences and/or similarities (see Chapter 4).

2.3 - Areas Examined, 1982

During the 1982 field season 14 new survey locales were examined at the reconnaissance level (110, 111, 112, 113, 116, 118, 119, 121, 125, 126, 127, 129, 130, and 131). Additional reconnaissance level survey was also conducted in survey locale 5 (see Appendix for survey locale maps). Preliminary reconnaissance level survey was conducted along the proposed transmission corridors from Fairbanks to Healy and Anchorage to Willow and along the "new" segment of the proposed access route west of Deadman Creek. Areas affected by geotechnical testing and a proposed winter "cat trail" were also examined during the 1982 field season.

3 - HISTORIC AND ARCHEOLOGICAL SITES DOCUMENTED IN 1982

3.1 - Introduction

Surface reconnaissance and subsurface testing in 15 survey locales, along the proposed access route, along the transmission corridors from Fairbanks to Healy and Anchorage to Willow, and areas associated with geotechnical testing documented 52 sites during the 1982 field season. Thirty-six of these sites were located in survey locales, 12 along the transmission corridor from Fairbanks to Healy, 3 along the proposed access route, and 1 associated with geotechnical testing. The total number of sites documented to date is 167.

Eight of the 15 survey locales (53%) produced cultural resources. This is considerably higher than the percentage of survey locales producing sites during the first two years of the project (28 of 111, 25%). This is no doubt due to refinement of data concerning site locations within the study area which were incorporated into survey locale selection in 1982. It is likely that further refinement of this data will continue to make reconnaissance survey more efficient.

Of the 52 sites documented during the 1982 field season four are located in the Watana Dam and impoundment area, three along the proposed access route and associated borrow areas, 12 within the proposed transmission corridor from Fairbanks to Healy, and 33 in other portions of the study area adjacent to the proposed impoundment. Three of the known sites within the proposed transmission corridor from Fairbanks to Healy were located through on-the-ground testing. The remaining nine sites are documented in the files of the Alaska State Office of History and Archeology. Three of the sites located along the proposed access route and associated borrow areas have not been recorded, and it will be necessary to record these sites as well as the unrecorded sites along the transmission corridor.

Reconnaissance level survey along the proposed transmission corridors from Fairbanks to Healy and Anchorage to Willow was preliminary. Due to

late selection, the Watana Dam to the Intertie portion of the transmission corridor has not been examined. A review of the records at the State Office of History and Archeology did not produce any documentation of sites along the Anchorage to Willow portion of the corridor. However, this is due to the fact that no archeological or historic surveys have been conducted in this area. Although it was possible to land a helicopter for surface reconnaissance and subsurface testing along the Fairbanks to Healy segment of the transmission corridor, dense forest vegetation prohibited this along the Anchorage to Willow segment. Further survey is required along the transmission corridors to complete the cultural resource inventory.

Site reports in this section are arranged by the following areas: Watana Dam and impoundment, proposed access route and associated borrow areas, proposed transmission corridors, Fairbanks to Healy, and other portions of the study area. Sites receiving systematic testing in 1982 are presented in section 3.8.

3.2 - Watana Dam and Impoundment

(a) Archeological Sites, Results, and Discussion

(i) AHRS Number TLM 115, Accession Number UA82-95

Area: 1.5 km northwest of Kosina Creek Mouth, Survey Locale 121

Area Map: Figure A.4; Survey Locale Map: Figure A.24

USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 450920 Northing 6962550

Latitude 62°47'30" N., Longitude 147°57'48" W.

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

Sec. 9, SE $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$

Site Map: Figure 3.1

Setting: The site is located at an elevation of ca. 580 m asl (1900 feet) on the northern slope of the Susitna River Canyon, 1.5 km northwest of the mouth of Kosina Creek (Figure A.4). It is situated upon a relatively flat bench on a north-south trending finger ridge sloping down the canyon wall perpendicular to the Susitna River. The Susitna River flows 250 m away, down a moderately steep (20-degree) slope. The eastern edge of the ridge is also steep (ca. 20 degrees), formed by a small tributary drainage. The ridge slopes gradually to the west, and forms the eastern edge of a relatively gentle canyon slope. The site is located on the southernmost flat bench of the ridge, before it drops sharply towards the Susitna River. This bench is approximately 20 m long (east-west) and 10 m wide (north-south), where it projects out from the sloping ridge. The site is located on its outermost edge. Apart from the moderately dense spruce, birch, and cottonwood forest which surrounds the site and neighboring terrain, the bench provides a point of high relief affording a good view of surrounding countryside. The

Susitna River is visible to the south and east, and is readily accessible from the site. To the southeast, Kosina Creek and the sand bar in front of it can be seen. Thick vegetation obstructs the view to the north, east, and west.

Reconnaissance Testing: A black basalt projectile point (UA82-95-1; Figure 3.48, a) was unearthed in an initial shovel test, and was determined to be situated in stratigraphic unit 4 (Oshetna tephra), near its contact with glacial drift. This test was expanded into a 40 cm by 40 cm test pit (test pit 1), but no additional artifacts were found. Five additional shovel tests placed on the bench failed to produce cultural material. Examination of the surface of the edge of the bench and the slope beneath it was also negative.

Collected Artifact Inventory

Subsurface:

1 Black basalt projectile point (UA82-95-1; Figure 3.48, a)

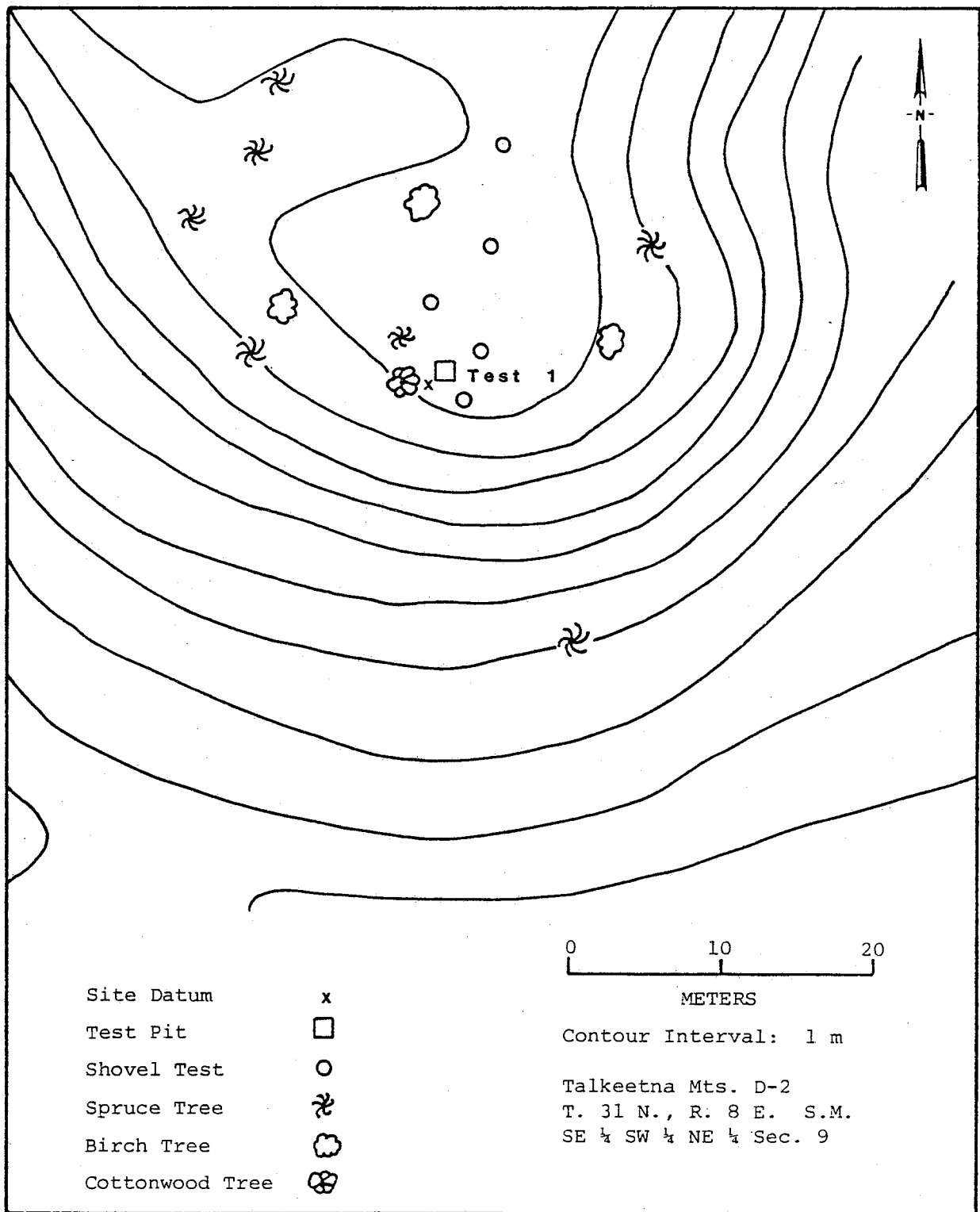


Figure 3.1. Site Map TLM 115.

(ii) AHRS Number TLM 119, Accession Number UA82-59

Area: ca. 9 km southeast of Watana Creek Mouth, Survey Locale 118
Area Map: Figure A.3; Survey Locale Map: Figure A.22
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 444900 Northing 6964900

Latitude 62°48'48" N., Longitude 148°4'50" W.

T. 31 N., R. 7 E., Seward Meridian
Sec. 2, NW $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$

Site Map: Figure 3.2

Setting: The site is located on the north side of the Susitna River on the central portion of a continuous ridge which is approximately 400 m long and 30 m to 40 m wide. The ridge is oriented in a northwest to southeast direction roughly perpendicular to the river, sloping gradually from the uplands down to the Susitna River canyon. The site is at an elevation of 675 m asl (2200 feet) on a discrete section of the ridge. This area of the ridge has a 2-degree to 3-degree southward slope and then slopes more steeply for about 30 m to 40 m at which point the ridge makes a gradual change in direction to a north-south orientation. A deflated area, 20 m by 12 m, flanks the east side of the ridge. The exposure contained artifactual material, which is probably the result of erosion of the ridge top. To the east the ridge slopes at approximately a 15-degree angle toward a small creek which is ca. 30 m lower in elevation. This creek flows southward into the Susitna. The ridge slope is more gradual in all other directions. From the site area there is a clear view to the east overlooking the small creek and drainage system in addition to the uplands. The Susitna River valley is discernible to the southeast. Visibility in all other directions is limited due to trees. Vegetation on the site includes scattered spruce, lowbush cranberry, dwarf birch, Labrador tea and lichens. Stands of birch with intermittent spruce are apparent on the ridge slopes grading into a lowland spruce-hardwood forest.

Reconnaissance Testing: The site contained a diffuse surface scatter of flakes which were located on an exposure on the eastern face of the ridge, and along a game trail which runs along the eastern edge of the ridge. One subsurface flake was located in a shovel test directly west of the deflated area. This shovel test was expanded into a 40 cm by 40 cm test pit (test pit 1), but no additional artifacts were found. The flake which was recovered came from an upper strata of dark brown silty-sandy matrix with finely sorted organics. This stratigraphic unit is situated above the Devil tephra. Another test pit (test pit 2) was placed approximately 16 m north of test pit 1, 2 m west of the location of 2 basalt flakes found on the game trail. No artifactual material was found in test pit 2.

Collected Artifact Inventory

Surface:

- 3 Chert flakes
- 4 Basalt flakes

Subsurface:

- 1 Chert flake

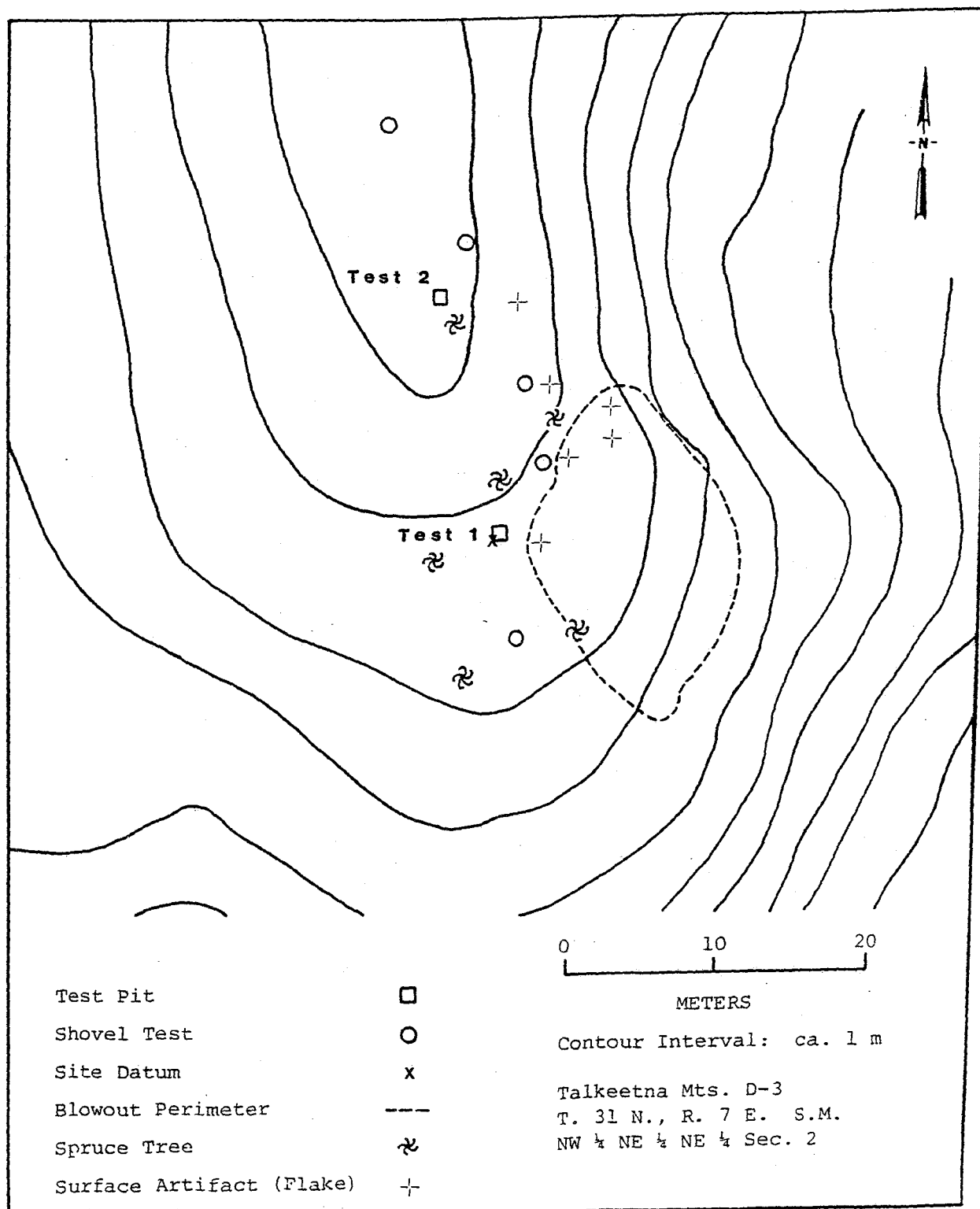


Figure 3.2. Site Location Map TLM 119.

(iii) AHRS Number TLM 126, Accession Number UA82-66

Area: ca. 1.5 km northeast of Watana Creek Mouth, Survey Locale 130
Area Map: Figure A.3; Survey Locale Map: Figure A.33
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 437720 Northing 6968020

Latitude 62°50'13" N., Longitude 148°13'11" W.

T. 32 N., R. 7 E., Seward Meridian
Sec. 30, SW $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$

Site Map: Figure 3.3

Setting: The site is located on the crest of a ridge 600 m north of the Susitna River, ca. 1.5 km northeast of the mouth of Watana Creek, at 634 m asl (2080 feet). The ridge is composed of glacial drift, oriented in a northwest-southeast direction. It is approximately 80 m long and about 10 m wide along the relatively flat crest and slopes moderately steeply to the south, west, and east, towards lower terrain characterized by broad marshy areas and irregular kames and terraces. The ridge rises about 10 m above the western marshes and from 4 m to 10 m above the southern and eastern kame topography. The site lies to the north about 2 m above a broad, flat plateau connecting the site ridge with other ridges of similar height to the north. The view from the site is panoramic, but occasionally obstructed by moderately dense white spruce and birch forest. To the west the Watana Creek canyon and intervening marshland is visible, while to the south and east the kame topography north of the Susitna River canyon is visible for ca. 500 m. The ridges and plateau north of the site are visible for a distance of about 300 m. The surface of the site is fairly extensively covered with lichen, low heath, and dwarf birch vegetation, along with white spruce and paper birch. Fallen spruce trees and occasional frost boils expose underlying gravels in a few places.

Reconnaissance Testing: Two flakes were recovered from test pit 1 below the pink-gray Devil tephra unit, and above the glacial drift, but their precise stratigraphic position is not known. Two additional shovel tests were placed on top of the ridge with negative results. The surface of the ridge and gravel exposures were closely examined, but no additional cultural material was recovered.

Collected Artifact Inventory

Subsurface:

- 1 White rhyolite flake
- 1 Light gray cryptocrystalline flake

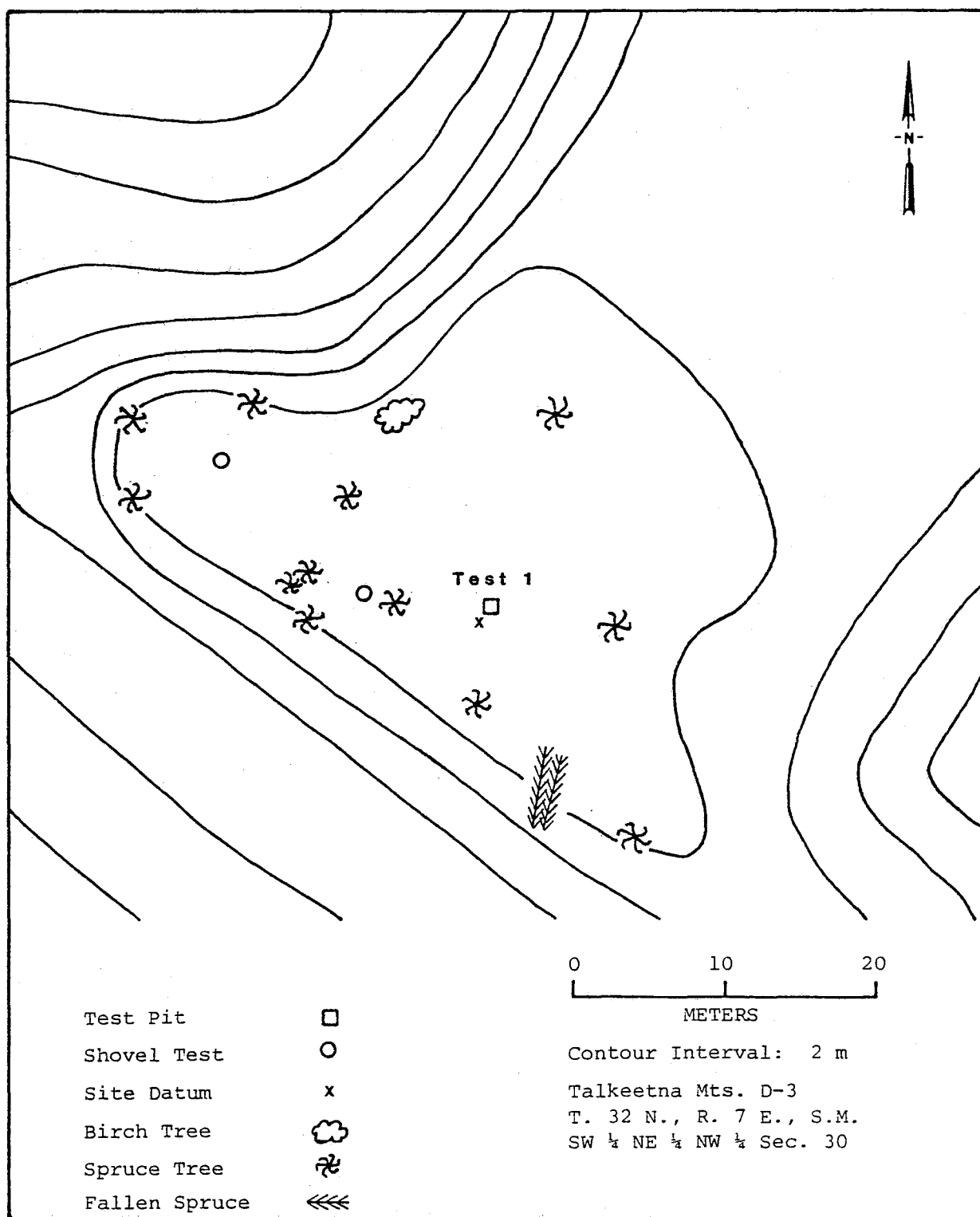


Figure 3.3. Site Map TLM 126.

(iv) AHRS Number TLM 137, Accession Number UA82-77

Area: ca. 2.5 km northeast of the confluence of Tsusena Creek with the Susitna River, seismic line 82-A

Area Map: Figure A.2; Location Map: Figure A.35

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

Site Location: UTM Zone 6 Easting 420180 Northing 6968020

Latitude 62°50'9" N., Longitude 148°33'57" W.

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

Sec. 29, SW $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$

Site Map: Figure 3.4

Setting: The site is located on a discrete kame ca. 2.5 km northeast of the confluence of Tsusena Creek with the Susitna River at an elevation of approximately 640 m asl (2100 feet). The kame is the highest of a small set of kame ridges and knolls that abut the eastern slope of the Tsusena Creek drainage in the site locality. A 2.5 m deep gully separates the kame from gradually rising or rolling terrain to the south and east, while to the north there is a gradual downward slope to the margin of the Tsusena Creek canyon, which is ca. 6 km to the northwest at its nearest point and ca. 150 m (500 feet) lower in elevation. Two small lakes lie ca. 1 km to the northeast at approximately the same elevation as the site.

The cultural material occurred in a test pit (test pit 1) .5 m below the broad, rounded apex of the kame, which is ca. 70 m long in an east-west direction and ca. 10 m wide in a north-south direction, and approximately 20 m from its eastern end. The view from the site includes relatively thinly vegetated slopes to the north and south, and the Susitna valley to the west. The view to the east is obstructed by white spruce stands, but would otherwise encompass rolling terrain of moderate

relief. Vegetation at the site consists of well-drained tundra with small shrubs and scattered spruce and birch, and is similar to that of the surrounding area.

Reconnaissance Testing: The site consists of two subsurface flakes.. There was no surface indication of the site. A single brown chert flake was found 10 cmbs in a shovel test, which was expanded into a 40 cm by 40 cm test pit (test pit 1). A small black basalt flake was found 10 cmbs to 12 cmbs in test pit 1 in a small area of coarse gray sand. Although the upper soil units revealed in test pit 1 (interpreted as the Devil, Upper and Lower Watana tephras) were largely continuous and well-horizoned, the flakes were found in a lower soil which was mottled, texturally variable, and evidently cryoturbated, rendering stratigraphic placement difficult or impossible. Six other shovel tests dug on the kame produced no additional artifacts.

Collected Artifact Inventory

Subsurface:

- 1 Brown chert flake
- 1 Small black basalt flake

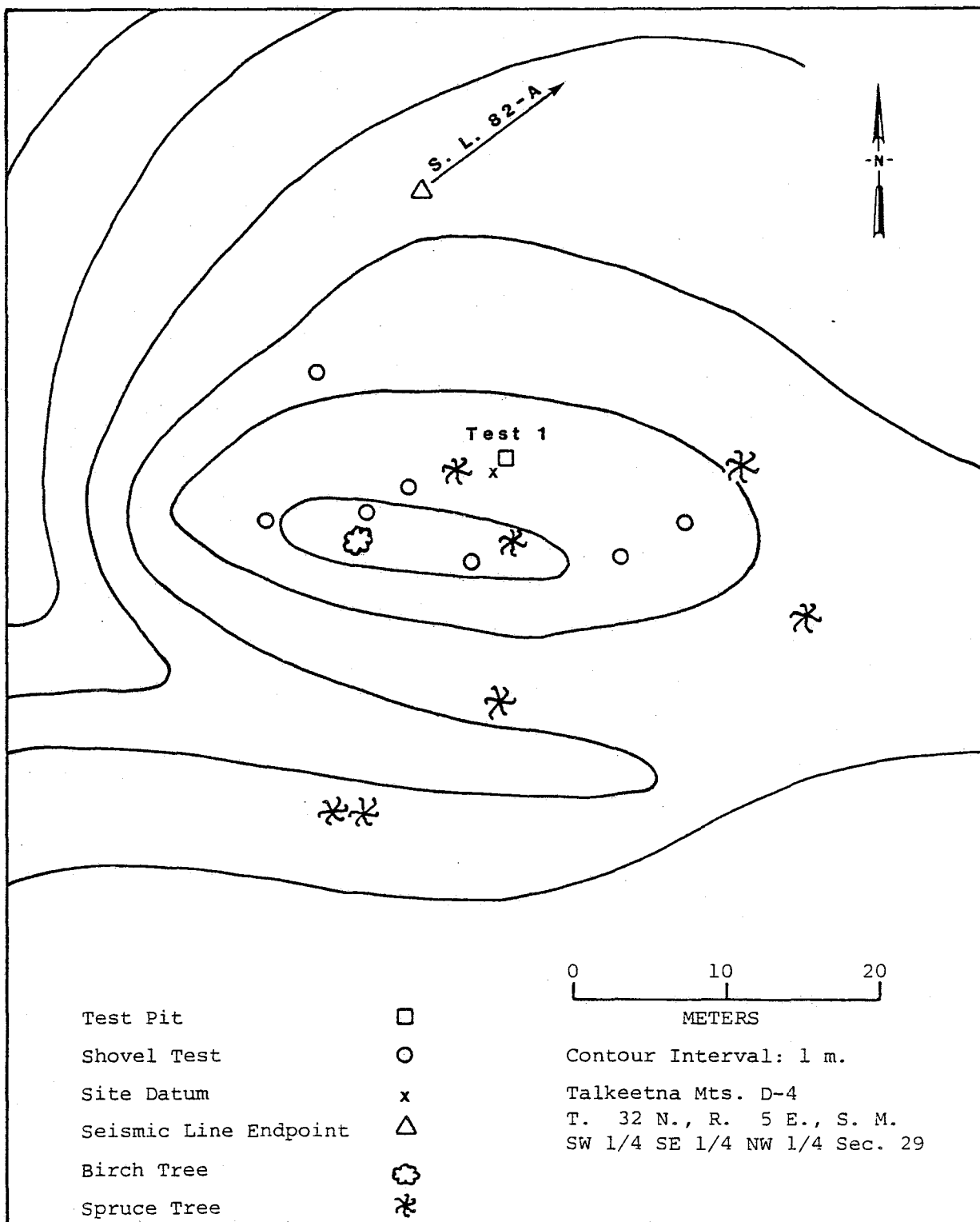


Figure 3.4. Site Map TLM 137.

(b) Historic Sites - Results and Discussion

None located during 1982 field season.

3.3 - Proposed Access Route and Associated Borrow Areas

(a) Archeological Sites - Results and Discussion

Three sites were located during reconnaissance level survey in 1982. These sites, TLM 153, TLM 155 and HEA 211 were not recorded due to time constraints. Therefore, it is necessary to return to these sites at some future date to record them.

(b) Historic Sites - Results and Discussion

No historic period sites were located during the 1982 field season along the proposed access route and associated borrow areas.

3.4 - Transmission Corridor - Fairbanks to Healy

(a) Archeological Sites - Results and Discussion

(i) AHRS Number HEA 210, Accession Number UA82-101

Area: ca. 0.3 km southeast of confluence of Healy Creek with the
Nenana River, Proposed Transmission Corridor

Area Map: Figure A.12; Location Map: Figure A.36

USGS Map: Healy D-4, Scale 1:63,360

Site Location: UTM Zone 6 Easting 405050 Northing 7081350

Latitude 63°50'55" N., Longitude 148°55'49" W.

T. 12 S., R. 7 W., Fairbanks Meridian

Sec. 28, NW $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$

Site Map: Figure 3.5

Setting: The site is located at ca. 427 m asl (1400 feet) on an alluvial terrace ca. 30 m (100 feet) above and ca. 0.3 km southeast of the confluence of Healy Creek with the Nenana River. The terrace is 60 m wide oriented east-west, becoming northeast-southwest to the south, where it narrows and terminates ca. 2 km distant from the site. The terrace is dissected by a 2 m deep dry gully about 120 m south of the site. A terrace 6 m higher than the terrace on which the site is located rises abruptly to the east and southeast within 40 m of the site. A lower terrace lies to the north and west of the site about 15 m above the current levels of the Nenana River and Healy Creek. The view from the site includes the Healy Creek floodplain and valley wall to the north, the Nenana River floodplain to the northwest, west, and southwest, and the relatively low terrain on the west side of the river, as well as the southward continuation of the terrace sequence to its terminus against the north facing margin of hilly uplands forming the Healy Creek valley wall ca. 2 km distant.

The terrace surface is wind-scoured, but patchy vegetation composed of dwarf birch, forbes, lichens, and a few small spruce occurs. The lower terrace to the north is well-vegetated with grasses and shrubs. The north side of Healy Creek and the west side of the Nenana River are forested with spruce and hardwoods.

Reconnaissance Testing: Surface reconnaissance was conducted over the terrace surfaces within an area up to 1 km south and southeast from the Healy Creek mouth. The site consists of two loci with an isolated surface artifact found at each. Locus A consists of a cryptocrystalline flake found on the interior surface of the terrace ca. 30 m away from the base of the upper terrace. Locus B is ca. 40 m north of Locus A on the north edge of the terrace overlooking Healy Creek and consists of a retouched gray chert flake (UA82-101-2; Figure 3.50, g). No features or other cultural material were observed. Due to the exposure of alluvial gravels over most of the terrace surface, no subsurface testing was conducted.

Collected Artifact Inventory

Surface:

- 1 Brown cryptocrystalline flake
- 1 Gray chert retouched flake (UA82-101-2; Figure 3.50, g)

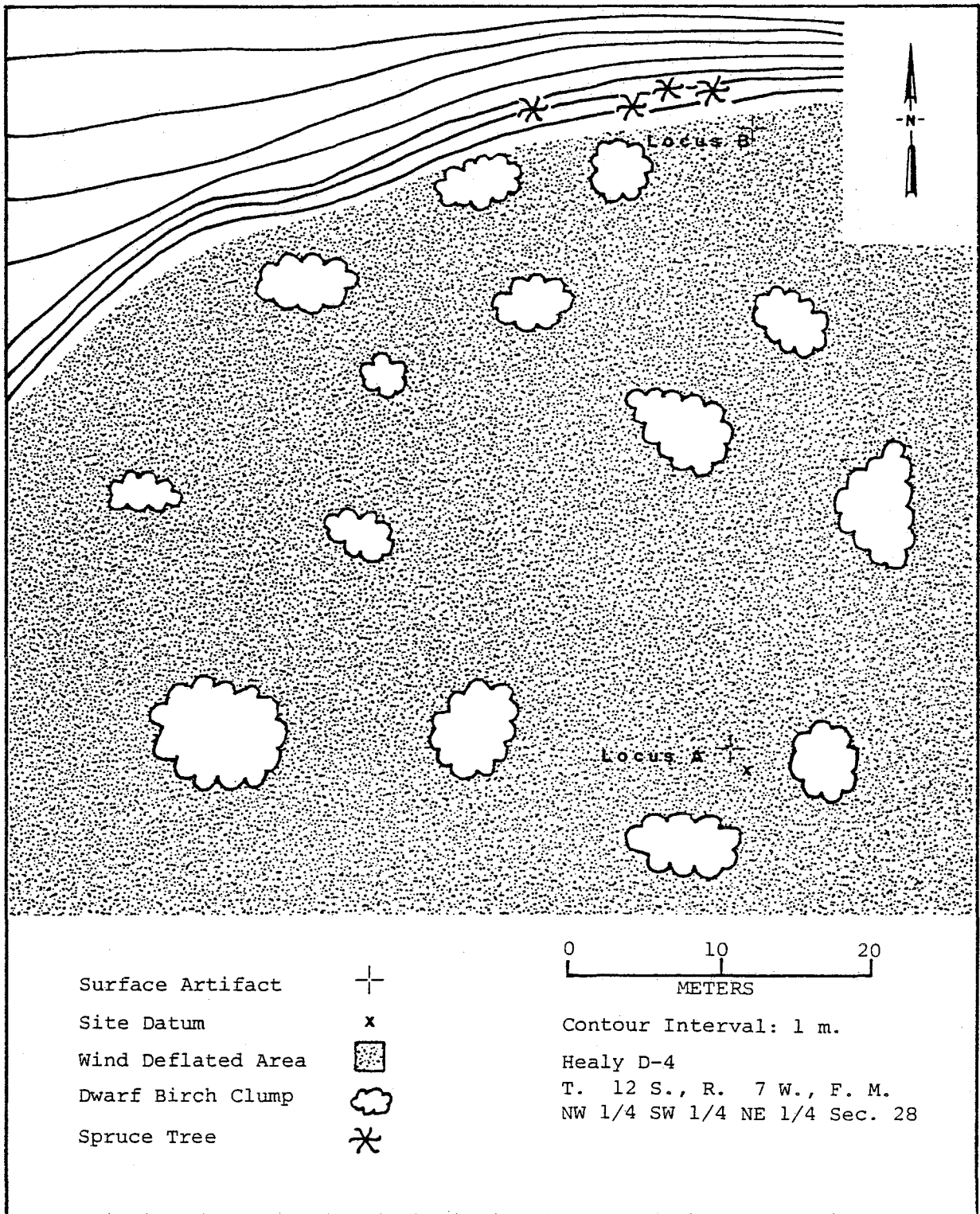


Figure 3.5. Site Map HEA 210.

(ii) AHRS Number FAI 213, Accession Number UA82-102

Area: ca. 10 km northeast of the confluence of Birch Creek with the
Nenana River, Proposed Transmission Corridor

Area Map: Figure A.14; Location Map: Figure A.37

USGS Map: Fairbanks A-5, Scale 1:63,360

Site Location: UTM Zone 6 Easting 398870 Northing 7123050

Latitude 64°13'11" N., Longitude 149°6'10" W.

T. 8 S., R. 8 W., Fairbanks Meridian

Sec. 15, SW $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$

Site Map: Figure 3.6

Setting: The site is located at ca. 203 m asl (750 feet) on the top of a steep (45-degree) south-facing bluff where the orientation of the bluff edge changes from northwest-southeast to northeast-southwest. Approximately 30 m below the site at the base of the bluff is a 300 m wide abandoned stream channel which is presently well-vegetated, with only a small stream flowing along the base of the bluff on which the site is located. A bluff of slightly lower elevation occurs on the opposite side of the channel. The whole bluff/stream channel system is located on gradually northward sloping terrain of low relief except for some deeply incised drainages, such as that of Windy Creek, which is 1 km southeast of the site at its nearest point.

Visibility from the site is excellent to the northwest, where the channel begins to open out onto the Tanana Flats outwash plain, to the west and south with the channel bottom and facing slopes in view, and along the southeastern continuation of the channel bottom. Mountainous uplands forming the south edge of the Tanana Flats are in view several kilometers distant to the south and southeast. Visibility in other directions is restricted by the relatively level, brushy ground on top

of the bluff which descends to the Tanana Flats ca. 1 km north of the site. A large ca. 30 hectare lake is located ca. 5 km northeast of the site, and the Nenana River is ca. 7 km southwest of the site at its nearest point.

Vegetation at the site consists of scattered spruce and thick stands of young birch, with the major portion of the ground cover formed by lichens, moss, and forbes. The channel has well-developed spruce bog vegetation. Along the edge of the bluff, sands and silts overlying glacial drift are currently undergoing deflation, which has created a 2 m by 5 m unvegetated area at the point of inflection. The deflation continues to the northwest and northeast but moderates along relatively straight adjacent bluff edges.

Reconnaissance Testing: The site consists of both surface and subsurface artifactual material. A surface lithic scatter was located in a deflated area (4.5 m by 2.5 m) at a point of inflection of the bluff edge. Twenty-nine flakes of various material types were recovered from the surface scatter. One of three shovel tests excavated in the site area contained a single basalt flake. Test pit 1 was placed on the northern edge of the deflated area. One chert flake was recovered and a massive charcoal lens with oxidized matrix was located in the test pit. The lens may suggest a hearth feature although no artifactual material was found in association with it. One flake, located on the bluff edge 50 m northwest of the surface scatter, was not collected.

Collected Artifact Inventory

Surface:

29 Flakes of various material types

Subsurface:

1 Basalt flake

1 Gray chert flake

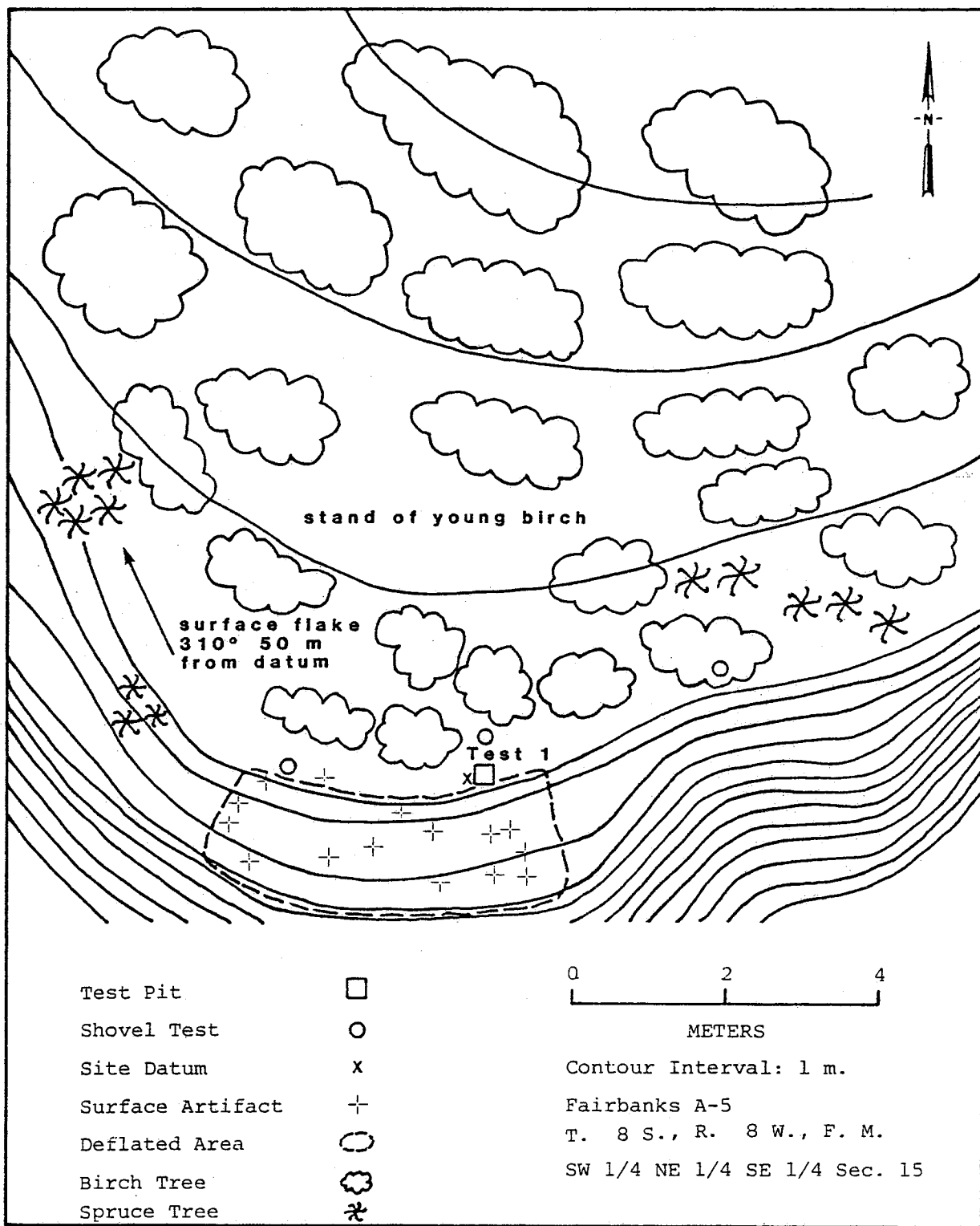


Figure 3.6. Site Map FAI 213.

(iii) AHRS Number FAI 214, Accession Number UA82-103

Area: ca. 1 km southwest of the confluence of Birch Creek with the
Nenana River, Proposed Transmission Corridor

Area Map: Figure A.14; Location Map: Figure A.38

USGS Map: Fairbanks A-5, Scale 1:63,360

Site Location: UTM Zone 6 Easting 388420 Northing 7118120

Latitude 64°10'22" N., Longitude 149°17'50" W.

T. 8 S., R. 9 W., Fairbanks Meridian

Sec. 34, NE $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$

Site Map: Figure 3.7

Setting: The site is located at ca. 366 m asl (1200 feet) on the easternmost point of the broad, relatively flat crest of a northeast-southwest trending ridge. To the east and northeast of the site a steep (30-degree) slope abruptly descends ca. 90 m (300 feet) to the Nenana River floodplain. The confluence of Birch Creek and the Nenana River is located ca. 1 km to the northeast of the site. The steep-walled Birch Creek drainage lies ca. .5 km to the west of the site, defining the west side of the site ridge. The ridge forms part of a system of low mountains which reaches its highest elevation, 554 m asl (1816 feet), ca. 3 km to the northwest of the site. The site is located near a communications tower in a recently cleared 60 m by 30 m area.

Visibility from the site is excellent to the southeast overlooking the Nenana River floodplain, to the east where the floodplain is constricted within a ca. 1.5 km wide steep-walled corridor, and to the northeast where the floodplain opens out onto the Tanana Flats outwash plain. The steep slopes of hilly uplands forming the east Nenana River valley wall are also in view. Visibility in other directions is limited by the forested ridge crest. Within 8 km of the site, but at least 3 km distant, are several lakes which exceed 10 hectares in size.

Vegetation at the site reflects the recent clearing of the communications tower site and includes fireweed, grass, and young trees, with some original ground cover of mosses and small shrubs left intact. Vegetation of the ridge crest and slopes is upland spruce-hardwood forest. Adjacent low flat areas are characterized by lowland spruce forest, with extensive boggy areas.

Reconnaissance Testing: No surface indication of the site was observed. One obsidian flake was found in shovel test 1, which was expanded into a 40 cm by 40 cm test pit (test pit 1) and produced four basalt flakes (10 cmbs to 20 cmbs). Shovel test 4, 50 cm west of test pit 1, produced 6 basalt flakes from approximately 13 cmbs. Two other shovel tests produced no cultural material. No features were observed.

Collected Artifact Inventory

Subsurface:

10 Basalt flakes
1 Obsidian flake

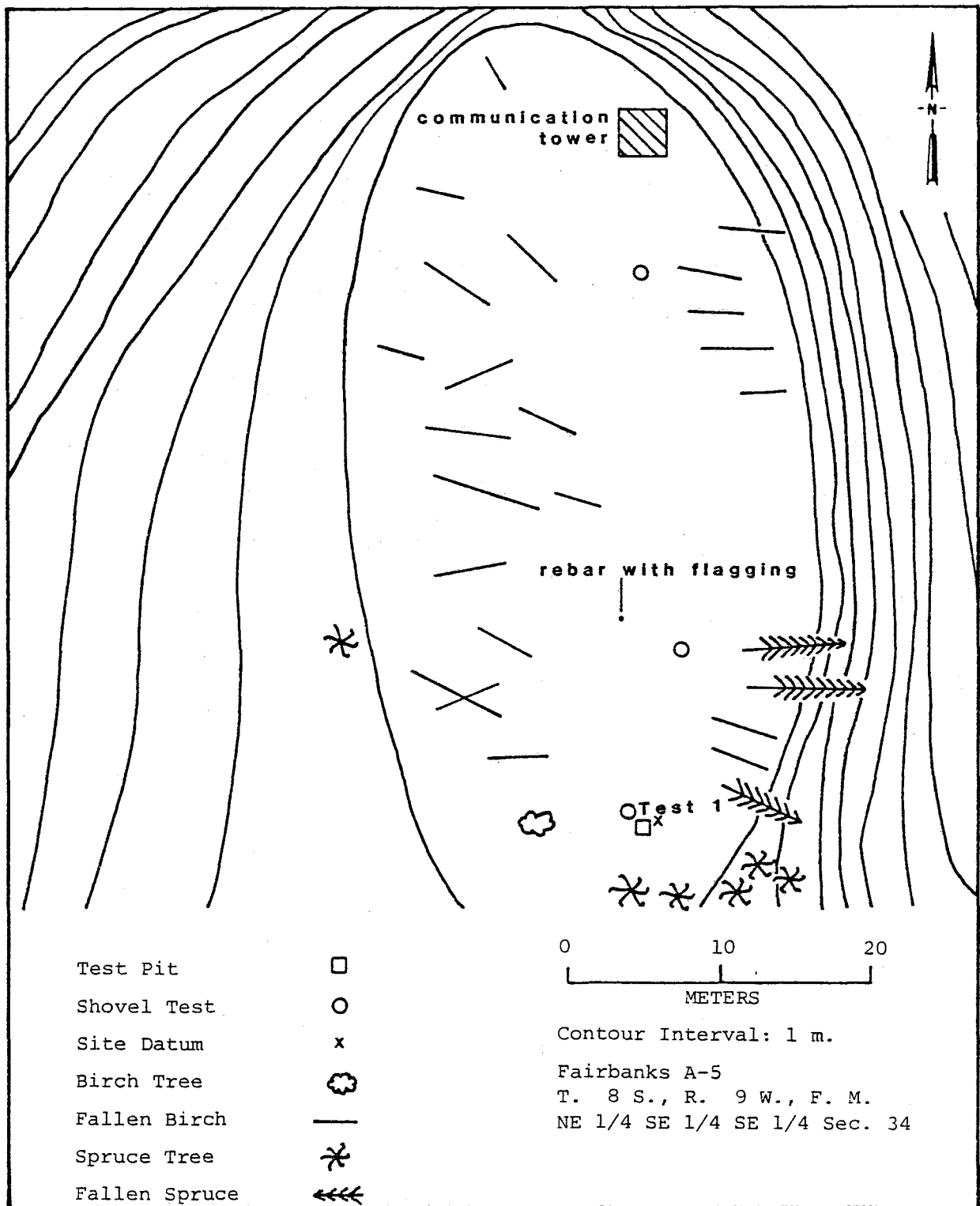


Figure 3.7. Site Map FAI 214.

The following sites are located within the proposed transmission corridor from Fairbanks to Healy: HEA 026, HEA 030, HEA 035, HEA 037, HEA 038, HEA 080, HEA 083, HEA 119 and HEA 137. These sites are on file in the State Office of History and Archeology, but remain to be field checked.

(b) Historic Sites - Results and Discussion

No historic sites were recorded along the transmission corridor between Fairbanks and Healy during the 1982 field season.

3.5 - Other Portions of the Study Area

(a) Archeological Sites - Results and Discussion

(i) AHRS Number TLM 118, Accession Number UA82-58

Area: Unnamed lake shore west of Devil Creek, Survey Locale 111

Area Map: Figure A.1; Survey Locale Map: Figure A.17

USGS Map: Talkeetna Mts. D-5, Scale 1:63,360

Site Location: UTM Zone 6 Easting 395050 Northing 6968600

Latitude 50°00'03" N., Longitude 149°03'39" W.

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

Sec. 27, NE $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$

Site Map: Figure 3.8

Setting: The site is located on the top of an elongate north-south oriented knoll (ca. 60 m by 30 m in size), 18.3 m (60 feet) above the southeast end of an unnamed 1 hectare lake which is at an elevation of 488 m asl (1600 feet). The site is 400 m southeast of the confluence of High Lake's outlet stream and Devil Creek. Devil Creek enters into the Susitna River 1.3 km to the south and is 152 m (500 feet) lower in elevation than the site knoll. Two other knolls, 6 m to 12 m lower in elevation, are within 200 m to the southwest. The view from the site is panoramic to the north, northeast and northwest, encompassing the entire lake and the terrain 1 km to 3 km distant up to an elevation of 701 m asl (2300 feet). To the east, west, and south the presence of trees obscures the view of a poorly drained ravine which is at lake elevation and lower. To the south-southwest the Susitna River valley is partially visible.

Vegetation in the low areas surrounding the site knoll consists of grasses, black spruce and paper birch forest with dwarf birch thickets.

The surrounding uplands are closed black spruce forest. On the site knoll vegetation consists of a continuous moss and heath ground cover with large boulders and exposed bedrock apparent. Scattered birch and black spruce along with low bush cranberry and dwarf birch are also present.

Reconnaissance Testing: No cultural material was found on the surface of this site; however 5 small gray chert flakes, 3 fire cracked rocks and charcoal were found in a shovel test which was placed on the upper central portion of the knoll. A 40 cm by 40 cm test pit (test pit 1) was placed adjacent to the shovel test. Test pit 1 revealed numerous small flakes (gray banded chert), a bifacial tool fragment, a microblade-like flake, and 4 fire cracked rocks. A carbon sample was also taken. This material was located 6 cmbs to 10 cmbs below the unit surface within a thin lens of very fine dark brown matrix containing carbon to the contact with underlying tephra. Nine additional shovel tests placed on the knoll failed to reveal any other cultural material.

Two tephras were observed in the profile of the test pit. The uppermost tephra is pinkish-gray in color with sharp contacts with the dark colored cultural lens above it and with a grayish tephra below it. The two tephras are similar in texture, but can be distinguished on the basis of color. It is possible that the upper "tephra" is a cultural ash. At this level of testing it can not be determined if the lower gray tephra was associated with the Devil or Oshetna tephra units.

Collected Artifact Inventory

Subsurface:

- 31 Flakes, light gray to white chert with banding
- 1 Microblade-like flake, gray chert
- 1 Light gray chert biface, tool fragment or point base?
- 7 Fire cracked rocks

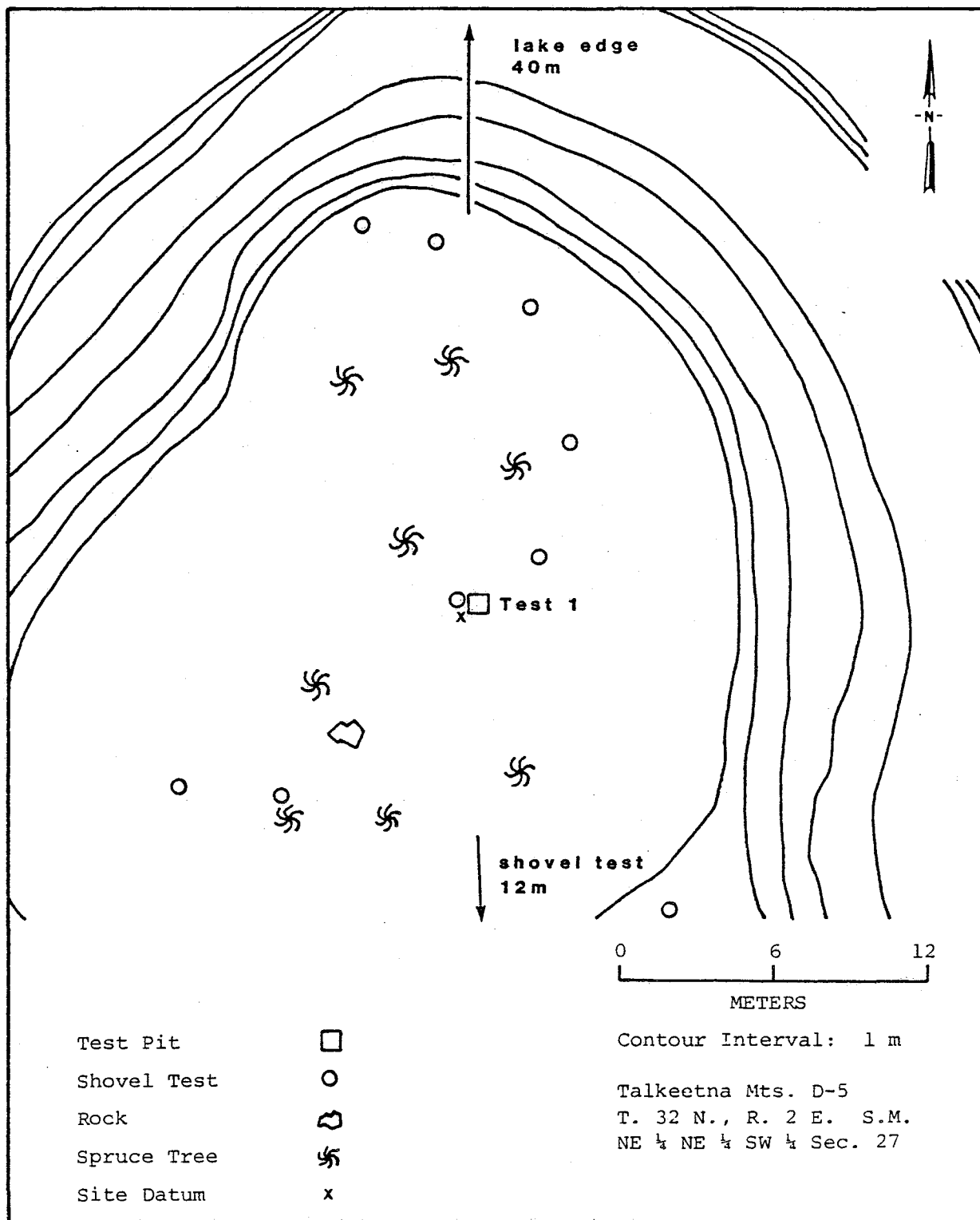


Figure 3.8. Site Map TLM 118.

(ii) AHRS Number TLM 120, Accession Number UA82-61

Area: ca. 5 km southeast of Watana Creek Mouth, Survey Locale 116
Area Map: Figure A.3; Survey Locale Map: Figure A.20
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 440200 Northing 6963900

Latitude 62°48'5" N., Longitude 148°10'0" W.

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

Sec. 4, NW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$

Site Map: Figure 3.9

Setting: TLM 120 is one of several sites on a system of knolls and low ridges which are oriented in a north-south direction sloping gradually northward toward the Susitna River. The ridge-knoll system is dissected by a series of unnamed creeks and drainages which flow north into the Susitna River and drain upland areas. The site is situated on a low-lying ovate knoll located between two unnamed creeks, one ca. .3 km to the east and the other ca. .8 km to the west. It is 686 m asl (2250 feet), 1.2 km south of the Susitna River and 198 m (650 feet) higher than the river in elevation. The knoll is approximately 25 m in diameter at the level upper extent and is defined mainly by its north exposure which slopes gradually over a distance of 30 m. The slope to the east, west, and south is more gradual. The predominant view is to the north overlooking the Susitna River valley and the topography on the northern side of the river. The river itself is not visible. A north-south trending ridge ca. 400 m west of the site, on which TLM 121 and TLM 125 are located, is also visible from the site. Vegetation of the site vicinity is open black spruce forest and includes hummocky, poorly drained areas with mosses, willows, lowbush cranberry, blueberry and grasses. Vegetation at the site consists of scattered spruce trees, low shrub, mosses and lichens. Approximately 20% of the ground surface is exposed in the site area.

Reconnaissance Testing: The site was characterized by a surface scatter of basalt flakes 3 m by 1.5 m in spatial extent. Ten of the 16 surface flakes were clustered within a 50 cm by 50 cm area in the central portion of the scatter. A 40 cm by 40 cm test pit was excavated along the northeast edge of the scatter and subsurface flakes were recovered 1 cmbs to 2 cmbs. These flakes were of the same lithology as the surface material. The absence of the Devil tephra in the upper extent of test pit 1 makes the interpretation of the stratigraphic position of artifactual material problematic. Six additional shovel tests placed on the knoll and the knoll perimeter failed to reveal any additional subsurface material.

Collected Artifact Inventory

Surface:

16 Basalt flakes

Subsurface:

7 Basalt flakes

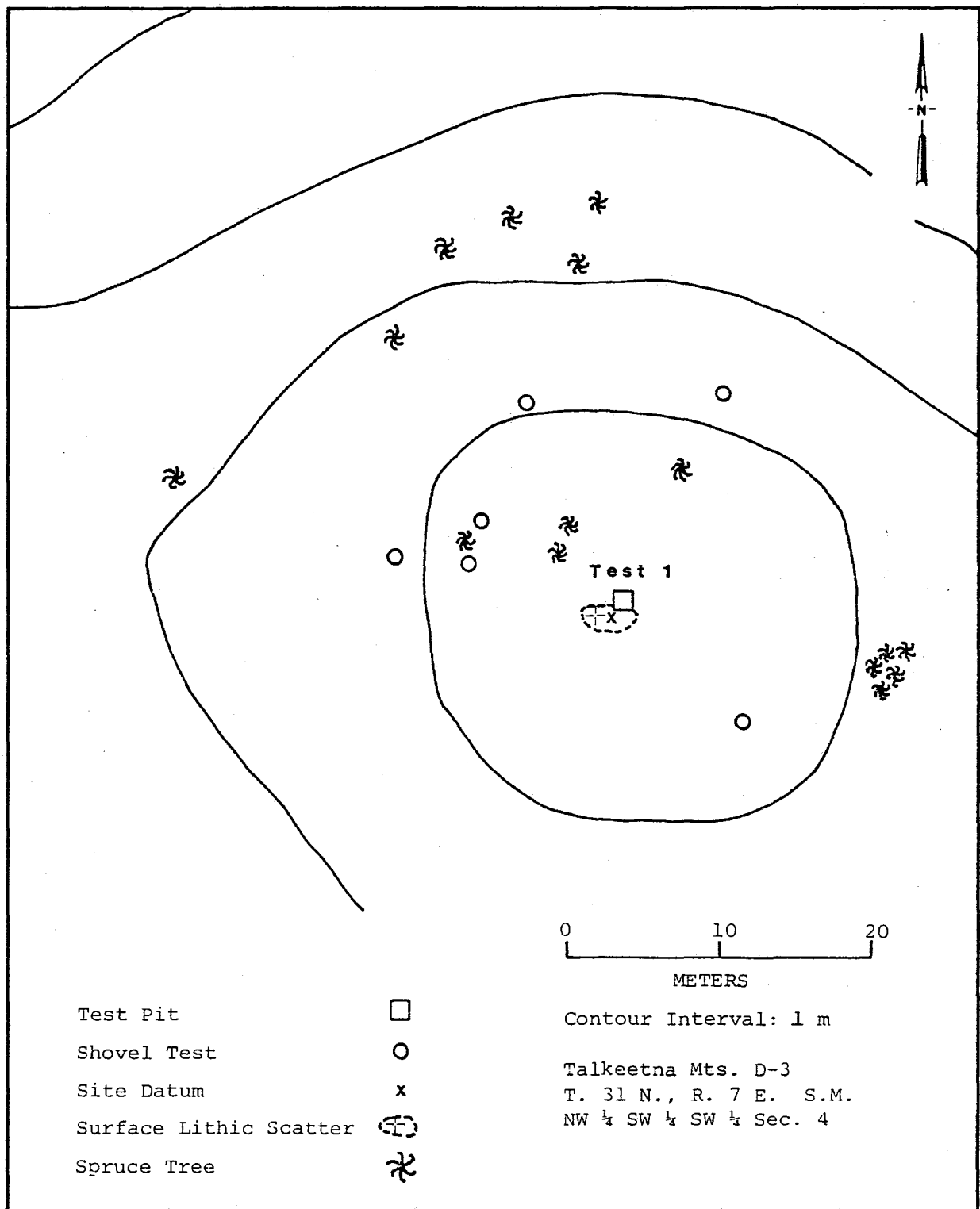


Figure 3.9. Site Map TLM 120.

(iii) AHRS Number TLM 121, Accession Number UA82-60

Area: ca. 5 km southeast of Watana Creek Mouth, Survey Locale 116
Area Map: Figure A.3; Survey Locale Map: Figure A.20
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 441950 Northing 6964100

Latitude 62°48'13" N., Longitude 148°10'35" W.

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

Sec. 5, NW $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$

Site Map: Figure 3.10

Setting: The site is located on a north-south oriented ridge 1 km south of the Susitna River and 5 km southeast of the mouth of Watana Creek. The site is situated at an elevation of 686 m asl (2250 feet), on a flat area near the north edge of the ridge. The ridge measures ca. 400 m along its axis; the plateau measures 145 m by 150 m. Drainages flow north to the Susitna River along both sides of the ridge. The site is situated 2 m east of the plateau's western edge, 50 m south of the plateau's northern end, and 175 m south of the ridge's northern terminus. The drainage immediately west of the site is small and the drainage on the east side of the plateau is a very shallow boggy area 150 m distant. The view from the site overlooks the western drainage forested with black spruce. Two knolls are visible to the west. The knoll furthest west is higher than the site plateau by ca. 30 m. To the east the plateau is highly visible for 150 m because it is not forested. Northeast, beyond the northern rim of the plateau, the northern bank of the Susitna River is visible, along with rising topography on the north side of the Susitna River. To the south, the plateau ends abruptly 100 m from the site, where it meets a 5-degree slope. This slope rises 30 m to the rim of another plateau that lies along the ridge. Another site (TLM 125) is situated 70 m south along this higher plateau, however, only the rim of the plateau is visible from the site. Site

vegetation consists of a patch of white lichens 5 m by 6 m in diameter. The site plateau is covered in herbaceous and woody plants including lowbush cranberry, cranberry, bearberry, Labrador tea and dwarf birch. Along the perimeter of the plateau are black spruce, which become crowded in the nearby drainages.

Reconnaissance Testing: The site contains subsurface cultural material from the one excavated test including 23 calcined long bone fragments, 8 pieces of fire cracked rock, and charcoal pieces. No features were noted during excavation of the test pit. Cultural material was recovered from a stratigraphic unit directly above the Devil tephra. On-ground reconnaissance in soil exposures around exposed bedrock, and two shovel tests nearby were negative.

Collected Artifact Inventory

Subsurface:

22 Long bone fragments, calcined, medium to large mammal
1 Long bone fragment, calcined, large mammal
8 Fire cracked rocks

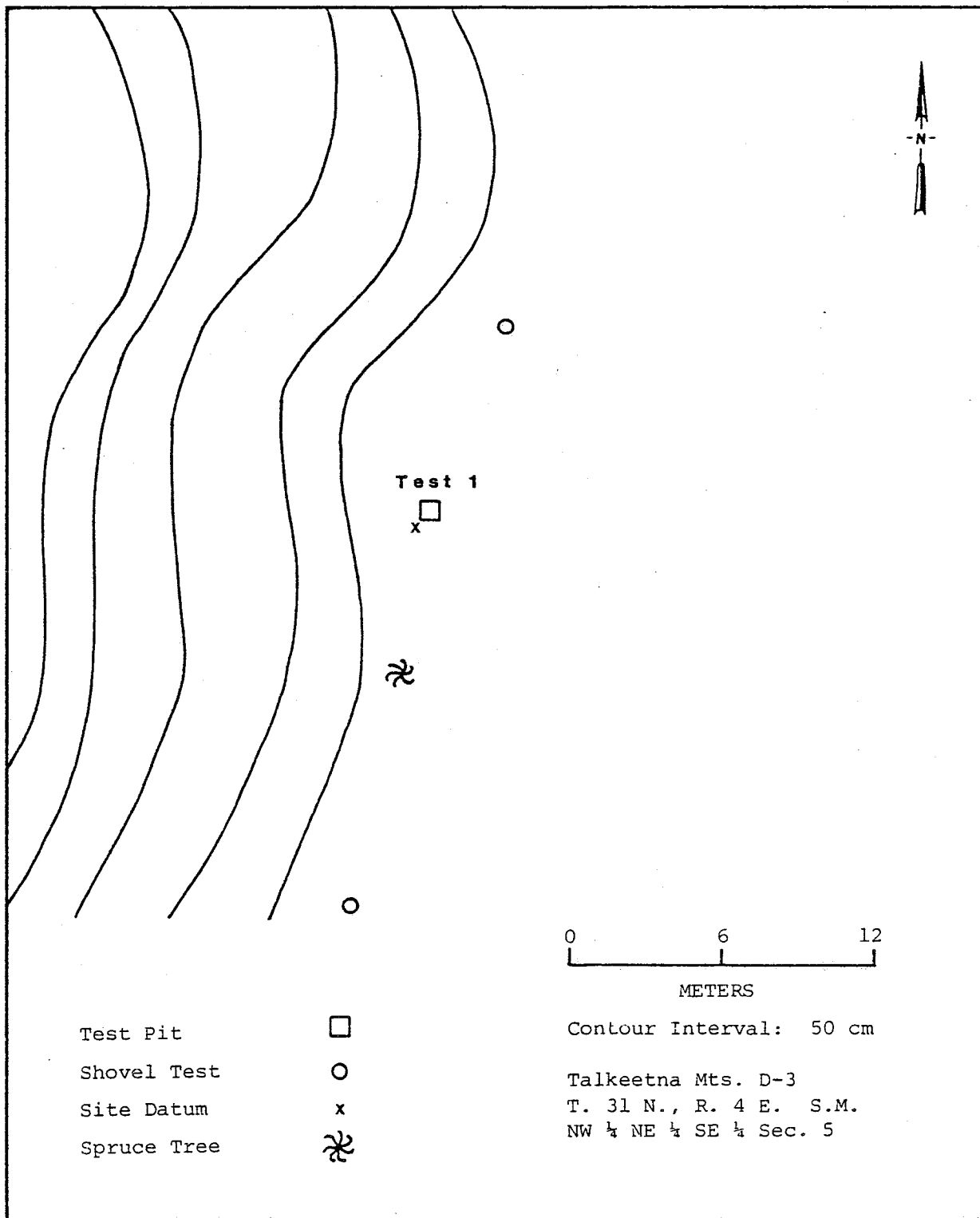


Figure 3.10. Site Map TLM 121.

(iv) AHRS Number TLM 122, Accession Number UA82-62

Area: ca. 3.5 km southeast of Watana Creek Mouth, Survey Locale 125
Area Map: Figure A.3; Survey Locale Map: Figure A.25
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 437400 Northing 6964100

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

T. 31 N., R. 7 E., Seward Meridian
Sec. 6, SE $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$

Site Map: Figure 3.11

Setting: The site is located ca. 3.5 km southeast of the confluence of Watana Creek and the Susitna River, at ca. 686 m asl (2250 feet) (Figures A.3 and A.25). It lies on a low ridge in the center of a relatively flat, gently northward sloping lacustrine plain bordering the Susitna River. The plain, which is about 500 m wide from the edge of the river canyon to the north to the steep uplands in the south, is about 190 m (600 feet) higher than the Susitna River at its nearest point. The plain is generally boggy, containing a number of small drainages and ponds; a small lake (less than 1 hectare) is located ca. 1 km west of the site. A series of low, rounded ridges and knolls composed of glacial drift stand 3 m to 10 m above this plain along its length. The site occupies the southeastern end of one of these ridges, about 3 m above the surrounding plain and 0.5 m below the top of the ridge. The ridge is low and broad, oriented in a linear fashion along a northwest-southeast axis. It is approximately 100 m long and 35 m wide at the southeast end, where the site is located. The view from the site is panoramic in all directions, affording a good vantage point overlooking the black spruce forest and bogs of the surrounding plain, the steep uplands to the south, and of the extensive plain north of the Susitna River. The Susitna River and canyon are not visible from the site. Vegetation on the ridge consists of lichen, low heath, dwarf

birch, and scattered spruce. Small deflated and undeflated frost boils are common.

Reconnaissance Testing: The site consists of a single basalt flake found on the surface in a deflated area (1.2 m by 2.5 m area) on the northeast face of the ridge. A 40 cm by 40 cm test pit (test pit 1) was dug in soil adjacent to this gravelly deflated area, with negative results. The flake was 22 cm northwest (300°) of the southwest corner of test pit 1 (site datum). Seven additional shovel tests were placed on the ridge end, and other deflated areas were examined carefully. No additional artifacts were found.

Collected Artifact Inventory

Surface:

1 Basalt flake

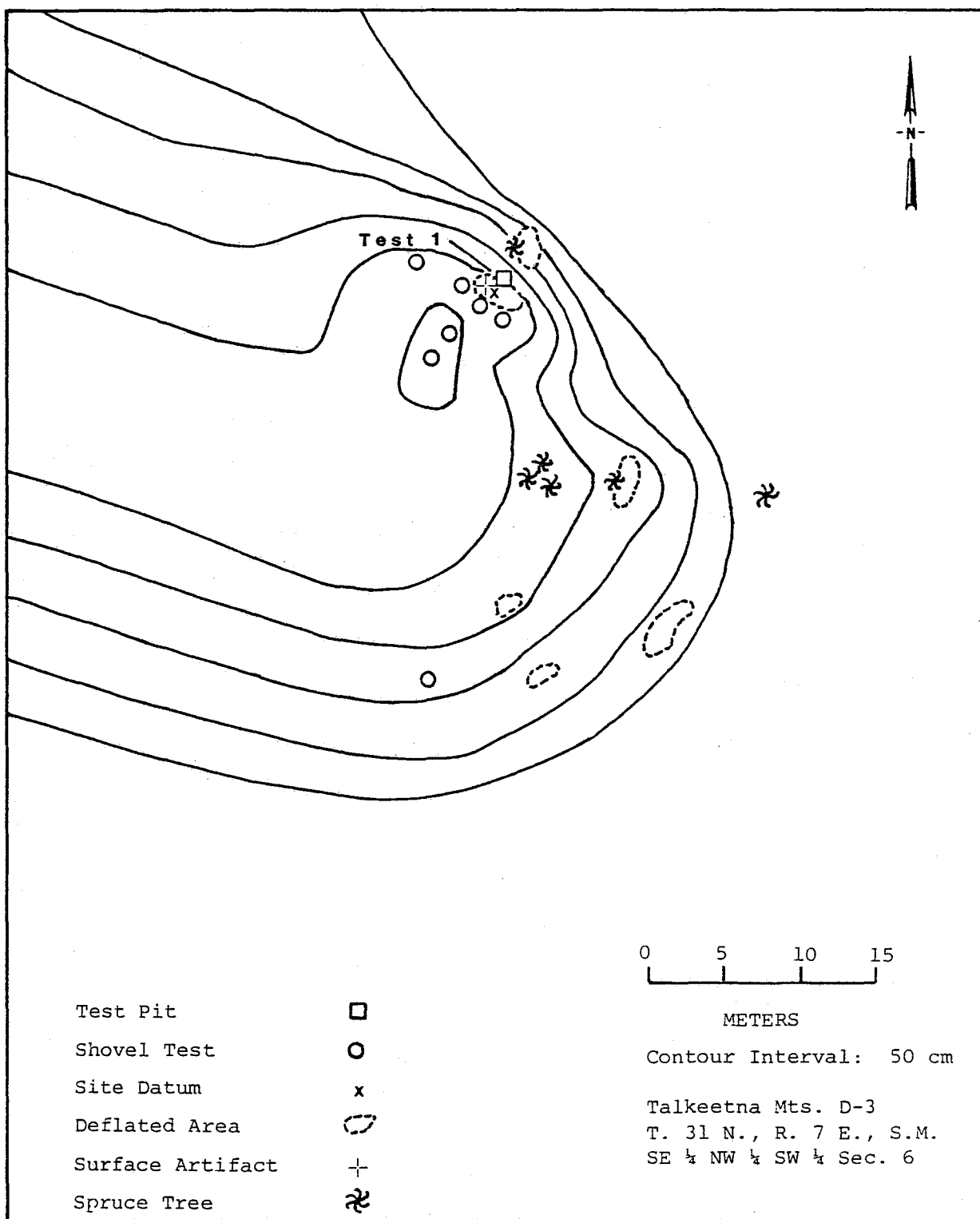


Figure 3.11. Site Map TLM 122.

(v) AHRS Number TLM 123, Accession Number UA82-220

Area: ca. 3.7 km southeast of Watana Creek Mouth, Survey Locale 125
Area Map: Figure A.3; Survey Locale Map: Figure A.26
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 438080 Northing 6964300

Latitude 62°48'18" N., Longitude 148°12'50" W.

T. 31 N., R. 7 E., Seward Meridian
Sec. 6, NW $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$

Site Map: Figure 3.12

Setting: The site is located on the crest of a low ridge at approximately 686 m asl (2250 feet) near the center of a lacustrine plain south of the Susitna River, 3.7 km southeast of the mouth of Watana Creek (Figure A.3). The ridge is arcuate, running roughly north-south with a narrow southern end and a lobate northern end. The ridge, approximately 100 m long (north-south) and 35 m to 40 m wide, is 2 m higher in elevation than the surrounding plain at the narrow southern end and about 10 m higher than the gradually sloping plain at the northern extremity. The plain in this area is approximately 500 m wide (north-south), sloping gradually from steep southern uplands to the rim of the Susitna River canyon. The Susitna River lies about 200 m in elevation below the plain. While the plain is generally relatively flat and boggy, numerous similar well-drained ridges and knolls rise from 3 m to 10 m above the surface along its entire length.

The site is located on the ridge crest near the center of the ridge. A large gravel exposure on the eastern face of the ridge also contains artifactual material, probably eroding from above. From the site a good view of the surrounding plain and southern uplands is available. The Susitna River and canyon to the north cannot be seen. A small creek running 500 m east of the site (the nearest available water, except for

bogs) is masked from view by rather dense black spruce woodlands. Vegetation on the site includes lichen mat, low heath, dwarf birch, and scattered spruce, though exposed glacial drift and frost boils occur over much of the site surface.

Reconnaissance Testing: The site contains two small possible cache pits and a surface scatter of weathered bone and charcoal (Figure 3.12).

Pit 1, southwest of site datum, is roughly circular with a diameter of 1.5 m and a depth of 35 cm. Pit 2, ca. 15 m to the northeast, is elliptical, measuring 2.0 m (north-south) by 1.5 m (east-west), and is 50 cm deep. Between the two pits on the crest of the ridge (and extending down the eastern slope for about 3 m to 5 m) are scattered fragments of weathered, but unburned, bone. Two diagnostic bone fragments were collected, one an unburned rib fragment, possibly caribou, and one an unburned long bone fragment, possibly caribou. A small concentration of charcoal lies 60 cm southwest of site datum. A 40 cm by 40 cm test pit (test pit 1; southwest corner is site datum) was dug in the vegetation mat near this surface scatter. A small piece of charcoal was found in the west sidewall, located below the Devil tephra. No charcoal was collected. No other artifactual materials were found. Seven shovel tests scattered along the ridge produced negative results. The backfill of the shovel test in pit 2 contained possible birch bark.

Collected Artifact Inventory

Surface:

1 Unburned rib fragment, possibly caribou (Rangifer tarandus)

1 Unburned long bone fragment, possibly caribou (Rangifer tarandus)

Subsurface:

2 Pieces possible birch bark

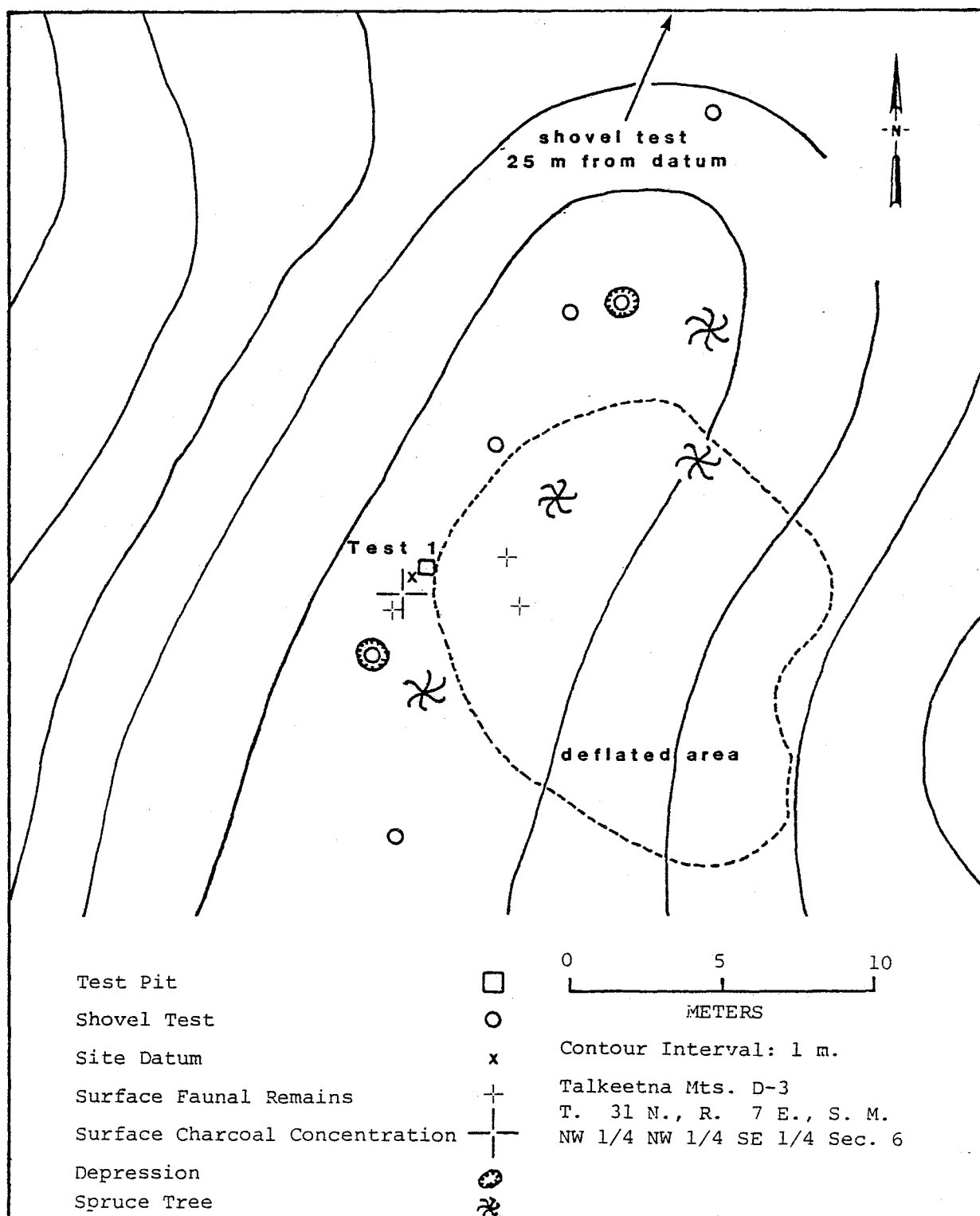


Figure 3.12. Site Map TLM 123.

(vi) AHRS Number TLM 124, Accession Number UA82-64

Area: ca. 3.75 km southeast of the mouth of Watana Creek, Survey
Locale 125

Area Map: Figure A.3; Survey Locale Map: Figure A.26

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

Site Location: UTM Zone 6 Easting 438650 Northing 6964200

Latitude 62°48'15" N., Longitude 148°12'10" W.

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

Sec. 6, NE $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$

Site Map: Figure 3.13

Setting: The site is located ca. 3.75 km southeast of the confluence of Watana Creek and the Susitna River, at ca. 686 m asl (2250 feet) (Figure A.23). It lies on a low ridge in a relatively flat, gently northward sloping lacustrine plain bordering the Susitna River. The plain, which is about 500 m wide from the edge of the river canyon to the north to the steep uplands to the south, is about 190 m (600 feet) higher than the Susitna River at its nearest point. The plain is generally boggy, containing a number of small drainages and ponds. A small lake (less than 1 hectare) is located ca. 1.2 km west of the site. A series of low, rounded ridges and knolls composed of glacial drift stand 3 m to 10 m above the plain along its length. The site occupies one of these ridges. The ridge is low and broad, oriented in a linear fashion along a north-south axis. It is approximately 200 m long, from its northern terminus to where it merges with the steeply rising southern uplands (the valley wall), and approximately 45 m wide. A small creek runs northward approximately 200 m east of the site. View from the ridge crest is panoramic, affording a good vantage point overlooking the black spruce forest and bogs of the surrounding plain, the steep uplands to the south, and the extensive plain north of the Susitna River. The Susitna River and canyon are not visible from the site. Vegetation on

the ridge consists of lichen, low heath, dwarf birch, and scattered spruce. Small frost boils are common.

Reconnaissance Testing: The site consists of one basalt projectile point (UA82-64-1; Figure 3.48, b) found on the surface in a deflated area (3 m by 5 m) on the crest of the ridge (Figure 3.13), and one modified brown chert flake (UA82-64-2; Figure 3.48, c) found on the surface of a frost boil (1 m by 2 m) on the east face of the ridge near its base and approximately 90 m north-northeast of the basalt projectile point. A 40 cm by 40 cm test pit (test pit 1) was dug in soil adjacent to the projectile point, with negative results. The projectile point was 2 m south (180°) of the southwest corner of test pit 1 (site datum). Sixteen shovel tests were placed on the ridge between, and in the immediate vicinity of, the surface artifacts. Other deflated areas were examined carefully without additional artifacts being found.

Collected Artifact Inventory

Surface:

- 1 Basalt projectile point (UA82-64-1; Figure 3.48, b)
- 1 Modified brown chert flake (UA82-64-2; Figure 3.48, c)

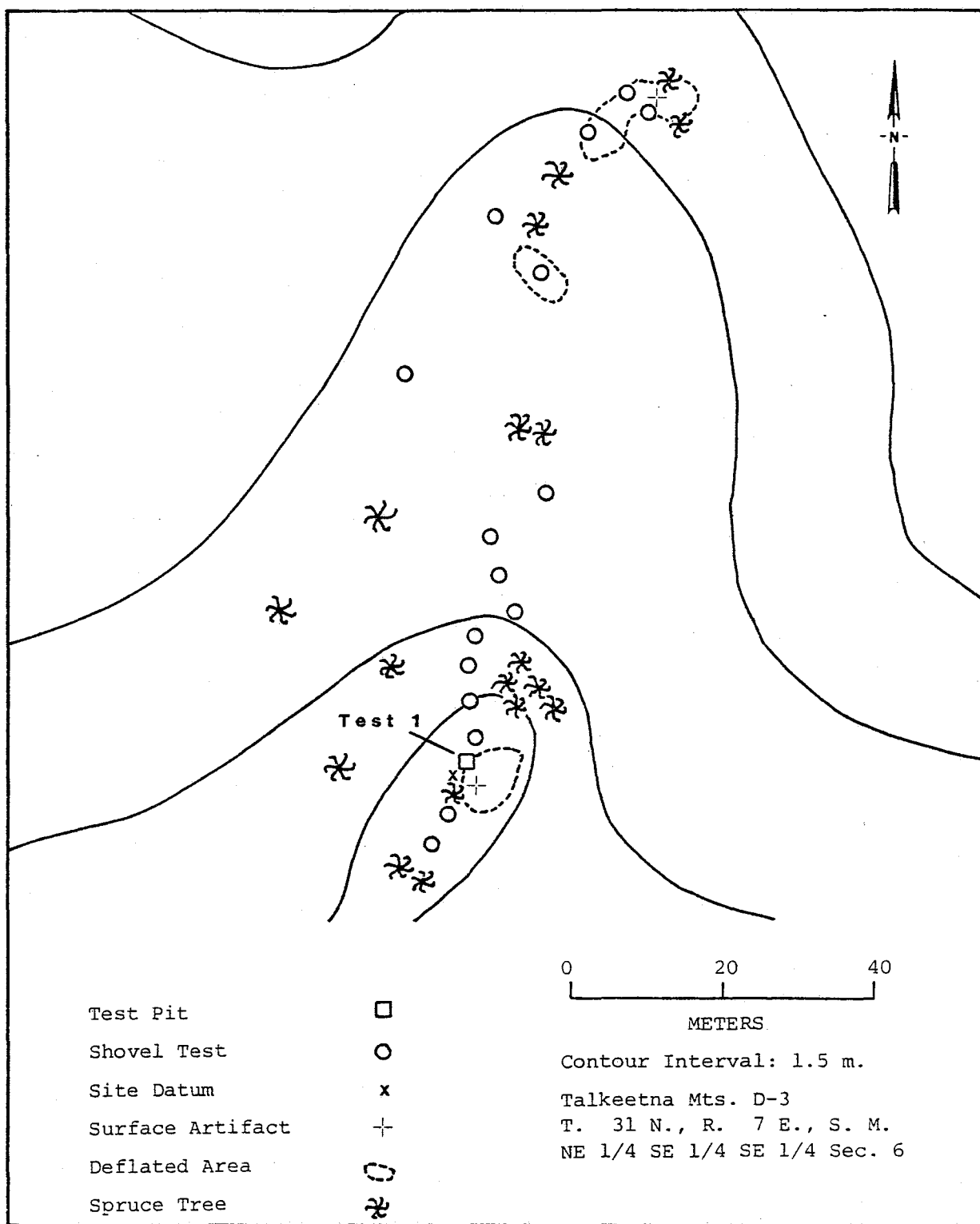


Figure 3.13. Site Map TLM 124.

(vii) AHRS Number TLM 125, Accession Number UA82-65

Area: ca. 1.5 km south of the Susitna River, Survey Locale 116
Area Map: Figure A.3; Survey Locale Map: Figure A.20
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 440250 Northing 6963950

Latitude 62°63'10" N., Longitude 149°00'25" W.

T. 31 N., R. 7 E., Seward Meridian
Sec. 5, NE $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$

Site Map: Figure 3.14

Setting: TLM 125 is located at ca. 686 m asl (2250 feet) on a low knoll approximately 1.2 km south of the Susitna River. The knoll is part of a ridge system which extends in a north-south direction from near the shore of the Susitna River towards the uplands and mountains to the south. Numerous such features, also containing knolls of varying height above the surrounding terrain, are located in this survey locale. Between the knoll ridges numerous small drainages flow into the Susitna River. The knoll on which the site is located is approximately 5 m above the surrounding terrain, which consists of low bogs and dense stands of black spruce. The top of the knoll is relatively flat and the site itself is located on the southeast portion of the knoll. The slope of the ridge to the north is gentle for at least a kilometer until it begins to drop off to the river. The slopes of the knoll on the east, west and north, although greater than 15 degrees, do not pose an access problem due to the short distance to the surrounding lowlands. The closest lake (2 hectares) to the site is located 5 km to the northwest next to the Susitna River. This knoll, as well as other knolls in the area, provide dry "islands" in the relatively wet terrain which comprise most of the survey locale. The view from the site is panoramic although the knoll itself is only a few meters above the surrounding terrain. The view would be increased considerably if the trees below the site were not present.

Vegetation on the site consists of small isolated black spruce stands with scattered birch. Low brush, lichens, and moss cover most of the site where trees are not present. A few very small deflated areas are located on the knoll.

Reconnaissance Testing: No surface indications of a site exist on the knoll. A total of seven shovel tests were excavated, one of which produced cultural material. Shovel test 1, on the extreme southeast portion of the knoll, produced 1 basalt flake at 8 cm below the surface. Test pit 1, excavated directly east of the shovel test, produced 2 additional basalt flakes from just below the organic horizon in a stratigraphic unit consisting of sandy silt with some pebbles 4 cm to 8 cm below the surface. Charcoal lenses and isolated charcoal lumps were also present in this same stratigraphic unit.

Collected Artifact Inventory

Subsurface:

3 Basalt flakes

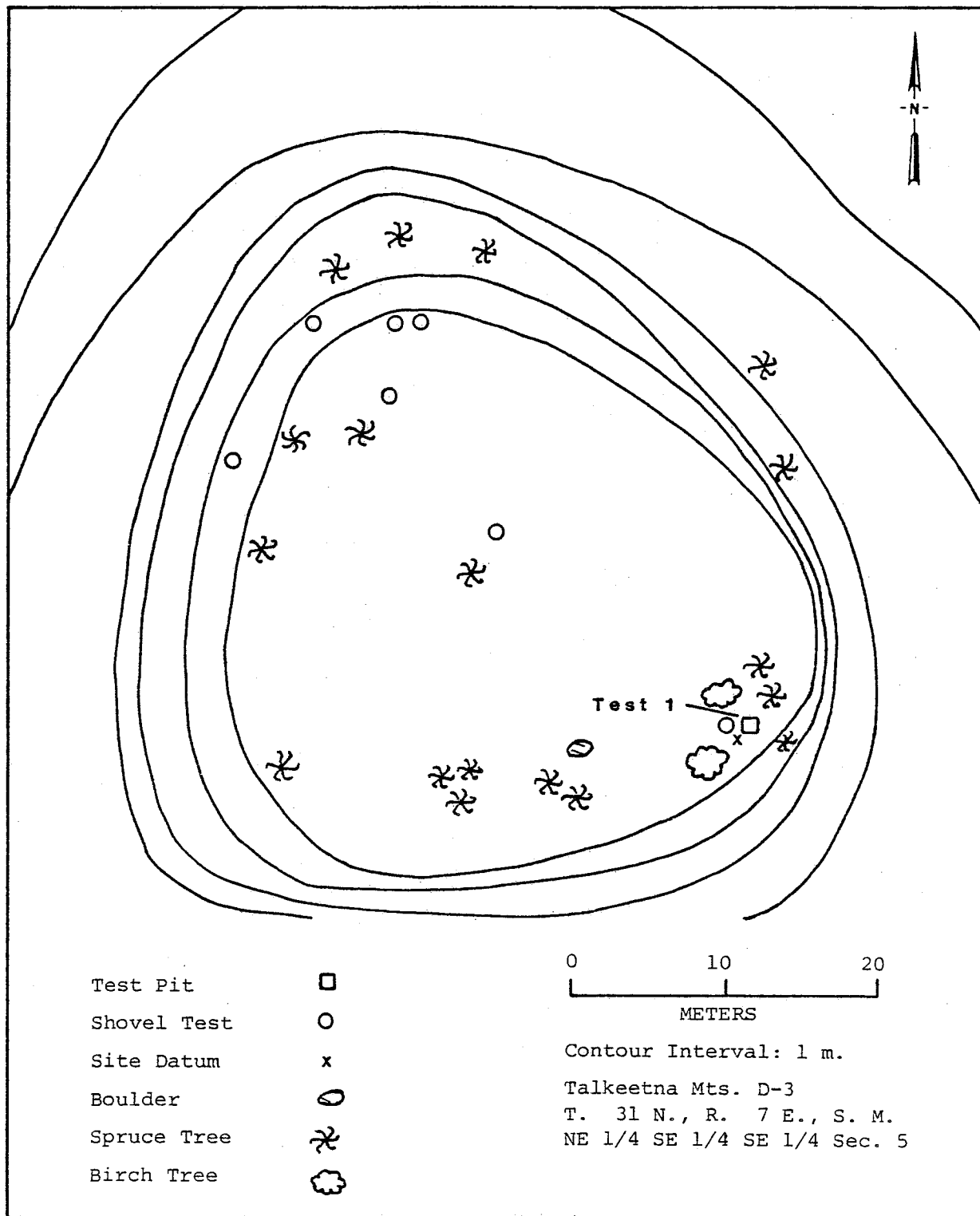


Figure 3.14. Site Map TLM 125.

(viii) AHRS Number TLM 127, Accession Number UA82-67

Area: ca. 7 km southeast of Watana Creek Mouth, Survey Locale 116
Area Map: Figure A.3; Survey Locale Map: Figure A.20
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 441650 Northing 6963700

Latitude 62°48'00" N., Longitude 148°8'40" W.

T. 31 N., R. 7 E., Seward Meridian
Sec. 4, SW $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$

Site Map: Figure 3.15

Setting: The site is located on a kame feature which can be described as an elongated knoll, east to west in orientation, and ca. 686 m asl (2250 feet). The knoll is 1.2 km south of the Susitna River and ca. 7 km southeast of the mouth of Watana Creek. The knoll itself is approximately 60 m in length along its east-west axis and ca. 10 m in width. The site is located on the eastern portion of the knoll with the site area characterized by a generally level area 20 m in length. The knoll is situated between two unnamed creeks which flow northward to the Susitna River. These drainage systems border the eastern and western edges of the knoll. The knoll is distinguished primarily by its north face which slopes 3 m over a distance of 20 m. The primary view from the site is to the north encompassing the topography on the northern side of the Susitna River. Visibility to the east, west and south of the site is limited by forest vegetation although lateral moraines and mountainous peaks can be seen south of the site, above the present vegetation. The creeks to the east and west are obscured by spruce forest. Surface vegetation at the site includes scattered black spruce with a ground cover of lowbush cranberry, Labrador tea, blueberry, heath, mosses and lichens. The area surrounding the site is characterized by poorly drained black spruce forest.

Reconnaissance Testing: No artifactual material was found on the surface. Basalt flakes were located in two shovel tests which were within 1.6 m of each other. One of these shovel tests was expanded into a 40 cm by 40 cm test pit (test pit 1), and 4 additional flakes were recovered. The material found in situ from test pit 1 was located within a dark brownish matrix to the contact with the underlying Devil tephra, 2 cmbs to 4 cmbs. An additional flake was found within the Devil tephra. In addition to the artifactual material, 2 small circular depressions were observed on the site surface. These depressions were ca. 60 cm in diameter and 10 cm deep and are located within 1.5 m of each other. Test pit 1 is situated on the northeast edge of the northernmost depression, bisecting the feature edge. No truncation of the strata was observed, rather the soil units followed the contours of the depression. Nine additional shovel tests were placed in the site area with negative results.

Collected Artifact Inventory

Subsurface:

8 Basalt flakes

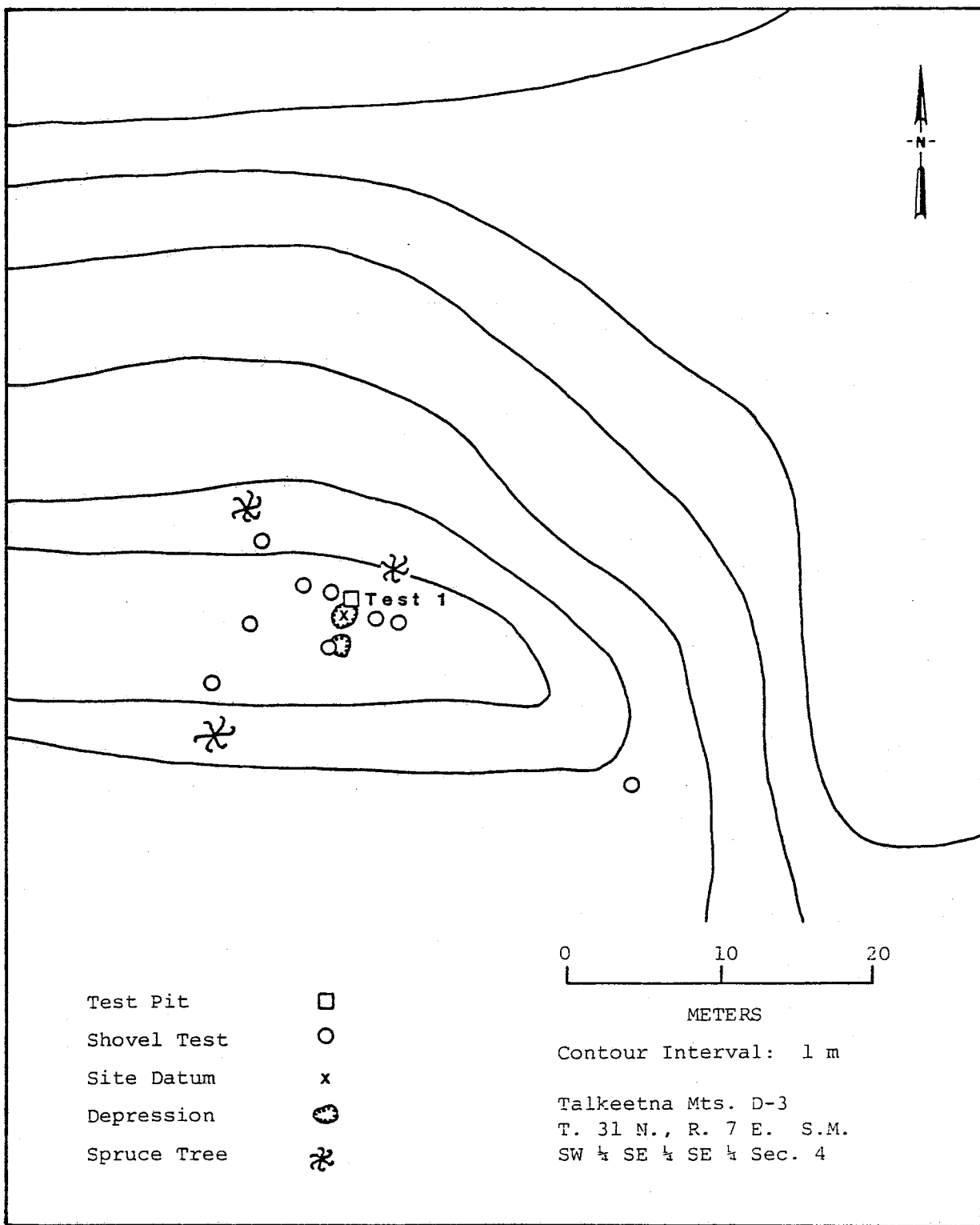


Figure 3.15. Site Map TLM 127.

(ix) AHRS Number TLM 128, Accession Number UA82-68

Area: ca. 3.9 km northeast of Jay Creek Mouth, Survey Locale 127
Area Map: Figure A.3; Survey Locale Map: Figure A.28
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 456250 Northing 6964500

Latitude 62°48'38" N., Longitude 147°51'25" W.

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

Sec. 1, SW $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$

Site Map: Figure 3.16

Setting: TLM 128 is located on a level area at the intersection of two different ridge systems on the west side of Jay Creek 3.9 km northeast of the Jay Creek and Susitna River confluence. The site, at an elevation of ca. 836 m asl (2750 feet), is a prominent topographic feature higher in relief than the surrounding terrain. The two ridges which intersect at the site location include a major ridge system orientated in a northeast to southwest direction, roughly parallel to Jay Creek, and a minor ridge orientated in a northwest to southeast direction extending down toward Jay Creek. The level area is ca. 35 m by 30 m in dimension and is situated on the south and west portion of the two ridges. The topographic setting of the site vicinity is characterized by a glaciolacustrine plain with an undulating surface composed of ridges and knolls to the south, and upland hills rising to elevations of 1113 m asl (3650 feet) to the north and west. To the northeast and east the topography is similar to the site terrain, including the major ridge with minor extensions and prominent topographic features. The view from the site is essentially panoramic, obstructed only by higher terrain 200 m to 300 m north and west. Of particular emphasis is the view in the southern directions from the southern area of the site. This view encompasses the glaciolacustrine plain with various terrain features and the area extending from the uplands down to the rim of the Jay Creek

valley, in the vicinity of a mineral lick, 1.2 km southwest and 61 m (200 feet) lower in elevation. Site vegetation includes low brush and scattered spruce. Lowbush blueberry, cranberry, bearberry and crowberry form the predominant site vegetation. Lichens, mosses and grasses occur on the ground surface with soil exposed only in a few locations along game trails and in an 8 m by 4.5 m exposure on the west edge of the site. Frost features were also observed particularly in the southwest area where surface artifacts were located.

Reconnaissance Testing: The site consists of both surface and subsurface material. A grayish-white chert biface fragment (UA82-68-3; Figure 3.49, a) was recovered from the surface in the southwest area of the site on a cryoturbated area. A 40 cm by 40 cm test (test pit 1) was placed adjacent to the frost feature. Artifactual material was recovered from two different stratigraphic levels. Six rhyolite and five basalt flakes were found in association with a dark brown finely sorted organic matrix to the contact with an underlying light gray deposit (Devil tephra). The proximal end of an obsidian microblade (UA82-68-15; Figure 3.49, b) was situated in a grayish silty sand matrix ca. 25 cm lower in elevation than the dark brown organic unit. The orientation of the blade was flat and the area from which it was recovered did not appear disturbed. The provenience of this blade may indicate a component prior to the deposition of the Oshetna tephra. In addition to material recovered from test pit 1 and the adjacent frost feature, a black chert lithic, possibly a tool fragment (UA82-68-16), was collected from the soil exposure in the southeast portion of the site area. On the western slope there is a square depression which appears to be the result of excavation into the slope. This surface feature is 1.7 m by 1.7 m in dimension and while slumpage has occurred, the depression has parallel and straight walls. This feature seems recent in origin. Five shovel tests were placed on the level central area of the site, all with negative results.

Collected Artifact Inventory

Surface:

Biface fragment, grayish white chert (UA82-68-3; Figure 3.49, a)

2 Rhyolite flakes

1 Black chert lithic (possible tool fragment) (UA82-68-16)

Subsurface:

1 Gray obsidian microblade - proximal end (UA82-68-15; Figure 3.49, b)

6 Rhyolite flakes

5 Basalt flakes

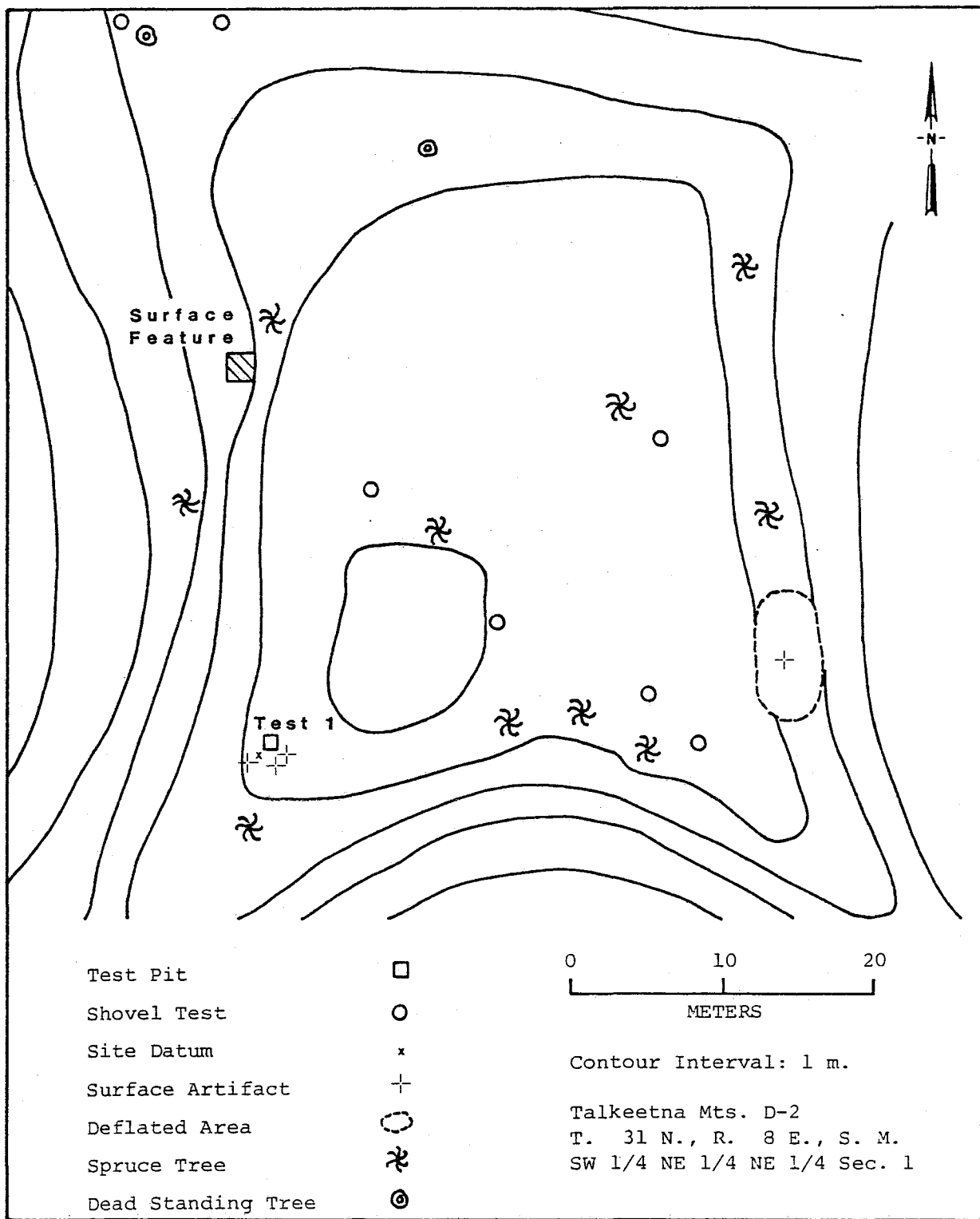


Figure 3.16. Site Map TLM 128.

(x) AHRS Number TLM 129, Accession Number UA82-69

Area: ca. 4 km southeast of the confluence of Watana Creek with the
Susitna River, Survey Locale 125

Area Map: Figure A.3; Survey Locale Map: Figure A.26

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

Site Location: UTM Zone 6 Easting 438800 Northing 6964300

Latitude 62°48'18" N., Longitude 148°11'58" W.

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

Sec. 5, NW $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$

Site Map: Figures 3.17, 3.18

Setting: The site, consisting of two loci, is located ca. 4 km southeast of the confluence of Watana Creek and the Susitna River, at ca. 700 m asl (2300 feet). It lies on a low ridge in the center of a relatively flat, gently northward sloping lacustrine plain bordering the Susitna River. The plain, which is about 500 m wide from the edge of the river canyon to the north to the steep uplands in the south, is about 190 m (600 feet) higher than the Susitna River at its nearest point. The plain is generally boggy, containing a number of small drainages and ponds. A small lake (less than 1 hectare) is located ca. 1.4 km west of the site. Two small creeks lie on each side of the ridge where the site is located, 100 m to 200 m away to the east and west. A series of low, rounded ridges and knolls composed of glacial drift rise 3 m to 10 m above the plain along its length. The site consists of two loci located on two separate but adjacent knolls on a single more or less continuous, sinuous, north-south trending ridge which is ca. 400 m long and 50 m to 100 m wide at its base. Locus A is situated on top of a high, triangular knoll about 100 m south of the northern end, with a related feature near the base of the ridge just east of the knoll. Locus B lies at the top of a flat rounded knoll 200 m to the south of Locus A. Visibility from the ridge is excellent,

since it is one of the highest in the vicinity, and offers a panoramic view of small drainages on both sides of it, as well as of the black spruce woodlands and bogs of the plain (north, east and west) and of the southern uplands. Vegetation on the ridge consists of lichen, low heath, dwarf birch, and scattered spruce. Small deflated and undeflated frost boils are common.

Reconnaissance Testing: The site consists of two loci. Locus A contains a small surface and subsurface lithic scatter with a small possible cache pit (0.8 m in diameter and 15 cm deep) 26 m to the east (105°) near the base of the slope. It was not tested. A 40 cm by 40 cm test pit excavated adjacent to the surface lithic scatter (test pit 1) revealed basalt flakes in situ in and above the Devil tephra. The southwest corner of test pit 1 is the site datum.

Locus B lies approximately 200 m south (200°) of Locus A, and consists of an isolated possible cache pit 1.4 m in diameter and 30 cm deep. It was not tested. Twenty-seven shovel tests were placed between and in the vicinities of the loci, and deflated areas were examined carefully. No additional artifacts were found.

Collected Artifact Inventory

Surface:

7 Basalt flakes

Subsurface:

31 Basalt flakes

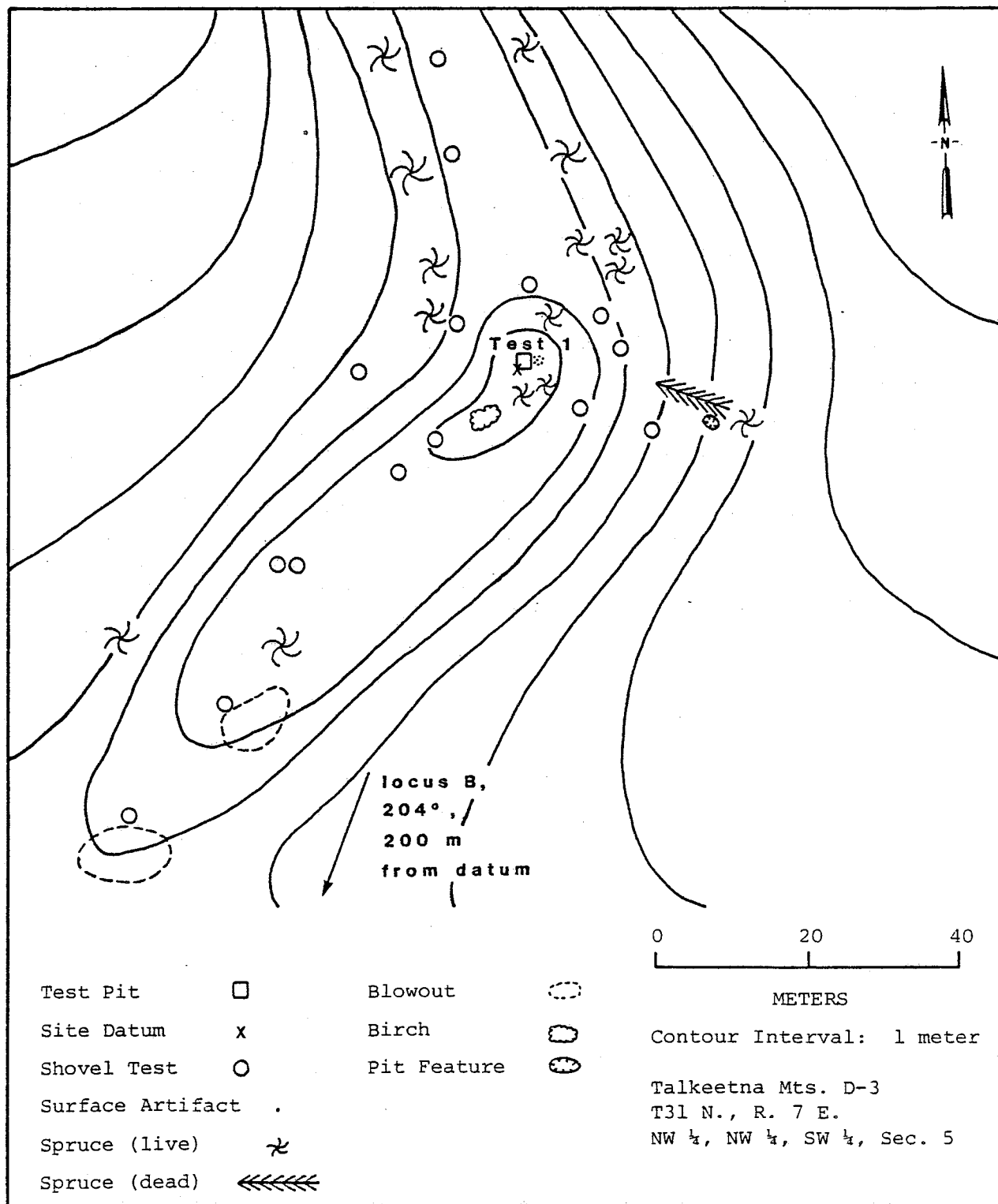


Figure 3.17. Site Map TLM 129, Locus A.

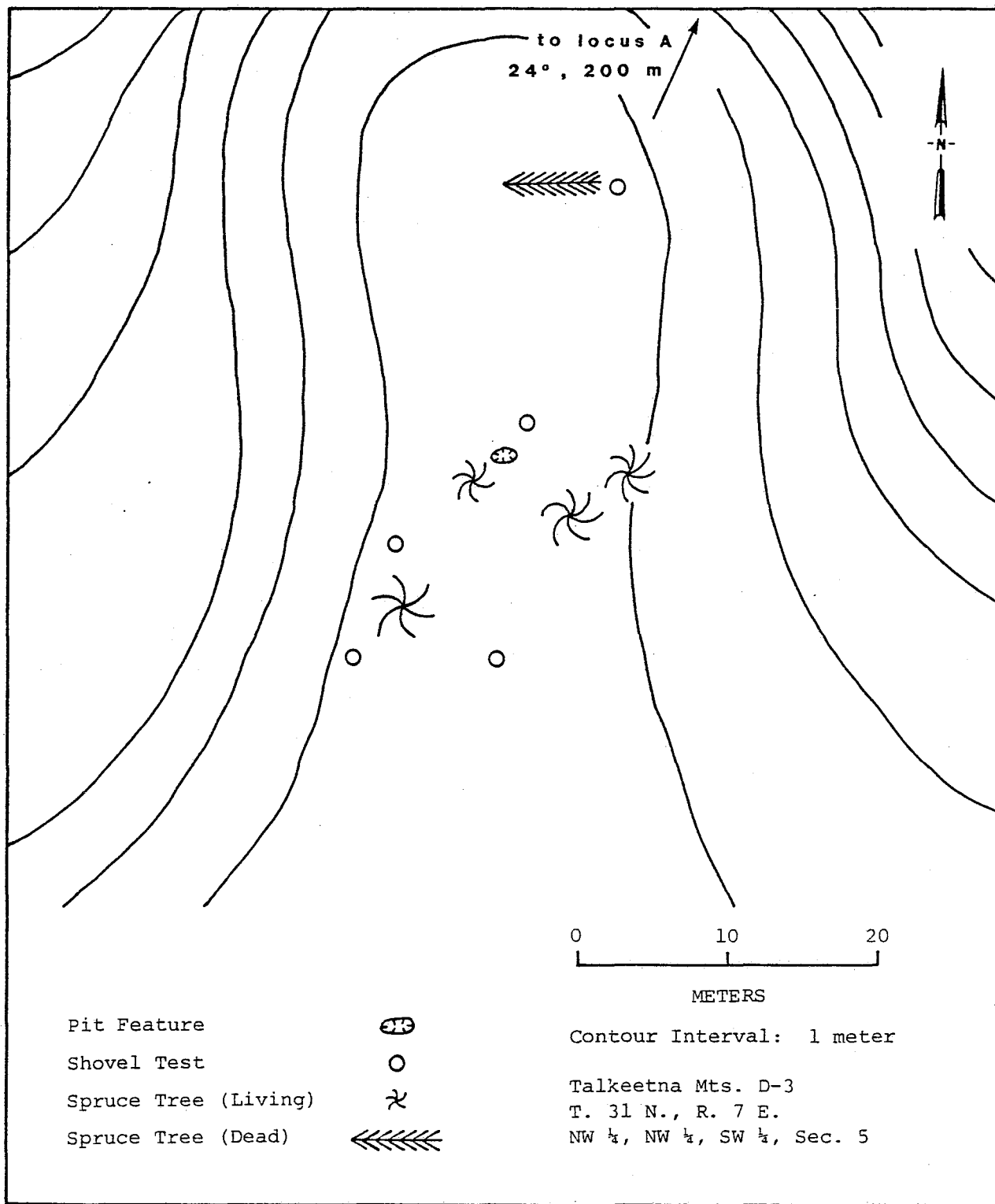


Figure 3.18. Site Map TLM 129, Locus B.

(xi) AHRS Number TLM 130, Accession Number UA82-70

Area: ca. 4.6 km southeast of Watana Creek Mouth, Survey Locale 125
Area Map: Figure A.3; Survey Locale Map: Figure A.26
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 439480 Northing 6964370

Latitude 62°48'26" N., Longitude 148°11'14" W.

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

Sec. 5, SE $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$

Site Map: Figure 3.19

Setting: The site is located on a small knoll at approximately 671 m asl (2200 feet) near the southern rim of the Susitna River canyon, 4.6 km southeast of the confluence of Watana Creek and the Susitna River. The knoll, a northeast-southwest trending glacial kame about 30 m long, 7 m wide, and ca. 1 m high, is situated on a glaciolacustrine plain which slopes gradually up from the Susitna River canyon rim (100 m north of the site) for a distance of about 500 m to merge with steep-walled uplands in the south. The plain is relatively flat and boggy, but numerous knolls and ridges are located on it. These range from 25 m to 300 m in length and from 1 m to 10 m higher than the plain, and provide dry areas within the boggy plain. The knoll on which TLM 130 is located is one of the smallest knolls in the area. Small drainages traverse the plain in a north-south direction; one of these lies 100 m to the west of the site, forming a small canyon to the northwest. A larger creek lies 250 m to the east, beyond a series of higher ridges and knolls. The view to the east is obstructed by these ridges which are ca. 6 m high. To the south and west the view of the boggy plain is partially limited by open black spruce forest and low knolls. The uplands to the south are clearly visible, and the Susitna River canyon (but not the river) is visible to the north. Vegetation on the site consists of fairly continuous lichen mat and low heath, with dwarf birch

growing on the sides. Spruce are scattered about the sides, and make up open woodlands and thickets in the bogs away from the site, 60 m to the south. Gravel exposures and frost boils are rare.

Reconnaissance Testing: All artifactual material collected at TLM 130 was recovered from test pit 1, near the center of the knoll. From an initial shovel test, 15 pieces of burned bone and 6 unmodified flakes of 5 different lithologies were recovered. This was expanded to a 40 cm by 40 cm test pit, excavated to a depth of 30 cm. Recovered from this test were 3 unmodified flakes, of 3 different lithologies, found in Devil tephra (3 cm below surface). At the contact between Devil and Watana tephra, 4 cm to 5 cm below surface, 1 brown chert endscraper (UA82-70-11; Figure 3.48, d), 2 unmodified flakes, 4 pieces of burned bone (one with a possible cut mark) and 56 pieces of burned bone were recovered in situ. Within the Watana tephra, between 5 cm and 10 cm below surface, 2 unmodified flakes and 82 pieces of burned bone were found. Charcoal was scattered abundantly throughout this stratum; a sample was taken for radiocarbon dating. An additional shovel test, at the north end of the knoll yielded no artifacts. No surface artifacts were found.

Collected Artifact Inventory

Subsurface:

- 1 Brown chert endscraper (UA82-70-11; Figure 3.48, d)
- 6 Black basalt unmodified flakes
- 3 Brown chert flakes
- 1 Gray-brown chert flake
- 1 Gray-black chert flake
- 1 Orange-brown chert flake
- 2 Gray rhyolite flakes
- 157 Long bone fragments, calcined, medium-large mammal
- 1 Charcoal sample

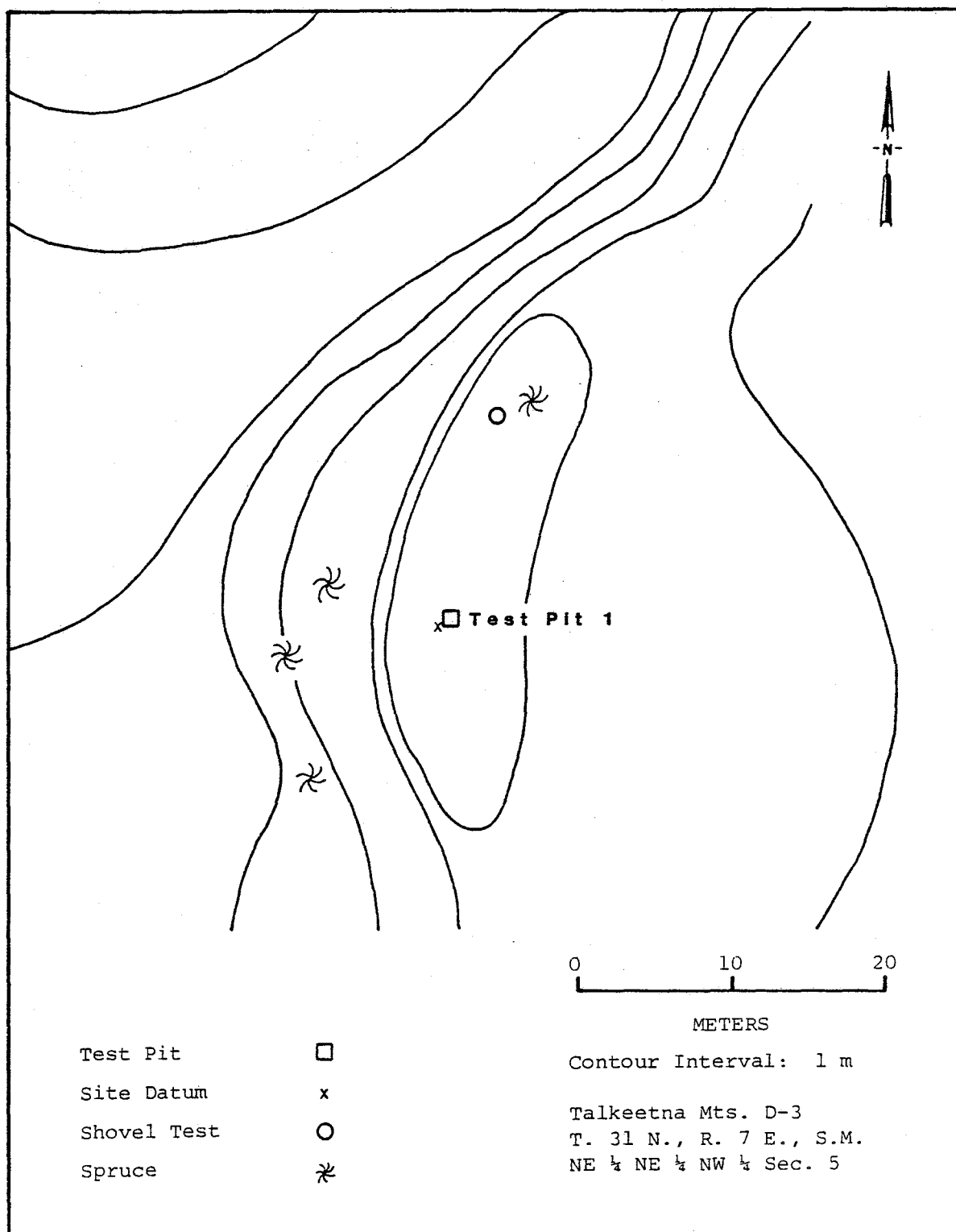


Figure 3.19. Site Map TLM 130.

(xii) AHRS Number TLM 131, Accession Number UA82-71

Area: ca. 4.5 km southeast of the confluence of Watana Creek with the Susitna River, Survey Locale 125

Area Map: Figure A.3; Survey Locale Map: Figure A.26

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

Site Location: UTM Zone 6 Easting 439660 Northing 6964320

Latitude 62°48'23" N., Longitude 148°11'15" W.

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

Sec. 5, NW $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$

Site Map: Figure 3.20

Setting: The site is located on a low knoll ca. 1 km south of the Susitna River and ca. 4.5 km southeast of the confluence of Watana Creek with the Susitna River (Figure A.26). The knoll is located in an area characterized by low ridges and knolls on a relatively flat, gradual north sloping lacustrine plain, at an elevation of ca. 677 m asl (2220 feet). The steep south wall of the Susitna canyon lies within 600 m of the site to the northeast. A small clearwater creek lies 60 m to 80 m to the west of the site. The knoll is ca. 20 m by 30 m at the base, with a north-south trending major axis, and rises to ca. 1.5 m above adjacent flat ground surface. The view from the top of the knoll is obstructed by 2 m to 5 m high discontinuous ridges and knolls within 100 m to the north and northeast, but is good to the east and west, encompassing hummocky, poorly drained areas and broad low drainages in these directions, as well as the facing slopes of low ridges not more than .5 km distant. To the south, the gradually rising lacustrine plain is in view, as well as the steeply rising uplands which form the south wall of the Susitna Valley ca. 0.5 km to 1 km distant. A reduction in the density of black spruce thickets and woodlands from ca. 30 m to 150 m to the east, south, and west of the site would result in improved visibility. Vegetation on the knoll consists of lichens, grasses,

forbes, low shrubs, and one small spruce tree. Small deflated and undeformed frost boils occur sporadically.

Reconnaissance Testing: The site contained one brown chert flake found on a deflated frost boil near the top of the knoll. A single 40 cm by 40 cm test was dug immediately southwest and slightly upslope from the location of the flake, intersecting the margin of vegetative mat surrounding the deflated area and exposing undeformed stratified soils, with negative results. Frost boils on and near the knoll were examined carefully, but no additional artifacts were found. No shovel tests were dug.

Collected Artifact Inventory

Surface:

1 Brown chert flake

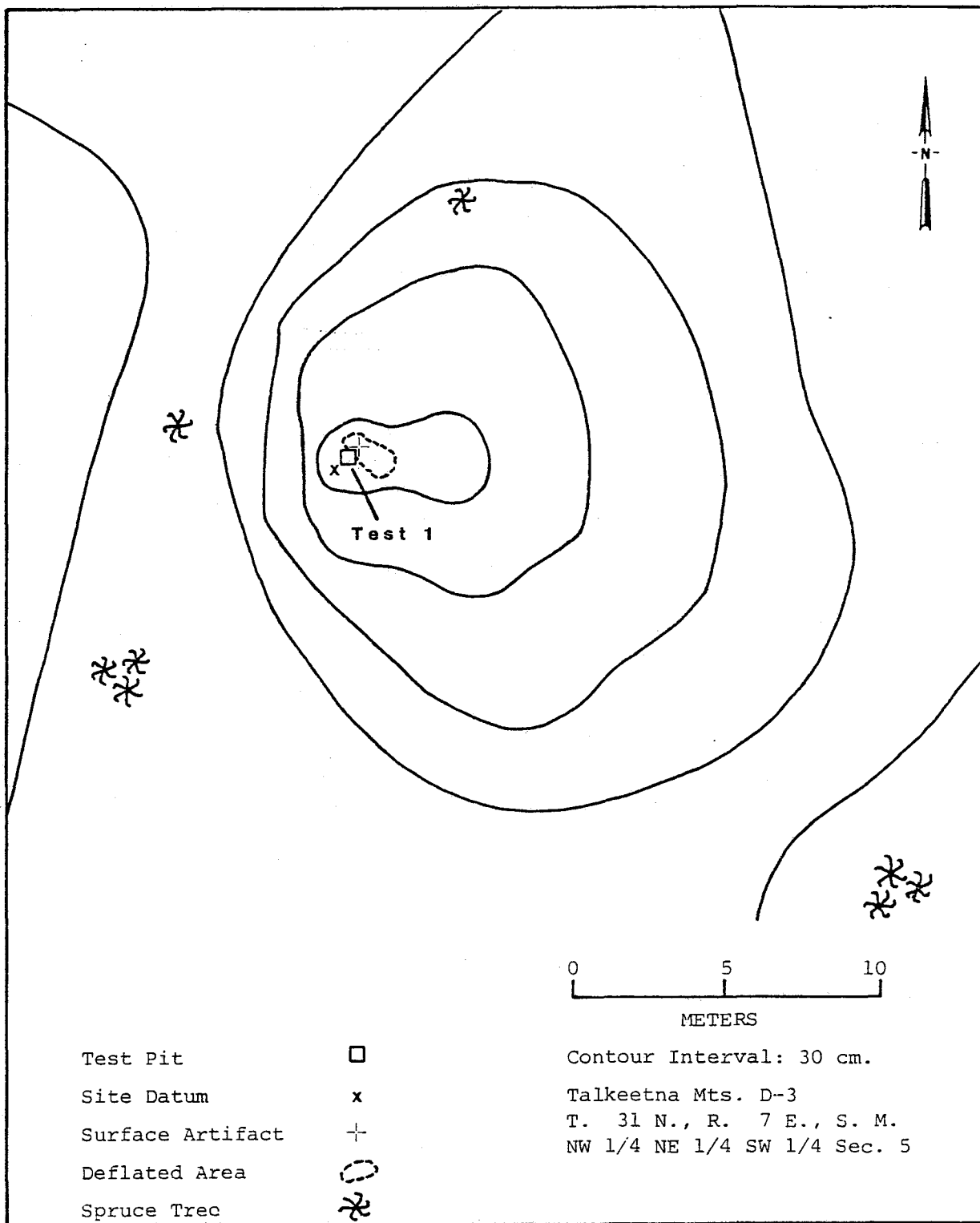


Figure 3.20. Site Map TLM 131.

(xiii) AHRS Number TLM 132, Accession Number UA82-72

Area: ca. 6 km Southeast of Watana Creek Mouth, Survey Locale 116

Area Map: Figure A.3; Survey Locale Map: Figure A.20

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

Site Location: UTM Zone 6 Easting 441350 Northing 6963800

Latitude 62°48'03" N., Longitude 148°9'50" W.

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

Sec. 4, NW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$

Site Map: Figure 3.21

Setting: The site is located on a northeast-southwest oriented knoll 1.2 km south of the Susitna River and 6 km southeast of the mouth of Watana Creek. The site is situated at an elevation of 686 m asl (2250 feet) on the center of the south end of the knoll. The knoll is flattened on top, measuring 45 m by 25 m. Numerous large soil exposures give evidence of cryoturbation. The knoll is one of several east-west trending knolls that are separated by drainages or bogs. The knolls are kame deposits situated upon a 1 km wide gently sloping lake terrace which is also oriented east-west. Shallow drainages flow north along the sides of the knoll. These drainages and the terrace area south of the site are obscured from view by dense stands of black spruce. Northern views from the site are also limited by spruce in the drainages and by its position on the knoll, although the view from the northern limit of the knoll is panoramic, encompassing the gentle slope descending to a flat plain bordering the Susitna River. The river is visible for several kilometers in all northerly directions, as is rising topography on its north side. Other knolls are visible to the west and northeast, ca. 200 m distant. Vegetation on the site knoll consists of large areas of lichens, crowberry, blueberry, Labrador tea and dwarf birch. Vegetation surrounding the knoll in all directions except north is composed of stands of dense black spruce and thick sphagnum moss

covering the ground. The flat plain bordering the Susitna River is heavily vegetated with black spruce and willow. Several sites have been located on nearby knolls to the east and west (TLM 120 through 125, TLM 127, TLM 129 through 133, and TLM 064).

Reconnaissance Testing: One single gray chert flake was found on the surface of a disturbed soil exposure. Thirteen shovel tests were placed on the knoll and numerous soil exposures were investigated, all with negative results. A test pit was not excavated at TLM 132.

Collected Artifact Inventory

Surface:

1 Gray chert flake

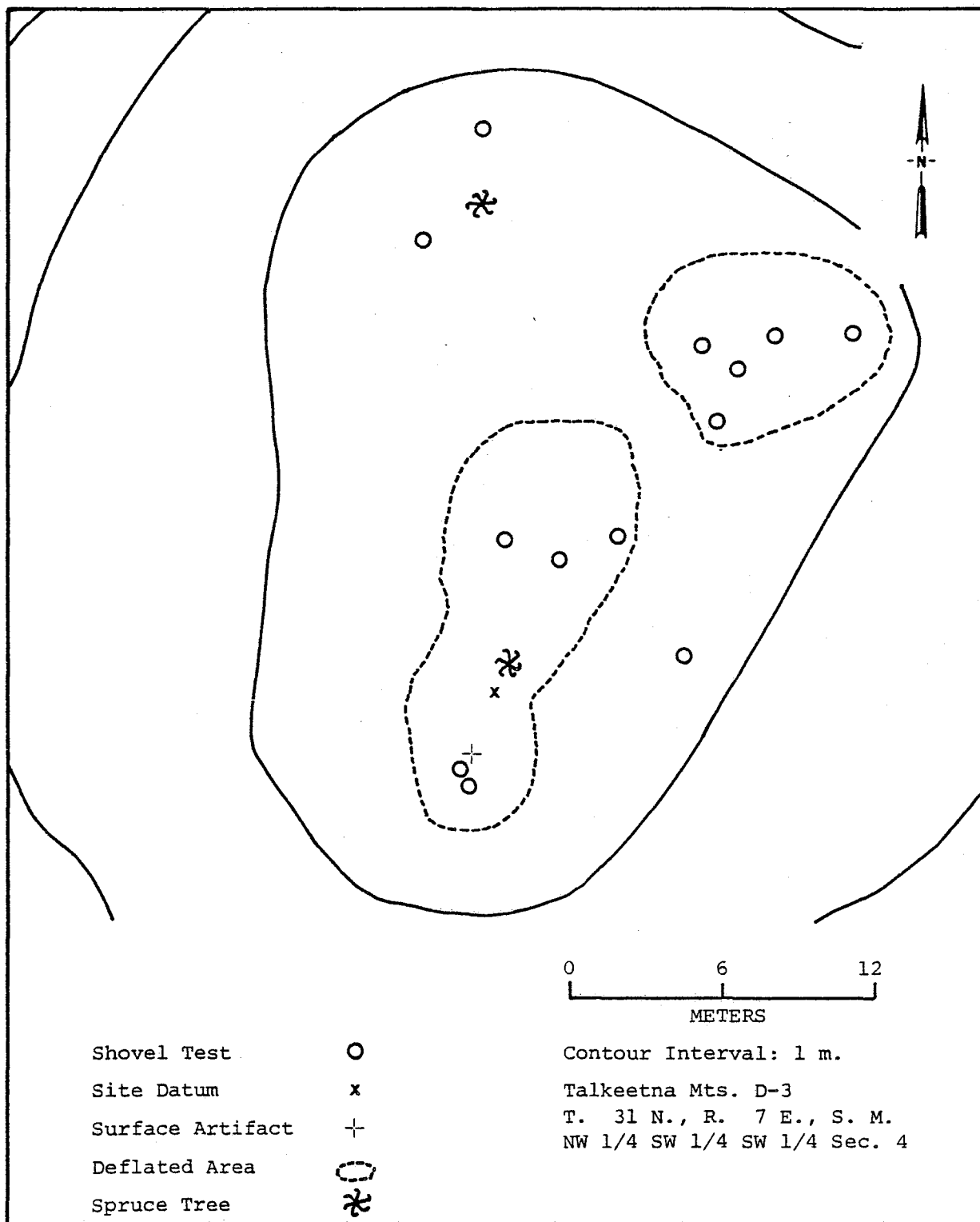


Figure 3.21. Site Map TLM 132.

(xiv) AHRS Number TLM 133, Accession Number UA82-73

Area: 3.4 km southeast of Watana Creek Mouth, Survey Locale 125
Area Map: Figure A.3; Survey Locale Map: Figure A.26
USGS Map: Talkeetna Mts. D-3, Scale 1:63,360

Site Location: UTM Zone 6 Easting 438150 Northing 6964590

Latitude 62°48'33" N., Longitude 148°12'50" W.

T. 31 N., R. 7 E., Seward Meridian
Sec. 6, NW $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$

Site Map: Figure 3.22

Setting: TLM 133 is located at 677 m asl (2220 feet) on the broad crest of a glacial drift ridge 100 m south of the rim of the Susitna River canyon, 3.4 km southeast of Watana Creek mouth. The ridge is approximately 150 m long trending in a northeast-southwest direction, with a broad flat top about 35 m wide. It is arcuate in shape, with high points on the northeastern and southwestern ends and a saddle approximately 1 m lower in elevation between them. The site is located in this saddle, midway along the ridgetop. The top of the ridge is from 3 m to 5 m higher than the surrounding flat, boggy glaciolacustrine plain, which extends on all sides. To the north, the plain is only a small area about 25 m wide between the edge of the drift ridge and the rim of the Susitna River canyon. To the south, the plain rises gradually towards steeper upland areas, about 500 m distant. Numerous other ridges and knolls are found on this plain along its ca. 10 km (east-west) length. Small to moderately large creeks crosscut the plain in some areas; one of these flows northward, 150 m east of the site. Elsewhere the plain is boggy, or low and intermittently wet. The Susitna River canyon, north of the site, drops steeply 200 m down to the Susitna River; access to the river is possible by more gradual ridges located to the northeast and northwest. From the ridgetop, the Susitna River and its canyon can be seen, and a commanding view of the surrounding

lacustrine plain and southern uplands is available to the south, east and west. Site vegetation consists of dwarf birch shrub, low heath, lichen mat, and scattered spruce and paper birch. Frost boils and gravel exposures are common, especially on the sloping sides of the drift ridge. Game trails are common.

Reconnaissance Testing: A single projectile point (UA82-73-1; Figure 3.48, e) was encountered on the surface of a lichen mat in a game trail. A 40 cm by 40 cm test pit (test pit 1) was placed adjacent to the location of the point, but no additional cultural material was recovered. Twelve shovel tests were scattered around the ridgetop and surrounding area, with negative results. Game trails, gravel exposures, and lichen mats were closely examined, but no additional surface artifacts were recovered.

Collected Artifact Inventory

Surface:

1 Brown chert projectile point (UA82-73-1; Figure 3.48, e)

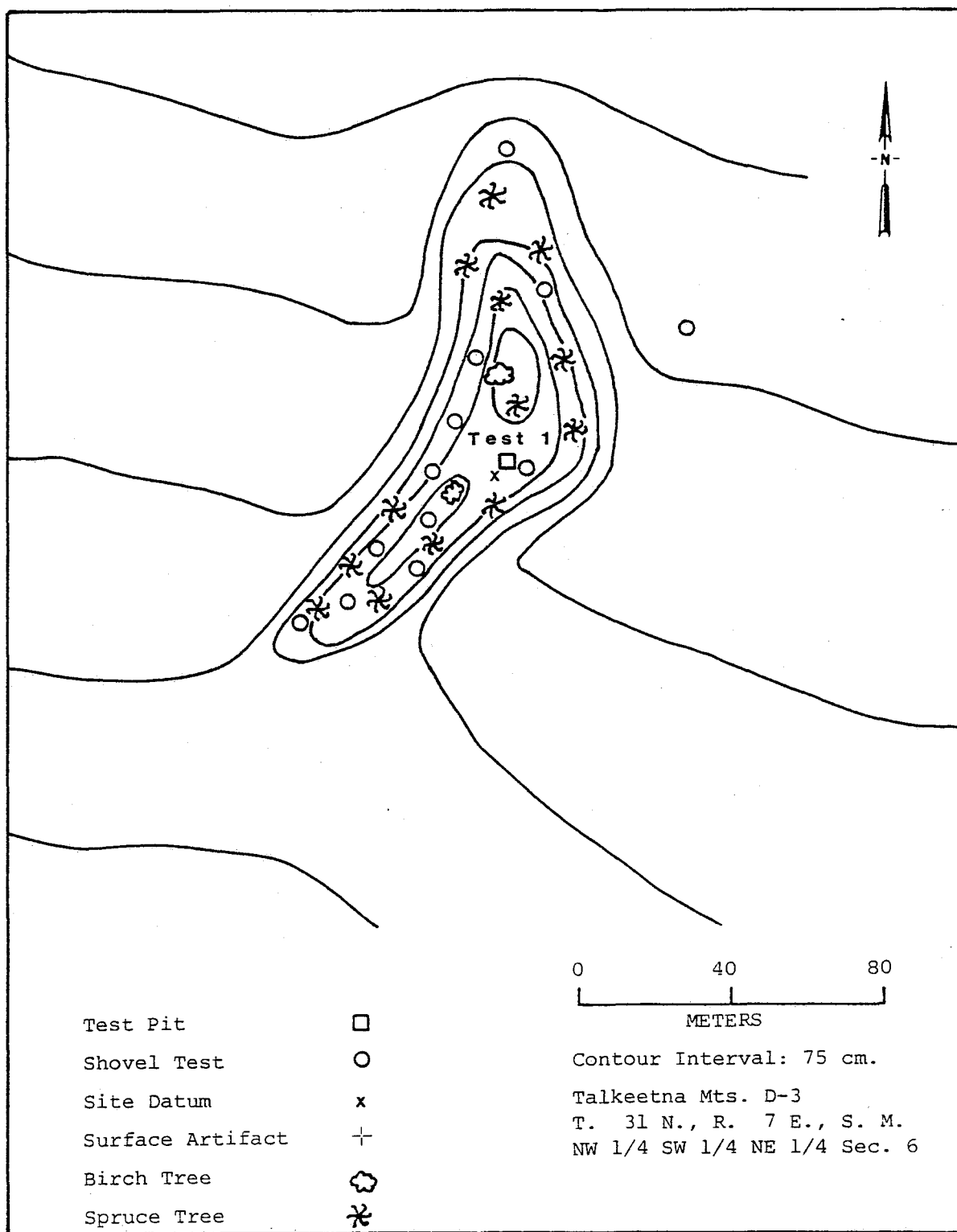


Figure 3.22. Site Map TLM 133.

(xv) AHRS Number TLM 134, Accession Number UA82-74

Area: ca. 3.5 km north-northeast of Jay Creek Mouth, Survey Locale 127

Area Map: Figure A.4; Survey Locale Map: Figure A.29

USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 456200 Northing 6964150

Latitude 62°48'22" N., Longitude 147°51'35" W.

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

Sec. 1, SE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$

Site Map: Figure 3.23

Setting: The site is located on a descending discontinuous ridge 300 m long, oriented northeast-southwest. The site is situated at an elevation of 800 m asl (2625 feet) at the southern tip of the ridge, about 3.5 km north-northeast of Jay Creek mouth and 3.2 km north of the Susitna River. The southern end of this ridge branches, forming two separate ridge sections (a western and an eastern) separated by a small drainage swale 3 m lower in elevation and measuring 75 m by 40 m. The site is situated on the eastern section of the ridge which measures approximately 100 m by 200 m. The site is in the middle of a gentle slope on a gravelly soil exposure measuring 1.5 m by 1.5 m. Views from the site are obscured to the northwest and west by spruce and intervening topography. A gentle slope rises 200 m to the north upon which TLM 128 is located. Mountainous foothills are visible to the north about 2 km distant. Views to the south and east include high topography on Jay Creek's east side and the Susitna River's south side (3 km distant). Site vegetation on the slope adjacent to the gravelly soil exposure includes cranberry, crowberry, blueberry, and extensive lichen mat. Flat areas between slopes have woody shrubs of dwarf birch and Labrador tea. A small black spruce stand west of the site separates the site and the drainage swale. Black spruce and aspen are on the south and east

facing slopes descending to Jay Creek. The gently rising northern slope is covered in dwarf birch with isolated black spruce. Other sites are present nearby. Within 1 km of TLM 134 are TLM 128, 135, 136, 144, and 143.

Reconnaissance Testing: The site is a surface lithic scatter. No subsurface artifacts were observed at the site. Six shovel tests were placed in the site area. Three green retouched chert flakes were located on a gravelly soil exposure on a gentle slope. The three flakes articulate forming an edge modified tool (UA82-74-1, 2, 3; Figure 3.48, f). Additional surface reconnaissance of soil exposures and lichen mat revealed one other surface artifact that may have a modified edge. It lies 10 m south of the site datum on a flat area below the site. A shovel test was placed adjacent to this find, but no artifacts were observed. One 40 cm by 40 cm test pit was excavated at the site, with no further artifacts present. Charcoal sample UA82-74-4 was taken from the test pit from within soil unit 6 beneath the Oshetna tephra.

Collected Artifact Inventory

Surface:

- 3 Green chert flakes, retouched, articulating (UA82-74-1, 2, 3; Figure 3.48, f)
- 1 Possibly modified rounded gravel

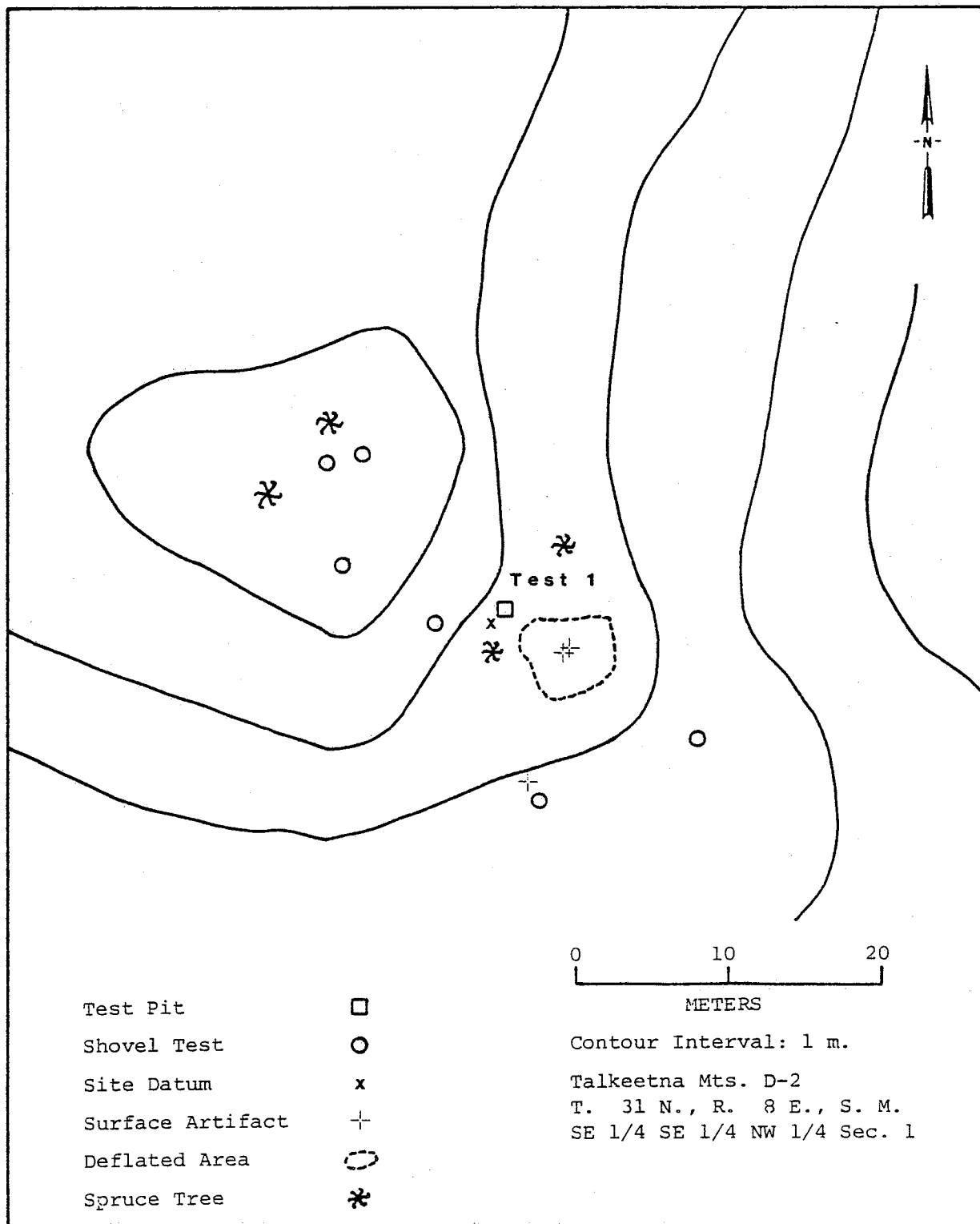


Figure 3.23. Site Map TLM 134.

(xvi) AHRS Number TLM 135, Accession Number UA82-75

Area: ca. 3.5 km northeast of Jay Creek Mouth, Survey Locale 127
Area Map: Figure A.4; Survey Locale Map: Figure A.29
USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 456150 Northing 6964050

Latitude 62°48'20" N., Longitude 147°51'37" W.

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

Sec. 1, SE $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$

Site Map: Figure 3.24

Setting: The site is at an elevation of ca. 800 m asl (2625 feet) on a discrete linear rise situated on the southeastern terminus of a broad sloping ridge. This ridge is oriented in a northwest to southeast direction roughly perpendicular to Jay Creek. The ridge descends from an elevation of 838 m asl (2750 feet) to the rim of the Jay Creek canyon. The linear rise is parallel to the ridge and has steep east, southeast and south slopes averaging 10 to 15 degrees. The east slope continues down to Jay Creek which is 400 m east and ca. 152 m (500 feet) lower in elevation. The southeast and south slopes descend into a drainage which flows into Jay Creek. The linear rise on the ridge terminus is separated from an additional rise, ca. 60 m northeast, by a broad swale. This rise is the location of TLM 134, a surface lithic scatter. TLM 135, on the southeastern edge, occupies an eroded area on the central portion of the crest of the linear rise. The upper extent of this terrain feature has dimensions of ca. 100 m by 15 m. The ridge system is bordered on the southeast and northeast sides by drainages which flow into Jay Creek draining the upland area. Visibility of these drainages and Jay Creek is obscured by vegetation and by the slope angle. Terrain northeast of the site is similar to the site area with ridge extensions perpendicular to Jay Creek. Southwest of the site the

terrain broadens out to a glaciolacustrine plain with discrete topographic features. The predominant view from this site is to the south and southwest toward the vicinity of a mineral lick which appears to be the focal point for the location of sites in this area. The mineral lick is about 800 m south where Jay Creek makes tight 90-degree turns. North of the site the upland topography is visible including the terrain features on which TLM 128 and TLM 144 are located. The view to the northeast is restricted by a rise on the northeastern terminus of the ridge upon which TLM 134 is located. Vegetation on the site consists of scattered spruce with lowbush cranberry, blueberry, dwarf birch, lichens, crowberry, bearberry and scattered grasses. An open mixed spruce-hardwood forest is characteristic of the vegetation on the slopes with high brush in open areas.

Reconnaissance Testing: The site is composed of surface lithic artifacts exposed in an eroded area on the crest of a discrete linear rise. Artifactual material came from a 3 m by 2 m area of this exposure and included a basalt corner notched projectile point (UA82-75-1; Figure 3.50, a), and 5 basalt waste flakes. A 40 cm by 40 cm test (test pit 1) was placed on a vegetated area off the exposure with negative results. Five shovel tests were placed along the crest of the rise, but none of these contained artifactual material.

Collected Artifact Inventory

Surface:

- 1 Basalt corner notched projectile point (UA82-75-1; Figure 3.50, a)
- 5 Basalt flakes

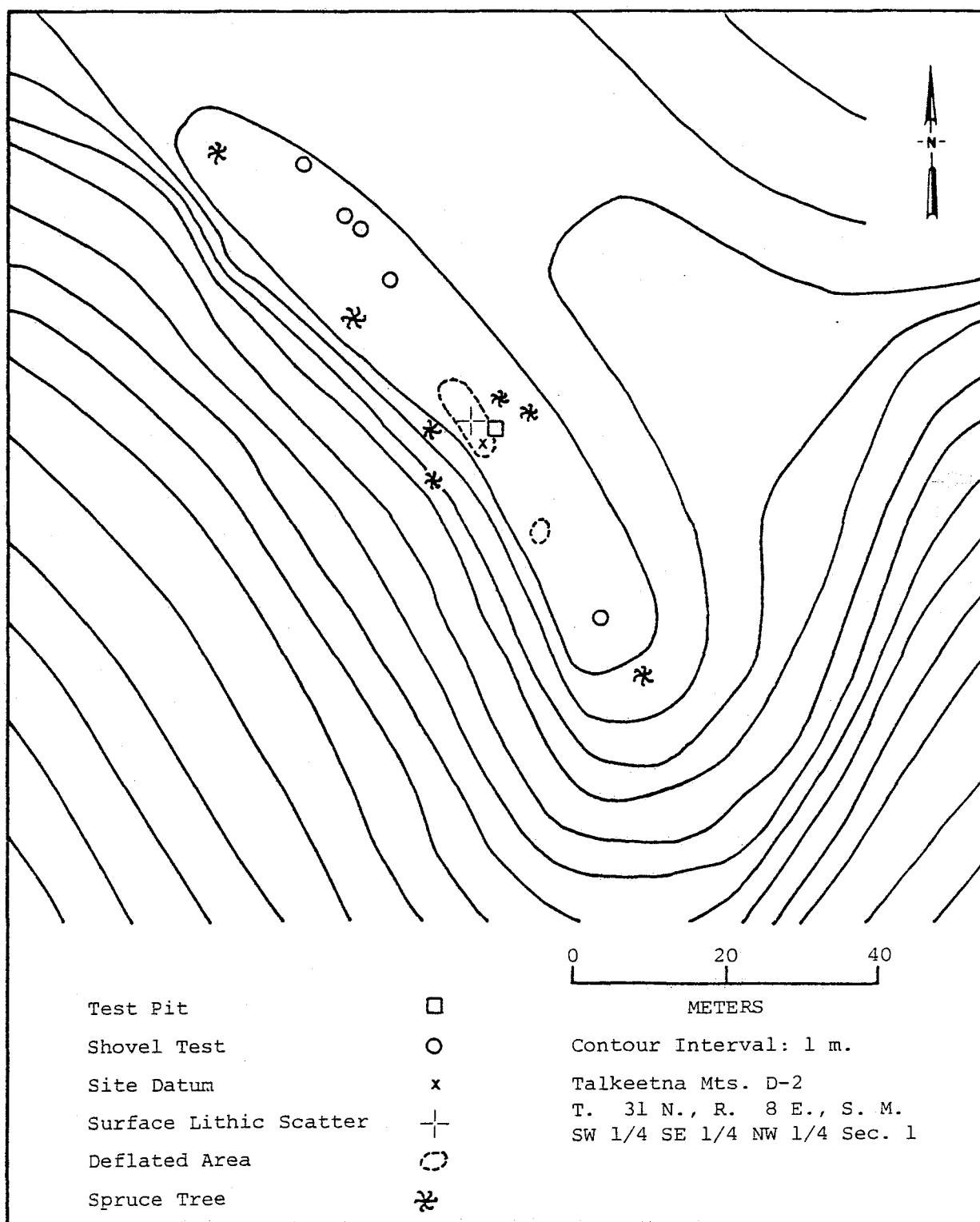


Figure 3.24. Site Map TLM 135.

(xvii) AHRS Number TLM 136, Accession Number UA82-76

Area: 3 km north-northeast from Jay Creek Mouth, Survey Locale
127

Area Map: Figure A.4; Survey Locale Map: Figure A.29

USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 455800 Northing 6963750

Latitude 62°48'10" N., Longitude 147°51'58" W.

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

Sec. 1, SE $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$

Site Map: Figure 3.25

Setting: The site is located on a small circular knoll approximately 500 m west of Jay Creek about 3 km north-northeast from its mouth. Terrain southeast of this knoll slopes gradually for approximately 40 m to the western rim of Jay Creek. Situated at an elevation of 787 m asl (2580 feet), and ca. 146 m above Jay Creek, the site is characterized by a 1.5 m rise above surrounding terrain. The level area at the upper extent of the knoll measures ca. 5 m by 7 m with basal measurements of ca. 13 m by 17 m marking the lower extent. Approximately 250 m to the northwest a continuous southeast facing hill descends from an elevation of 823 m asl (2700 feet) down into a shallow basin with a west to east flowing creek situated ca. 150 m northeast of the knoll. Two narrow (ca. 50 cm) and shallow (ca. 30 cm) streams that merge and bisect along a relatively straight path, ultimately flow into Jay Creek approximately 1.4 km east of the site. Thick brush obscures the creek from view. Site vegetation includes blueberry, Labrador tea, fireweed, crowberry, moss, black spruce, lichen (white and yellow), dwarf birch, equisetum, willow, grasses and rare juniper. Cryoturbation is evident across the level knoll crest. The continuous southeast facing hill described above determines the extent of visibility to the north, northwest, west and southwest. Visibility to the south is limited to the gentle sloping

terrain of the valley rim. Adjacent valley margins to the north and northeast are discernible through open forest up to 1 km. In the absence of a thick spruce stand, ca. 40 m west, the view would increase in that direction. Several sites have been discovered within a 500 m radius of TLM 136, the closest being TLM 143 situated approximately 200 m southwest.

Reconnaissance Testing: Both surface and subsurface cultural material was recovered. The site was initially identified by a 2.5 m by 2.5 m lithic scatter on the central portion of the level knoll crest which is oriented in a northeast-southwest direction. A total of five flakes and three bone fragments were collected from the cryoturbated surface, including a basalt tool fragment (UA82-76-1; Figure 3.50, b). No subsurface shovel tests were excavated, however a single 40 cm by 40 cm test pit (test pit 1) was excavated northeast of the surface feature. Artifactual material was recovered from three different stratigraphic units. These include 21 flakes and 62 calcined bone fragments between 2 cm and 8 cm below surface from the contact of a gray-white fine silt (Devil tephra) with a yellow-brown fine silt and within the yellow-brown fine silt unit. Twenty-two flakes and 5 bone fragments were located in a red-yellow fine sandy silt 8 cm to 12 cm below the surface (Watana tephra). Six flakes were recovered in a reddish-brown sandy clayey silt, 12 cm to 20 cm below the surface, below a thin layer of gray silt (Oshetna tephra). All faunal material consisted of calcined medium to large mammal long bone fragments. The distribution of artifactual material in the test pit indicates that the site is multicomponent. Carbon sample (UA82-76-51) could date the cultural component between the Devil and Watana depositions.

Collected Artifact Inventory

Surface:

- 1 Black basalt tool fragment (UA82-76-1; Figure 3.50, b)
- 1 Rhyolite flake with retouched edge (?)
- 1 Basalt flake
- 2 Rhyolite flakes
- 3 Long bone fragments, calcined, medium to large mammal

Subsurface:

- 2 Red chert flakes
- 2 Yellowish-brown chert flakes
- 21 Basalt flakes
- 24 Rhyolite flakes
- 67 Long bone fragments, calcined, medium to large mammal

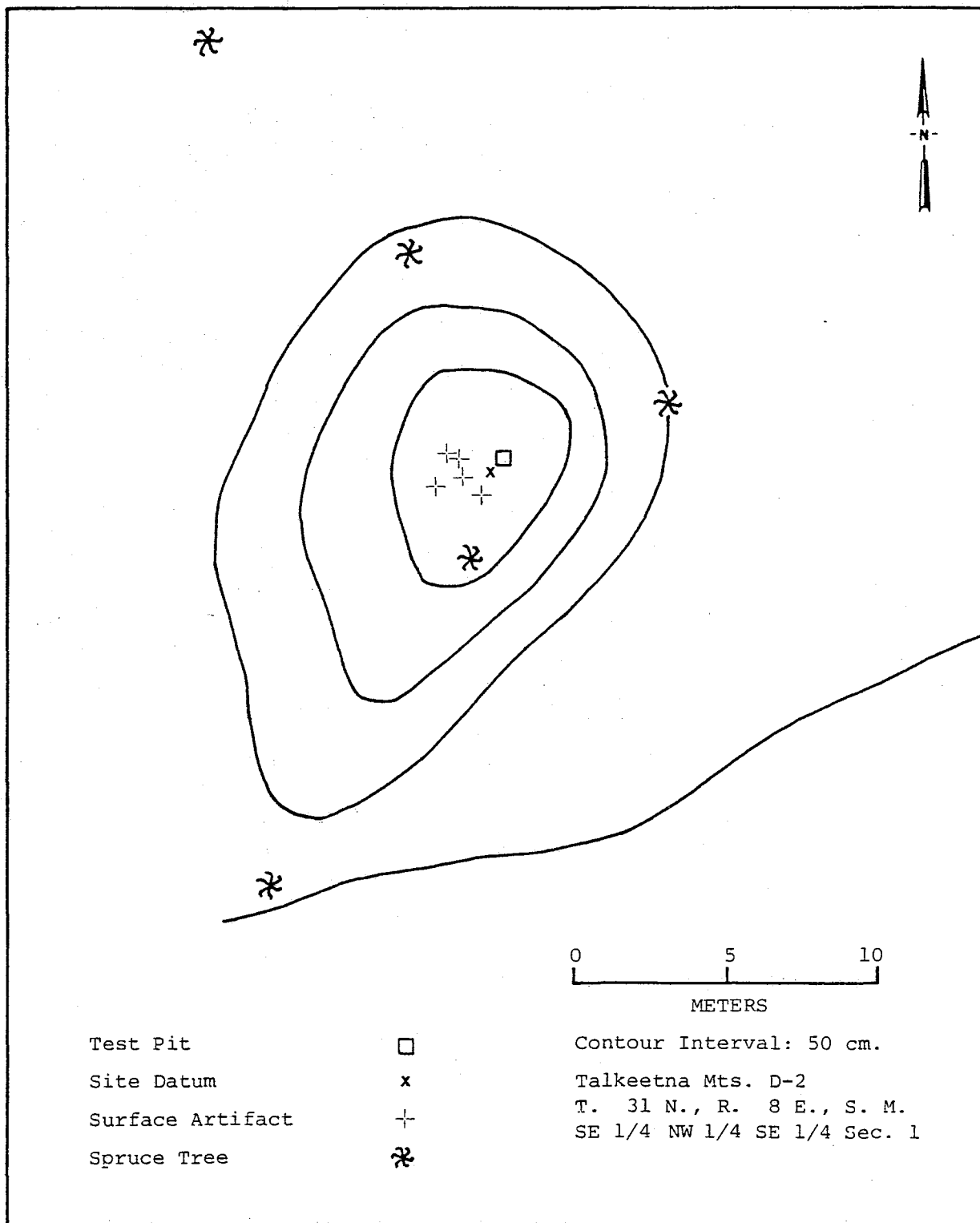


Figure 3.25. Site Map TLM 136.

(xviii) AHRS Number TLM 138, Accession Number UA82-78

Area: 2.75 km north of Jay Creek Mouth, Survey Locale 127
Area Map: Figure A.4; Survey Locale Map: Figure A.29
USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 455330 Northing 6963500

Latitude 62°48'06" N., Longitude 147°52'36" W.

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

Sec. 1, NW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$

Site Map: Figure 3.26

Setting: The site is located on an east-west trending kame ridge 2.75 km north of the mouth of Jay Creek, about 200 m northwest of a tight bend in Jay Creek, at 810 m asl (2650 feet) elevation. The ridge is slightly arcuate, and is about 50 m long (east-west) and 5 m wide at the rounded top. The site occupies the center of the ridge at its crest. It stands about 2 m above a small terrace to the north, while to the south, east and west it is from 6 m to 10 m higher than the surrounding terrain. A drainage channel curls around the west end of the kame from the terrace to the north, heading southward down a steepening canyon into Jay Creek. A drainage tributary to this canyon lies to the south, leaving the ridgetop a relatively high promontory isolated on all sides by relatively deep drainages (10 m for the two tributaries, and over 200 m for the very steep Jay Creek canyon). An excellent view of the surrounding undulating terrace, sloping down southward to the Susitna River canyon, is available from the site. To the north and west, the nearby Jay Creek uplands, rising to 1100 m (3650 feet) elevation, are prominent, while to the east can be seen much of the mountains and terrace on the opposite side of Jay Creek. Jay Creek itself cannot be seen, nor is it accessible, from the site, because of the extremely steep canyon wall. A mineral lick, favored by sheep, is reported to be located in the vicinity. Low lichen and heath vegetation covers much of

the surface of the site, with numerous frost boils, rodent burrows, and game trails exposing underlying sediments. Dwarf birch, scattered spruce and paper birch forest the sides of the ridge and surrounding terrain.

Reconnaissance Testing: A single flake was noted on the lichen-covered surface of a frost boil area. A test pit (test pit 1) 40 cm by 40 cm was placed adjacent to the location of this flake, but no artifacts were encountered. Five shovel tests were also placed on the ridge, with negative results. Surface exposures were also examined closely, but no additional artifacts were found.

Collected Artifact Inventory

Surface:

1 Black basalt flake

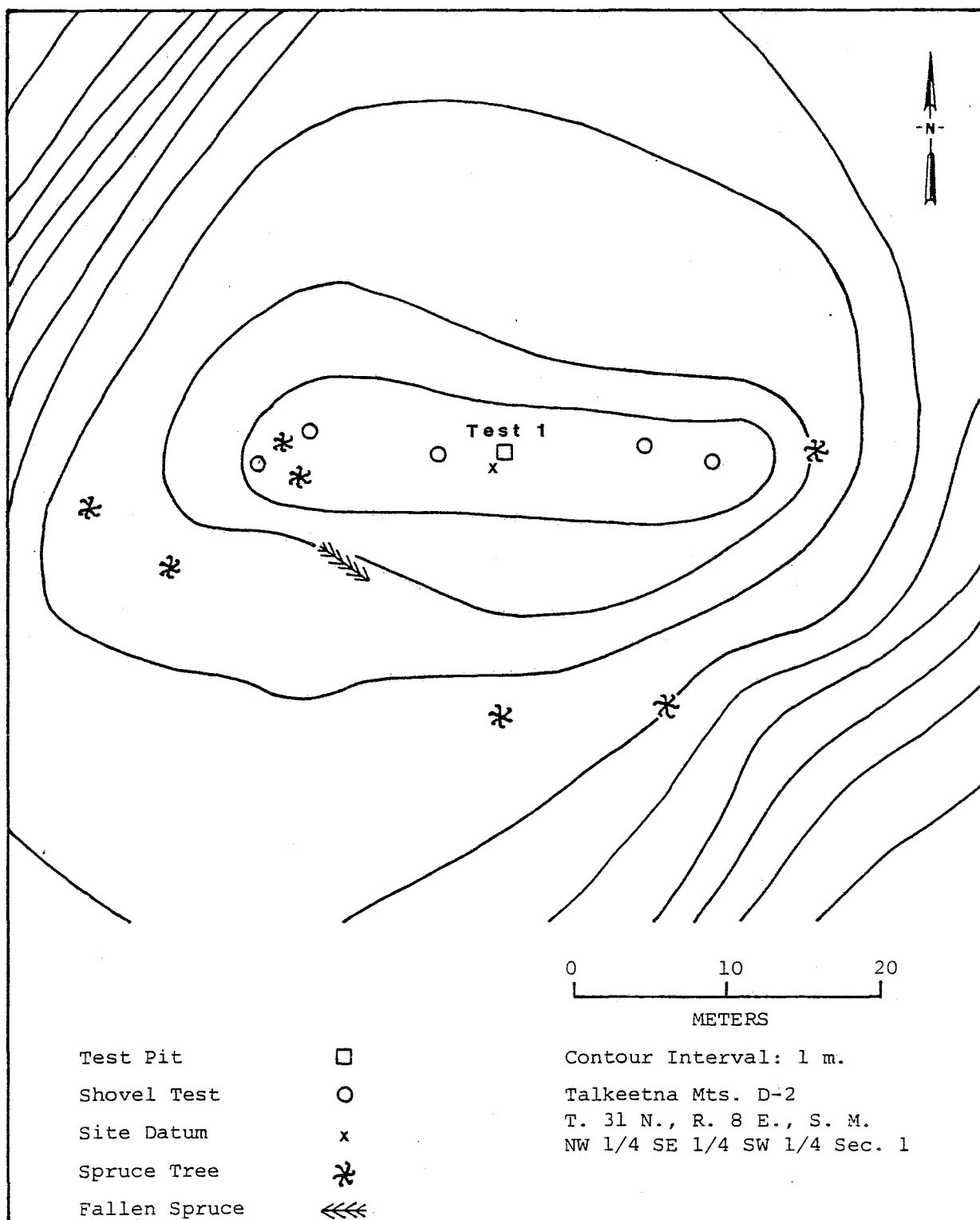


Figure 3.26. Site Map TLM 138.

(xix) AHRS Number TLM 139, Accession Number UA82-79

Area: 2.5 km north of the mouth of Jay Creek, Survey Locale 127
Area Map: Figure A.4; Survey Locale Map: Figure A.29
USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 455400 Northing 6963200

Latitude 62°47'58" N., Longitude 147°52'30" W.

T. 31 N., R. 8 E., Seward Meridian
Sec. 1, SE $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$

Site Map: Figure 3.27

Setting: The site lies on a broad, flat-topped ridge paralleling Jay Creek canyon, on the west side of Jay Creek 2.5 km north of the mouth of Jay Creek. The ridge, approximately 400 m long in a north-south direction and from 20 m to 100 m wide descends gradually southward in an undulating, stepped fashion. It is part of the large gradually sloping (4 to 5 degrees) undulating terrace north of the Susitna River, and is divided from the rest of this terrace by Jay Creek canyon, adjacent to the east, and by a small unnamed tributary canyon, 30 m to the west. The site is located on the eastern edge of the ridge top at 770 m asl (2530 feet) elevation, at the edge of Jay Creek canyon. The ridge is fairly constricted where the site is located, being about 25 m wide. Jay Creek canyon drops steeply to 160 m below the level of the site directly east of the site. To the west, the small drainage canyon is approximately 15 m deep. This small creek is the nearest accessible water. From the site, Jay Creek canyon is visible to the southeast and east. The lower, narrowing reach of the ridge and adjacent drainage canyon is visible to the south, while to the west the undulating terrace can be seen for a distance of about 500 m before high ground and trees block the view. The uplands beginning 500 m to 1000 m north of the site are plainly visible from the site. The area is covered by dwarf birch

scrub, with scattered spruce and paper birch. Cranberry, lichen, blueberry, and Labrador tea make up a fairly continuous ground cover.

Reconnaissance Testing: Cultural material was found in a single test pit, in subsurface context. Forty-six flakes of six different material types and seven pieces of burned bone were collected from a charcoal level beneath the organic mat and above (and slightly mixed with) an ashy silt layer (Devil tephra?). In this charcoal layer, and the upper portion of the yellow silt layer (Watana tephra) below this, 48 flakes of five lithologies and 71 burned bone fragments were recovered. All faunal material from the site consisted of calcined medium to large mammal long bone fragments. No additional cultural material was encountered on the surface or in two other shovel tests placed in the vicinity of test pit 1.

Collected Artifact Inventory

Subsurface:

63 Gray rhyolite flakes
2 White rhyolite flakes
8 Gray chert flakes
6 Brown rhyolite flakes
9 Black basalt flakes
1 Gray basalt flake
3 Light gray rhyolite flakes
78 Long bone fragments, calcined, medium to large mammal

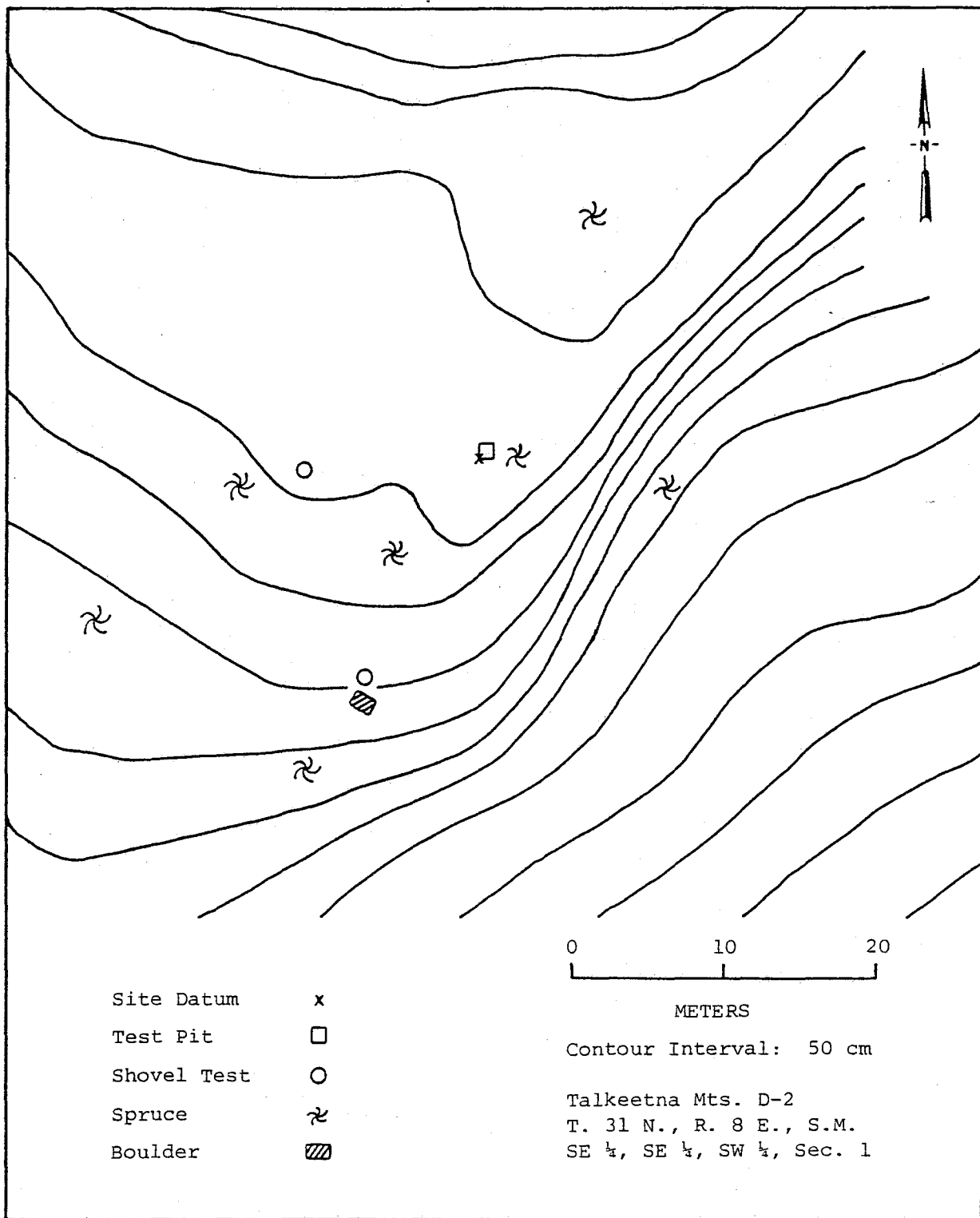


Figure 3.27. Site Map TLM 139.

(xx) AHRS Number TLM 140, Accession Number UA82-80

Area: ca. 2.1 km north-northeast of Jay Creek Mouth, Survey Locale
127

Area Map: Figure A.4; Survey Locale Map: Figure A.29

USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 455450 Northing 6963050

Latitude 62°47'50" N., Longitude 147°52'28" W.

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

Sec. 12, NE $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$

Site Map: Figure 3.28

Setting: TLM 140 is located on the crest of a north-south trending ridge along the west side of Jay Creek, approximately 2.1 km north-northeast of the mouth of Jay Creek. The ridge, formed by the convergence of Jay Creek canyon and an unnamed tributary drainage canyon, lies at 757 m asl (2475 feet) elevation, about 153 m (500 feet) above the level of Jay Creek 250 m to the east. The ridge narrows to the south and bends eastward as the tributary drainage canyon steepens and bends towards Jay Creek. At this southern end the ridge is narrow and crested, but to the north the ridge top is broad and flat, merging with the gradually sloping undulating terrain surrounding the area. Surface artifacts were found on game trails along this ridge top from the narrow southern end northward about 100 m. West of the site ca. 75 m, the tributary drainage occupies a low broad area about 3 m to 5 m below the level of the site. At the southern end, the canyon is about 15 m to 20 m below the site elevation. The bottom of the canyon is not visible from the site; Jay Creek is not visible either, the view being blocked by trees. The tributary creek is visible to the west, but the view to the surrounding terrace is blocked by higher terrain 150 m to the south-west and west. The slope to the north is not visible, being blocked by forests around the site. Open spruce woodland covers the site area,

with a moderately dense cover of dwarf birch, low heath plants, and lichen mat. Extensive exposed areas are present along frequent game trails and on the steep southern end.

Reconnaissance Testing: Cultural material was found on the surfaces of game trails in three localities. A single gray-white chert flake was found approximately 35 m north-northwest of site datum, and a single black basalt flake was encountered on the southern end, approximately 50 m south-southeast of site datum. A black basalt biface midsection (UA82-80-5; Figure 3.50, c) and four flakes of three material types were found in the vicinity of the site datum. A 40 cm by 40 cm test pit (test pit 1) in this area yielded a black basalt biface fragment (UA82-80-6; Figure 3.50, d) and 11 flakes of three material types beneath the organic mat and above the pink-gray silt layer (Devil tephra?). No additional artifacts were found on the surface or in eight other shovel tests.

Collected Artifact Inventory

Surface:

- 1 Gray-white chert flake
- 1 Black basalt biface fragment (UA82-80-5; Figure 3.50, c)
- 1 Black basalt flake
- 1 Red chert flake
- 2 Gray rhyolite flakes

Subsurface:

- 1 Black basalt biface fragment (UA82-80-6; Figure 3.50, d)
- 8 Gray rhyolite flakes
- 2 Black basalt flakes
- 1 Yellow translucent flake

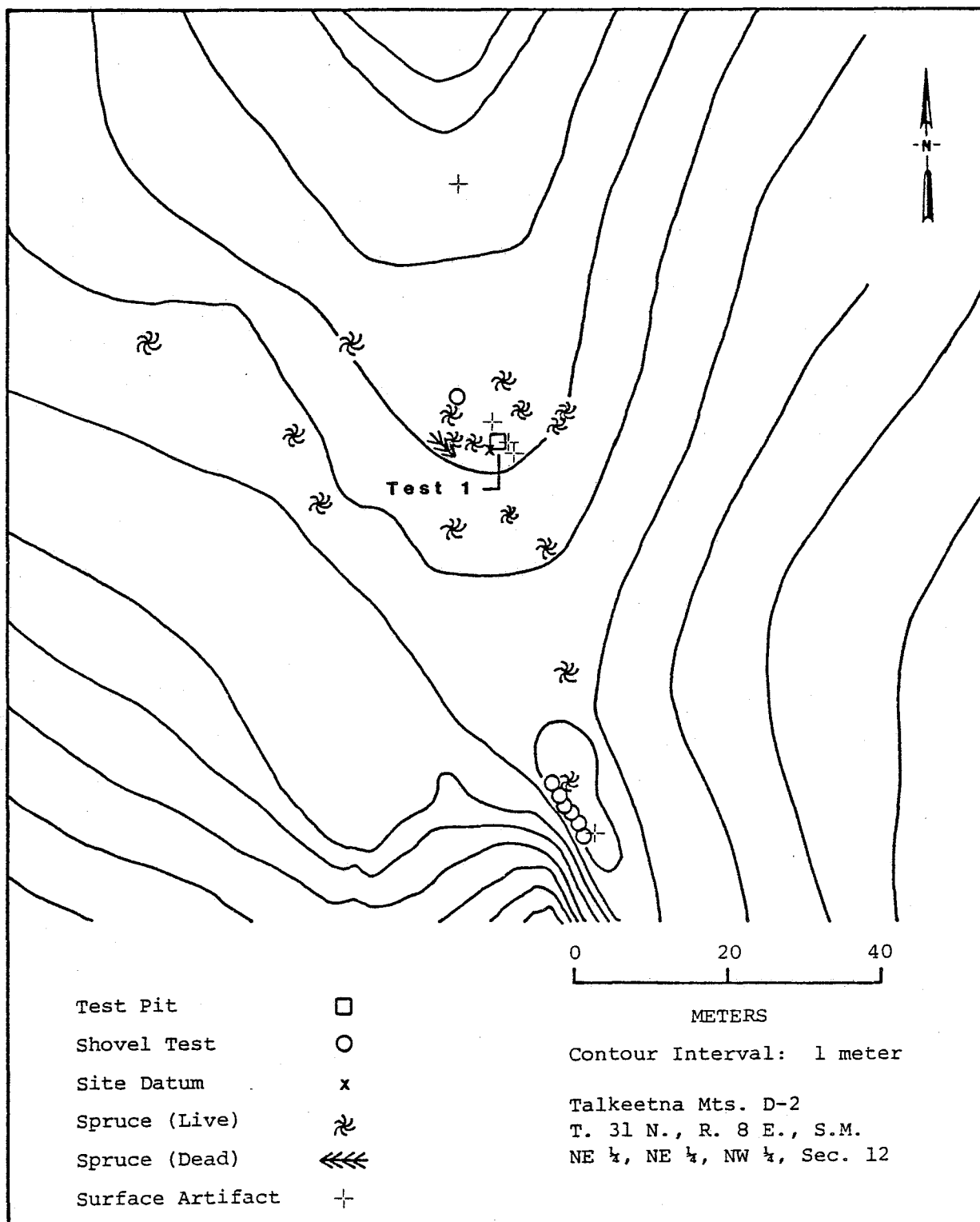


Figure 3.28. Site Map TLM 140.

(xxi) AHRS Number TLM 141, Accession Number UA82-81

Area: 2 km north-northeast of the mouth of Jay Creek, Survey
Locale 127

Area Map: Figure A.4; Survey Locale Map: Figure A.28

USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 455140 Northing 6962870

Latitude 62°47'45" N., Longitude 147°52'40" W.

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

Sec. 12, SW $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$

Site Map: Figure 3.29

Setting: The site is located on a kame terrace, ca. 746 m asl (2450 feet), 2 km north-northeast of the mouth of Jay Creek. The site overlooks a tributary canyon to Jay Creek canyon on the east, which drops approximately 150 m down a moderately steep slope to Jay Creek, 500 m eastward. The kame terrace is oriented roughly north-south, and is approximately 70 m long and 30 m wide, with a broad, flat top. The site is located midway along the terrace on its eastern edge. A clearwater creek lies 100 m to the northeast in the steep tributary canyon, and a small (1-hectare) marshy pond lies 200 m to the west. From the site, a panoramic view of the tributary canyon and Jay Creek canyon is available to the east and south. The undulating kame topography making up the gradually sloping terrace north of the Susitna River (of which the site terrace is a part) is visible to the north, west, and south, though higher terrain 400 m away blocks the view to the west beyond this distance. Open spruce woodland, with a moderately dense cover of dwarf birch and low heath plants, comprise the vegetation of the site and surrounding areas.

Reconnaissance Testing: Cultural material, consisting of 50 flakes of two material types and one black basalt biface fragment (UA82-81-15),

was encountered in test pit 1 beneath the organic mat at and in the underlying gray-white fine silt (Devil tephra). A sample of charcoal from the contact between the organic mat and Devil tephra units was also collected from test pit 1. Three flakes were collected from a small soil exposure on the slope of the terrace, 5 m east-southeast of site datum. Seven additional shovel tests were placed on the kame terrace, with negative results. No additional surface artifacts were encountered.

Collected Artifact Inventory

Subsurface:

- 1 Black basalt bi face fragment (UA82-81-15)
- 18 Black basalt flakes
- 34 Gray rhyolite flakes
- 1 White rhyolite flake

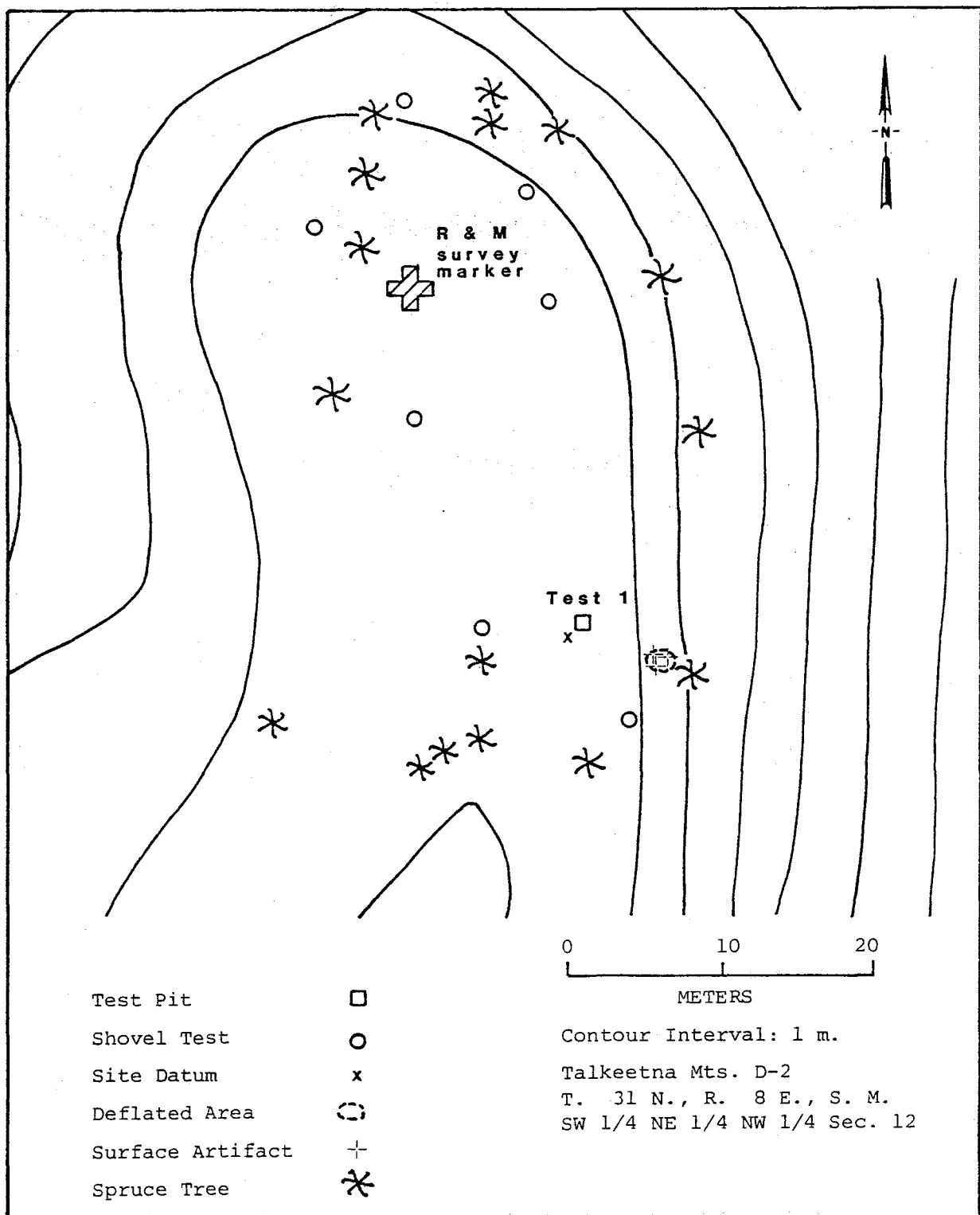


Figure 3.29. Site Map TLM 141.

(xxii) AHRS Number TLM 142, Accession Number UA82-82

Area: ca. 1.8 km north-northeast of Jay Creek Mouth, Survey Locale
127

Area Map: Figure A.4; Survey Locale Map: Figure A.28

USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 455020 Northing 6962750

Latitude 62°47'40" N., Longitude 147°52'50" W.

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

Sec. 12, NE $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$

Site Map: Figure 3.30

Setting: The site is situated on a low knoll 747 m asl (2450 feet) located upon a plateau .8 km west of Jay Creek and ca. 1.8 km north-northeast of Jay Creek mouth. The knoll is elongate, oriented roughly north-south measuring 30 m by 11 m at the base, and is 3 m higher in elevation than the surrounding plateau. The area can be described as lacustrine deposits over glacial till. The site is situated in the middle of the knoll 8 m from the northern end. Other similar knolls are present to the southeast, east and northwest within 200 m of the site knoll. Several small drainages flow east and south off the plateau feeding Jay Creek to the east 500 feet below, and the Susitna River to the south. Views to the northwest, south, and east are panoramic, encompassing the Jay Creek drainage, Susitna River valley, and intervening rolling terrain. Westerly views are obscured by a nearby stand of black spruce. Vegetation at the site consists of lichens, crowberry, wild rose, Labrador tea, grasses and some lowbush cranberry. The northern end of the knoll is covered in dwarf birch, as is the perimeter of the knoll. In all directions except east the terrain undulates and is covered with dwarf birch and Labrador tea, with small stands of black spruce. A flat grassy 1-hectare marsh borders the site to the east.

Reconnaissance Testing: Artifacts recovered in subsurface testing include 5 lithic flakes, 10 pieces of fire cracked rock, 9 pieces of burned bone (long bone), one tooth fragment, and ca. 172 burned bone fragments. No surface artifacts were found. Five shovel tests were placed on the knoll. Only one of the shovel tests contained cultural remains; this test became test pit 1. Cultural materials came from a stratigraphic unit 4 cmbs to 10 cmbs sandwiched between the recognizable Devil tephra and Watana tephra, and a C-14 sample of this unit was collected.

Collected Artifact Inventory

Subsurface:

- 1 Black basalt flake
- 1 Dark yellowish brown chert flake
- 2 Transparent quartz flakes
- 1 Transparent quartz flake with cortex
- 10 Pieces of fire cracked rock
- 1 Carpal/tarsal fragment, calcined, large mammal, possible caribou (Rangifer tarandus)
- 1 Flat bone fragment, calcined, large mammal
- 2 Phalanx fragments, distal portion, calcined, large mammal, possible caribou (Rangifer tarandus)
- 167 Long bone fragments, calcined, medium to large mammal
- 1 Sesamoid bone, calcined, large mammal, possible caribou (Rangifer tarandus)
- 1 Tooth fragment, incisor, unburned, caribou (Rangifer tarandus)

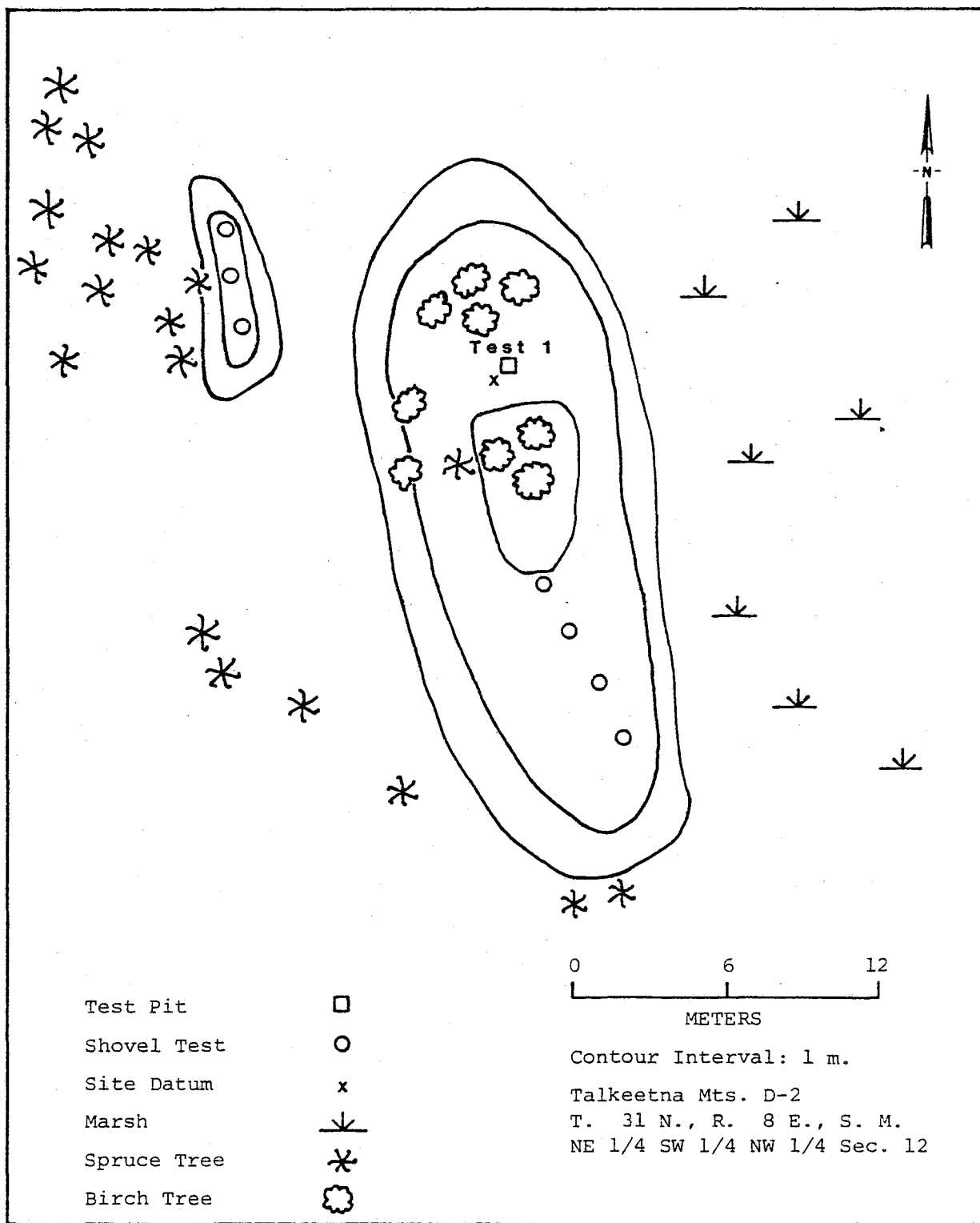


Figure 3.30. Site Map TLM 142.

(xxiii) AHRS Number TLM 143, Accession Number UA82-83

Area: 3 km north of Jay Creek Mouth, Survey Locale 127
Area Map: Figure A.4; Survey Locale Map: Figure A.29
USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 455600 Northing 6963700

Latitude 62°48'07" N., Longitude 148°52'09" W.

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

Sec. 1, SW $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$

Site Map: Figure 3.31

Setting: TLM 143 is located at ca. 775 m asl (2550 feet) elevation on a broad, slightly undulating gentle slope west of Jay Creek at the rim of Jay Creek canyon, 3 km north of the mouth of Jay Creek. The slope overlooks Jay Creek canyon just north of a very steep cliff face above a tight meander of Jay Creek, and is approximately 150 m (500 feet) higher than Jay Creek at its nearest point. The site lies on the edge of this canyon, with some material occurring on a moderately steep slope below the canyon rim leading into the steep canyon itself. The site appears to be confined to within 50 m of the canyon rim, but the extent of subsurface remains is unknown. The gentle slope descends gradually to the northeast; small linear kames, 1 m to 2 m high and ca. 30 m long trending northwest-southeast, make the surface undulate slightly. This gentle slope is the northeastern edge of a large glaciolacustrine plain on the north side of the Susitna River. The plain has numerous kame ridges on it, and generally descends southward in a gentle, undulating slope. Because that part of the slope on which the site is located descends northeastward, the rest of this plain is not visible from the site due to intervening higher ground to the southwest. Jay Creek canyon is easily seen meandering from the northeast to south of the site. Jay Creek is not easily accessible from the site due to the steepness of the canyon to the south, though moderately steep ridges

leading to the creek east of the site may provide access. A small clearwater stream flows 150 m north of the site at the bottom of a gentle slope. This is the nearest accessible water. Beyond this stream the Jay Creek uplands are visible. These extend to the west, blocking the view in that direction. Located in the steep canyon area south of the site is a mineral lick popular with mountain sheep. Sign of game is abundant in the site area. Over a dozen archeological sites have been found within 1 km of this lick area. The site is covered with a moderately dense stand of dwarf birch and fairly complete ground cover of lichen and low heath plants. Spruce, willow and paper birch are scattered on the gentle slope above the canyon, and become fairly dense on the canyon slopes. Game trails, rodent burrows, and frost boils provide a few areas of exposed sediments.

Reconnaissance Testing: A sparse surface scatter of lithic material was first encountered on the rim of the canyon and edge of the gentle slope leading away from it. Eighteen flakes, composed of basalt and rhyolite, were noted on the surface within an area of 70 m (northwest-southeast) by 20 m (northeast-southwest). Eight of these flakes were collected, and the rest were mapped in place. These flakes were found in areas of subsurface exposure (game trails, rodent burrows, frost-boiled areas, and places of active downslope movement of material). A single 40 cm by 40 cm test pit (test pit 1) was placed on the southeast end of a small kame, 30 m north of the canyon edge. A dense layer of cultural material was encountered in this test pit at 12 cmbs to 25 cmbs, underlying a discontinuous gray silt unit (Oshetna tephra). Two projectile points (UA82-83-1, 2; Figure 3.51, a, b, respectively), one side-notched and the other lanceolate with the base missing, were found in this cultural layer at 12 cmbs and 15 cmbs, respectively. Over 1300 flakes, composed of basalt, rhyolite, and several kinds of chert, and over 1300 long bone fragments of calcined bone were recovered from test pit 1 in this layer as well. No additional subsurface testing was conducted.

Collected Artifact Inventory

Surface:

- 4 Gray-black basalt flakes
- 1 Yellow rhyolite flake
- 1 White rhyolite flake
- 2 Light brown rhyolite flakes
- 1 Brown rhyolite flake

Subsurface:

- 2 Black basalt projectile points (UA82-83-1, 2; Figure 3.51, a, b, respectively)
- 1300+ flakes, many different material types
- 1356 Long bone fragments, calcined, medium-large mammal

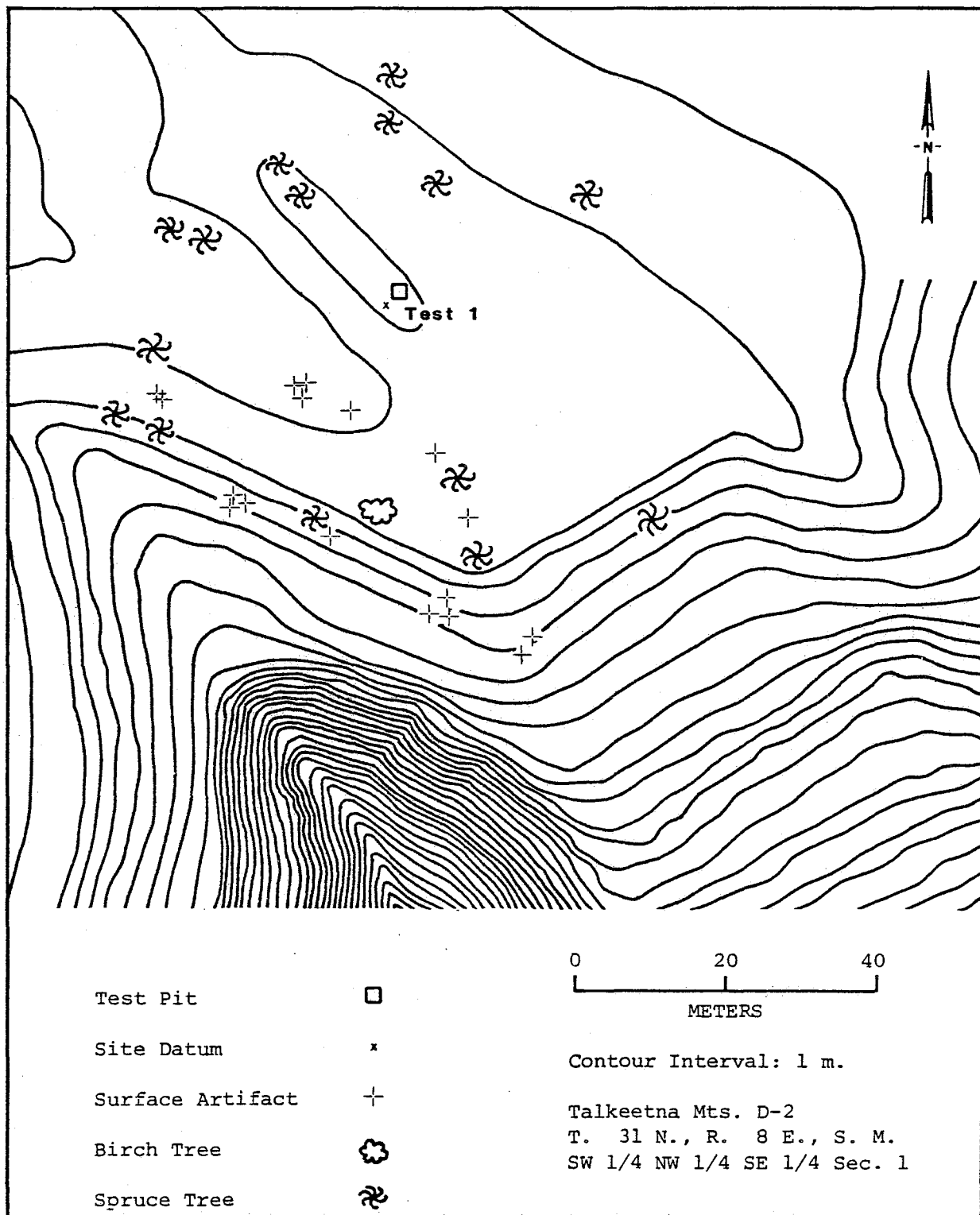


Figure 3.31. Site Map TLM 143.

(xxiv) AHRS Number TLM 144, Accession Number UA82-84

Area: ca. 3.7 km northeast of Jay Creek Mouth, Survey Locale 127
Area Map: Figure A.4; Survey Locale Map: Figure A.29
USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 456000 Northing 6964400

Latitude 62°48'35" N., Longitude 147°52'40" W.

T. 31 N., R. 8 E., Seward Meridian
Sec. 1, NW¼SE¼NE¼

Site Map: Figure 3.32

Setting: TLM 144 is located north of the Susitna River ca. 3.7 km northeast of the mouth of Jay Creek. The site morphology includes a prominent elongated knoll and 2 small circular knolls within 10 m north of the elongated knoll. The elongated knoll is the primary topographic feature and at an elevation of 831 m asl (2725 feet) is the highest point of topographic relief between its location and Jay Creek. The elongated knoll is orientated in a southwest to northeast direction and is ca. 20 m by 5 m on the level crest area. The 2 smaller circular knolls are 1 m to 1.5 m lower in elevation and from 7 m to 9 m in diameter. The southern face of the elongate knoll slopes moderately steeply at about a 10-degree angle for 75 m at which distance the slope becomes more gradual and merges onto a glaciolacustrine plain continuing for about 500 m to the Jay Creek valley rim. North and east of the site, slopes are more gradual and continue for 25 m before rising to upland hills which reach elevations of 1113 m asl (3650 feet). A small clearwater creek was observed approximately 200 m southwest of the site. This creek is a tributary of Jay Creek flowing northwest to southeast, draining the upland areas, and is accessible from the site. The view from the elongate knoll encompasses the Jay Creek valley and surrounding terrain and is obscured only minimally by present vegetation on the southern slope. This site is an excellent vantage point for observing

the uplands down to the vicinity of the reported mineral lick. While this site was being recorded 14 Dall sheep were observed making this descent. In the northern directions visibility is obscured by upland hills. The predominant vegetation on the site consists of low brush with a ground cover of lichens, crowberry, blueberry, Labrador tea, cranberry and scattered grasses. The southern slope includes dwarf birch, alder and spruce cover with denser spruce stands at lower elevations. North of the site, as elevation increases, the vegetation zone changes to open shrub. Erosional features are apparent on the east and southwest slope of the knoll as well as on the central portion of the crest.

Reconnaissance Testing: The site includes two areas, the prominent elongate knoll and the smaller circular knoll. The site was initially located by surface lithic debitage found on the exposure on the knoll crest. Additional surface reconnaissance located a basalt corner notched projectile point (UA82-84-1; Figure 3.50, e) on the southern slope of the knoll. A 40 cm by 40 cm test (test pit 1) was placed in the vicinity of the surface lithic scatter and a site datum established in the southwest corner. Excavation of this test pit yielded 2 flakes and 1 calcined long bone fragment, each recovered from different stratigraphic contexts indicating that this site is multicomponent. In addition to the previously mentioned cultural material, lithics were found in 2 of 5 shovel tests placed in the site area. One of these shovel tests was located on the western end of the elongate knoll and contained 5 flakes. The other shovel test situated on a small circular knoll, north of the western portion of the elongate knoll, contained 3 small flakes.

Collected Artifact Inventory

Surface:

- 1 Basalt corner notched projectile point (UA82-84-1; Figure 3.50, e)
- 2 Basalt flakes
- 1 Rhyolite flake

Subsurface:

- 4 Basalt flakes
- 1 Red chert flake
- 1 Brown chert flake
- 4 Rhyolite flakes
- 1 Long bone fragment, calcined, medium to large mammal

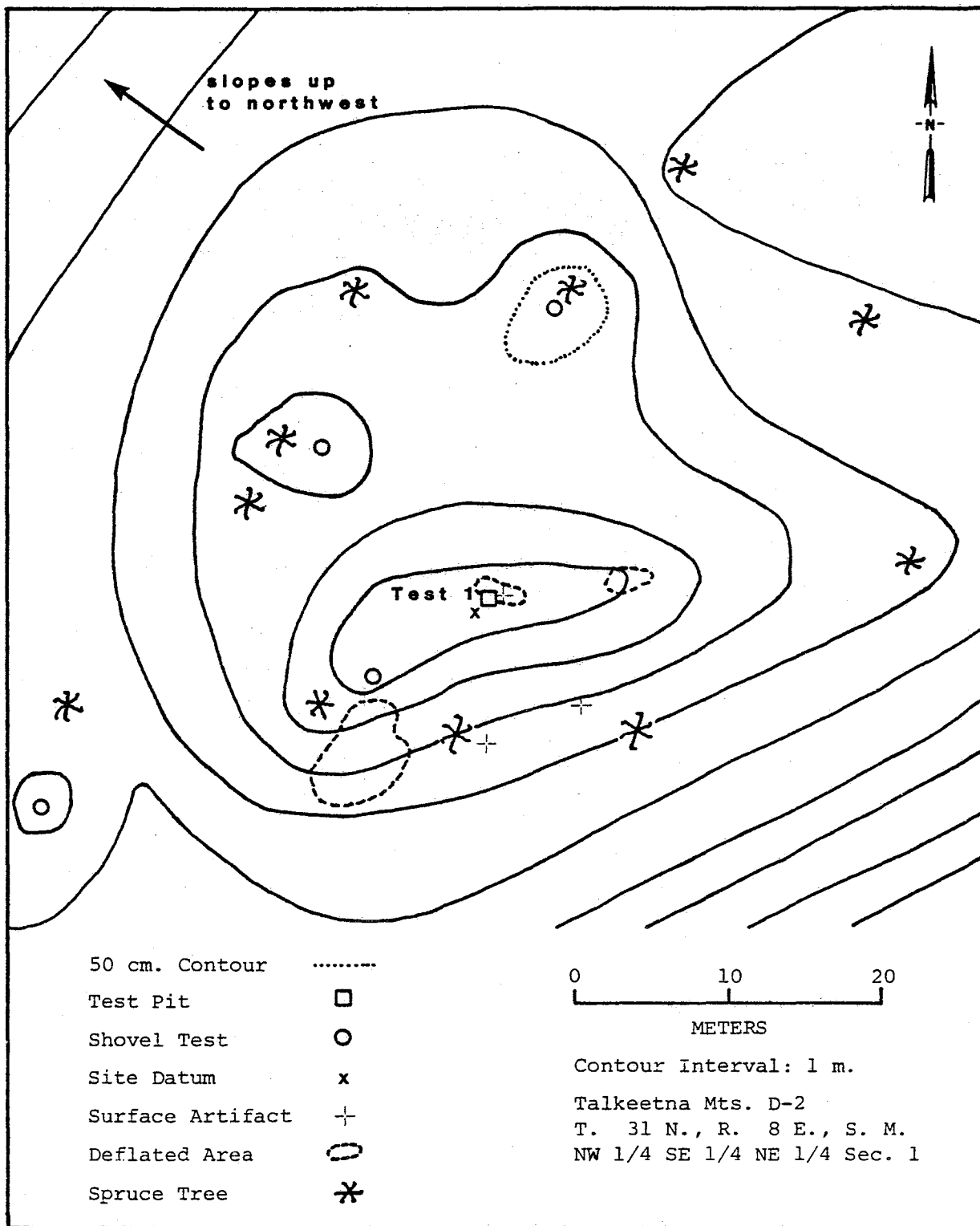


Figure 3.32. Site Map TLM 144.

(xxv) AHRS Number TLM 145, Accession Number UA82-85

Area: ca. 1.7 km northeast of Jay Creek Mouth, Survey Locale 127
Area Map: Figure A.4; Survey Locale Map: Figure A.28
USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 455650 Northing 6962400

Latitude 62°47'25" N., Longitude 147°52'10" W.

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

Sec. 12, NW $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$

Site Map: Figure 3.33

Setting: The site, at approximately 716 m asl (2350 feet), is located on a ridge which extends eastward from a glaciolacustrine plain ca. 1.7 km northeast of the confluence of Jay Creek with the Susitna River. Jay Creek, which is 300 m east of the site, flows southward 137 m (450 feet) below the site area. The creek is relatively inaccessible due to the steepness of the slopes extending down to it. 200 m north of the site the creek bends westward and then makes a sharp turn to the east. The site is situated on the central portion of the ridge which is ca. 200 m in length. The ridge slopes eastward at a moderate angle in the site vicinity for a distance of 15 m, and then decreases for 40 m. The ridge rises at this point, reaching its apex ca. 100 m east of the site. North and northeast the terrain broadens out for a distance of 35 m to the rim of the Jay Creek canyon. Visibility from the site is partially obscured to the east, north, and south by present vegetation. From the level area above the site, 2 m higher in elevation, there is a view of an amphitheater shaped cliff. This formation is the location of a reported mineral lick and is ca. 1 km north of the site. To the south the Jay Creek mouth is visible. Vegetation on the site includes both low and high shrub, scattered spruce trees, shrub birch, alder, blueberry, willow, lowbush cranberry, with a ground cover of lichens, mosses, and scattered grasses. The eastern, northern and

southern slopes are characterized by closed mixed spruce-hardwood forest. This forest includes stands of birch and spruce with undergrowth of mosses and grasses, and brush in the open areas.

Reconnaissance Testing: The site contains both surface and subsurface material. Basalt, rhyolite and chert flakes were located on a game trail which runs along the crest of the ridge, with the scatter confined to an 8 m by 1 m area on an eastward facing 4 to 5-degree slope. On this slope the ground surface appears to be additionally eroded by weathering processes. A 40 cm by 40 cm test (test pit 1) was placed north of the lithic scatter off the edge of the game trail. Subsurface material from this test pit included 107 flakes and 93 calcined long bone fragments. Only 2 stratigraphic units were recognized, a dark brown finely sorted organic layer and an underlying light grayish-brown silty matrix with gravels. The artifactual material was associated with the upper strata. Partially burned wood was also visible within this strata in the unit profile. Two additional basalt flakes were located 22 m west of the scatter on the level area of the ridge 2 m higher in elevation. Three shovel tests were placed in this area, all with negative results.

Collected Artifact Inventory

Surface:

- 3 Rhyolite flakes
- 3 Basalt flakes
- 1 Gray chert flake

Subsurface:

- 67 Rhyolite flakes
- 32 Basalt flakes
- 6 Gray chert flakes
- 2 Black chert flakes
- 1 Burin spall fragment (?)
- 1 Skull fragment, calcined, medium to large mammal
- 92 Long bone/flat bone fragments, calcined, medium to large mammal

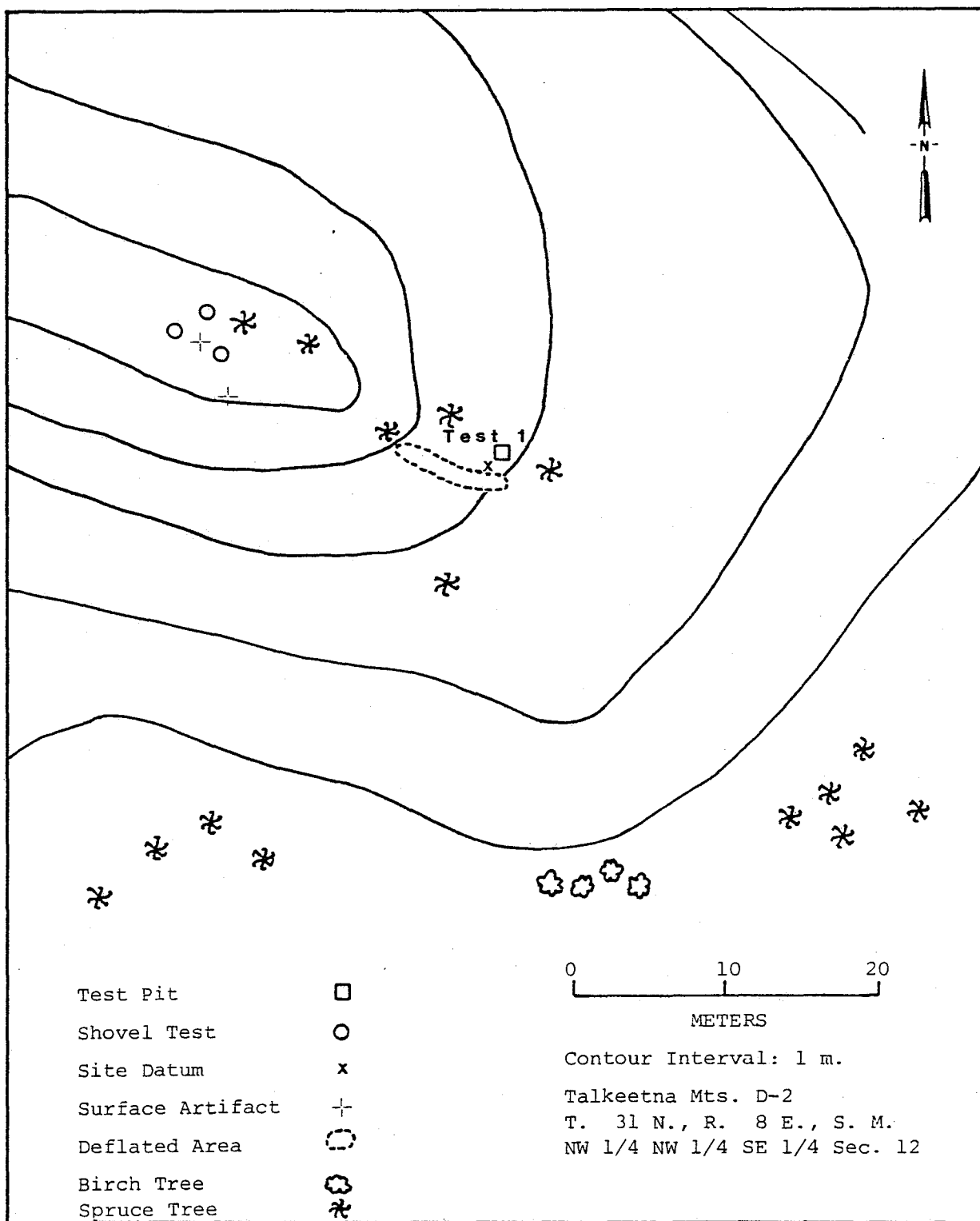


Figure 3.33. Site Map TLM 145.

(xxvi) AHRS Number TLM 146, Accession Number UA82-86

Area: ca. 2.5 km north of Jay Creek Mouth, Survey Locale 131
Area Map: Figure A.4; Survey Locale Map: Figure A.34
USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 455100 Northing 6963800

Latitude 62°48'10" N., Longitude 147°52'43" W.

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

Sec. 1, SW $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$

Site Map: Figure 3.34

Setting: The site is located on a broad sloping hill that descends from upland elevations 1114 m asl (3654 feet) down to a glacio-lacustrine plain 762 m asl (2500 feet). The site is topographically higher than terrain to the south and southeast situated approximately 7 m to 8 m above the lower undulating plain at a position intermediate between the Susitna River and the Watana Hills to the north. The site is at an elevation of ca. 834 m asl (2750 feet) where the plain begins a gradual northward rise to the Watana Hills. The south facing slope of the knoll gradually descends to the undulating plain, ca. 30 m distant. Neither Jay Creek or the Susitna River are visible from the site, however the valleys can be seen. A gradual east sloping draw levels out approximately 125 m northeast of the site. A small downcut valley adjacent to TLM 138 is situated at the eastern extent of the draw. Another narrow and shallow clear water stream is situated ca. 100 m directly south of the site. The latter stream originates from two kettle lakes (1 and 2 hectares) ca. .75 km west of the site. Although not visible from the site, the stream is visible from a kame crest 70 m south of TLM 146. In addition to the two lakes mentioned above, a third lake, Laha Lake, is visible from the site to the southwest. The three lakes are situated within a radius of 700 m and are easily accessible. Site vegetation includes willow, dwarf birch, white and yellow lichen, Labrador tea,

blueberry, crowberry, heath, and spruce. Surrounding vegetation includes all of the site species plus fireweed and mosses. Dwarf birch and blueberry stands are considerably more dense below the site terrain feature.

Reconnaissance Testing: Intensive surface and subsurface reconnaissance was conducted after a shovel test revealed a basalt flake (UA82-86-1). No artifacts were found on the surface or in subsequent subsurface shovel tests including a 40 cm by 40 cm test pit (test pit 1). The flat level area north of the site area (ca. 40 m by 20 m) was extensively examined with negative results. Adjacent deflated areas, across the crest, were examined but produced negative results. Frost heaving (boiling) is apparent across the level crest north of the site area and discontinuous stratigraphic units observed also evidence cryoturbation.

Collected Artifact Inventory

Subsurface:

1 Basalt flake with retouched or utilized edge (UA82-86-1)

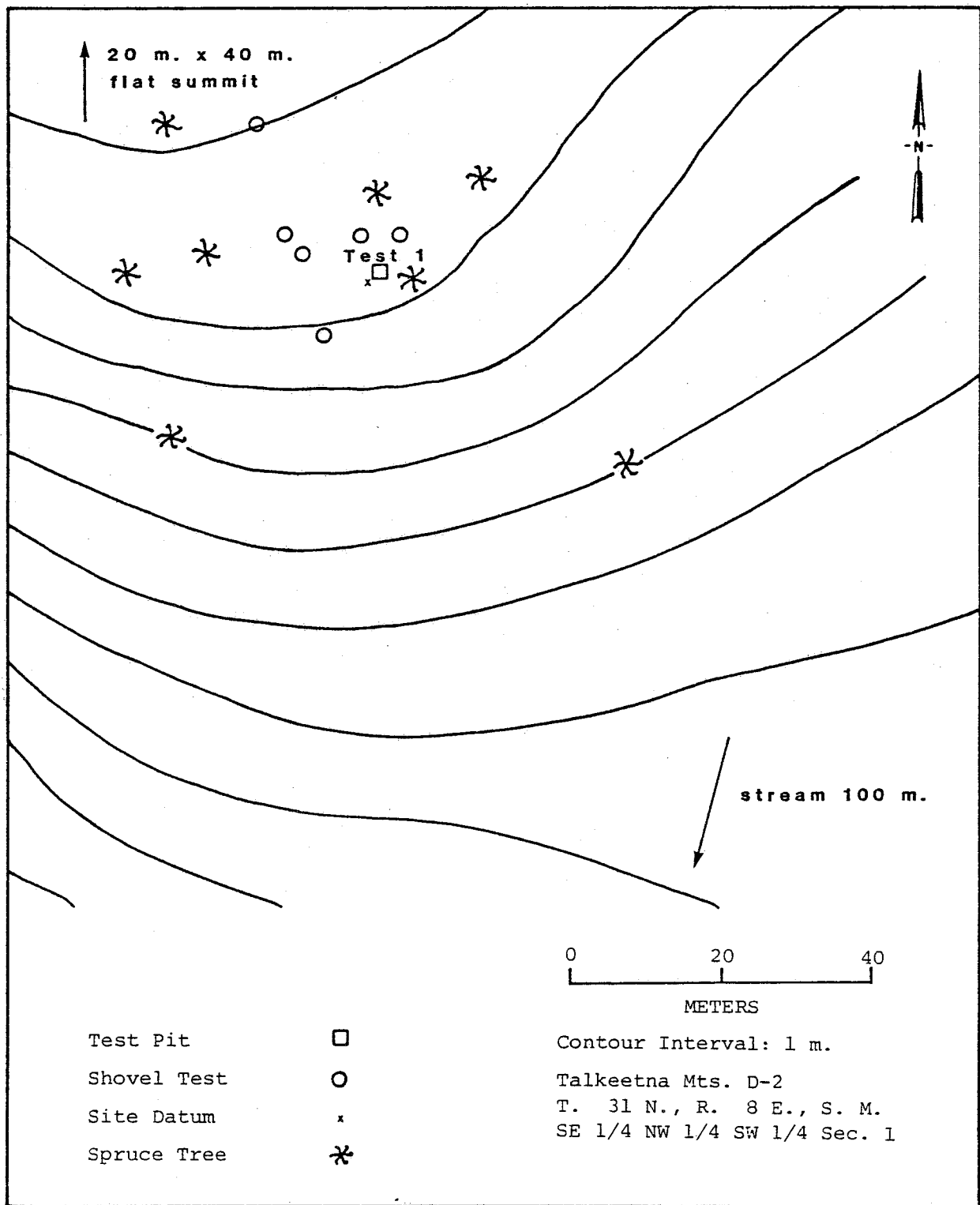


Figure 3.34. Site Map TLM 146.

(xxvii) AHRS Number TLM 147, Accession Number UA82-87

Area: 1.6 km north of Jay Creek Mouth, Survey Locale 127
Area Map: Figure A.4; Location Map: Figure A.28
USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 455130 Northing 6962500

Latitude 62°47'30" N., Longitude 147°52'50" W.

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

Sec. 12, SE $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$

Site Map: Figure 3.35

Setting: The site is located at an elevation of 735 m asl (2410 feet) on a broad flat terrace 1.6 km north of the mouth of Jay Creek, 850 m west of Jay Creek. The site is on the east side of the terrace, which measures 100 m (east-west) by 250 m (north-south), approximately 60 m north of the terrace's southern limit (Figure 3.35). The terrace slopes southward in a stepped fashion; dropping abruptly 10 m south of the site, then flattening out for 50 m, 1 m lower than the site. A circular basin lies 50 m southwest of the site; it is 5 m lower in elevation, and measures 50 m in diameter. Beyond this basin the terrace descends gently into a well-defined drainage, 300 m to the southwest. On the terrace, 50 m to the west of the site, lies a small kame 20 m long (northwest-southeast) and 6 m wide. It is 1 m higher in elevation than the level terrace. The terrace extends about 200 m to the northwest and west, where it merges with undulating kame topography. To the northeast and east the terrain is low and boggy, about 2 m lower in elevation than the site. Views from the site are good in every direction except west, where the small kame obstructs western terrain. However, the area west of the kame contains a small drainage that flows south joining the major drainage southwest of the site. West of the small drainage (100 m) the terrain rises 10 m higher than the site. A 2 hectare marshy basin is visible 100 m south and southeast of the site. Vegetation on the site

and surrounding terrace consists of dwarf birch and Labrador tea with a groundcover of blueberry, cranberry, fireweed, wild rose, and white lichens. To the north, the plateau is forested with black spruce. The low bog area to the northeast and east has grasses, willow, much cinquefoil and crowberry with numerous black spruce. The marshes to the southeast and south are grassy, while the nearer (more westerly) marsh is transitional with willow and dwarf birch present. Black spruce are present in the drainage area along the west side of the plateau, and abundant on the high terrain west of the site.

Reconnaissance Testing: One large gray rhyolite flake with black streaking was found in a shovel test. Its stratigraphic position is not known. Subsurface shovel tests placed nearby did not reveal additional cultural material. Surface reconnaissance of ground squirrel burrow berms was also negative. One test pit (test pit 1) was superimposed over the shovel test where the flake was found, but no other artifacts were observed. A charcoal sample was taken from a large charcoal layer between the Watana and Oshetna tephra units.

Collected Artifact Inventory

Subsurface:

1 Gray rhyolite flake

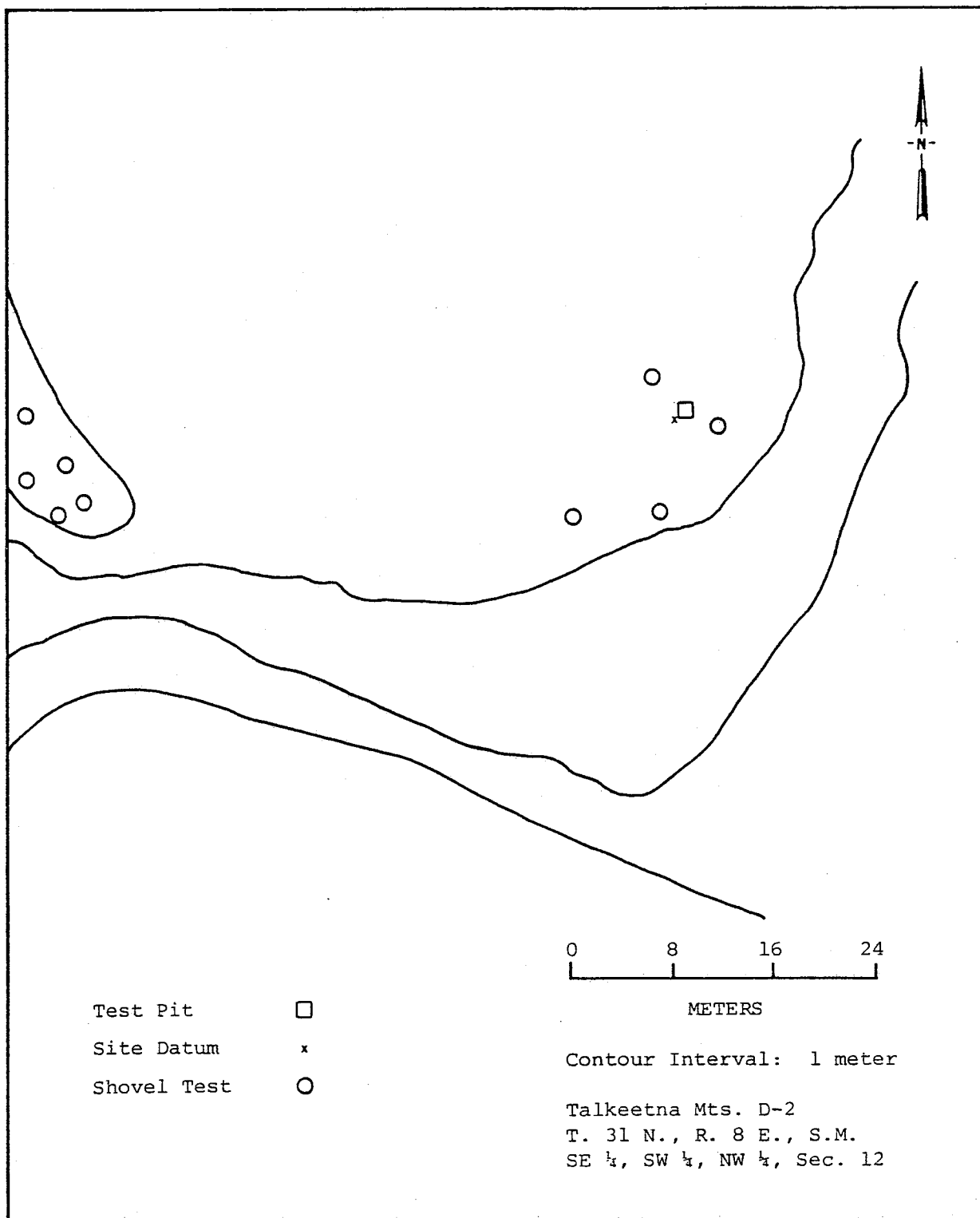


Figure 3.35. Site Map TLM 147.

(xxviii) AHRS Number TLM 148, Accession Number UA82-88

Area: 1.75 km north-northeast of Jay Creek Mouth, Survey Locale 127
Area Map: Figure A.4; Location Map: Figure A.28
USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 455300 Northing 6962600

Latitude 62°47'35" N., Longitude 147°52'30" W.

T. 31 N., R. 8 E., Seward Meridian
Sec. 12, SW $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$

Site Map: Figure 3.36

Setting: The site is located on the northwest corner of a roughly triangular broad, flat terrace, approximately 400 m west of Jay Creek, 1.75 km north-northeast of the confluence of the Susitna River and Jay Creek. The terrace lies at 732 m asl (2400 feet) elevation, and is part of the gradually sloping undulating glaciolacustrine plain north of the Susitna River in this area. It is separated from the rest of this plain by Jay Creek canyon 150 m to the east, an unnamed tributary canyon 100 m to the north, and a small drainage 100 m to the west of the site. The small drainage to the west is 5 m lower in elevation than the terrace top. The larger drainage north of the site drops abruptly about 60 m in depth. The site lies on the upper edge of the western slope of the terrace, approximately 0.5 m below the level top of the terrace. From the site, Jay Creek canyon and the canyon tributary to it are visible to the north, and the Jay Creek uplands, 2 km to 3 km distant, are visible as well. Portions of the undulating plain are visible to the west (up to 500 m distant) but the view is obscured by spruce forest and intervening hills. The marsh and small slow creek 100 m to the west provide the nearest easily accessible water. Clear running water is available from the tributary canyon to the north, 250 m away. Several small (1 hectare or less) ponds and marshes are found to the west. To the south, the view of the terrace and Susitna River canyon rim is obscured

by spruce forest. The terrace top is visible to the east, but Jay Creek canyon cannot be seen. Numerous other archeological sites in the area (TLM 128, 138, 139, 140, 141, 143, and 147) are visible to the north and west. The terrace is vegetated with moderately dense dwarf birch, lichen, Labrador tea, blueberry, and other heath shrubs. A few scattered spruce occur in the vicinity of the site, and are more common on the plain west and south of the site. The marsh 100 m west of the site contains low boggy heath plants and grasses. Spruce-birch forests are dense on the slopes of canyons to the north and east.

Reconnaissance Testing: Cultural material was encountered in subsurface context in a single 40 cm by 40 cm test pit (test pit 1). Twenty white rhyolite flakes were found in an initial shovel test, occurring from 1 cmbs to 6 cmbs in depth. Eleven additional white rhyolite flakes were encountered during excavation of test pit 1. These occur from 4 cmbs to 7.5 cmbs, under the organic mat. Flakes occur in a charcoal unit (Unit 2) directly below the mat, in a pinkish-gray fine silt unit (Unit 3: Devil tephra), and in the contact between them. A few flakes appeared to come from within the organic mat in the shovel test. Despite 7 additional shovel tests placed in the vicinity of test pit 1 and extensive surface examination, no other artifacts were found.

Collected Artifact Inventory

Subsurface:

31 White rhyolite flakes

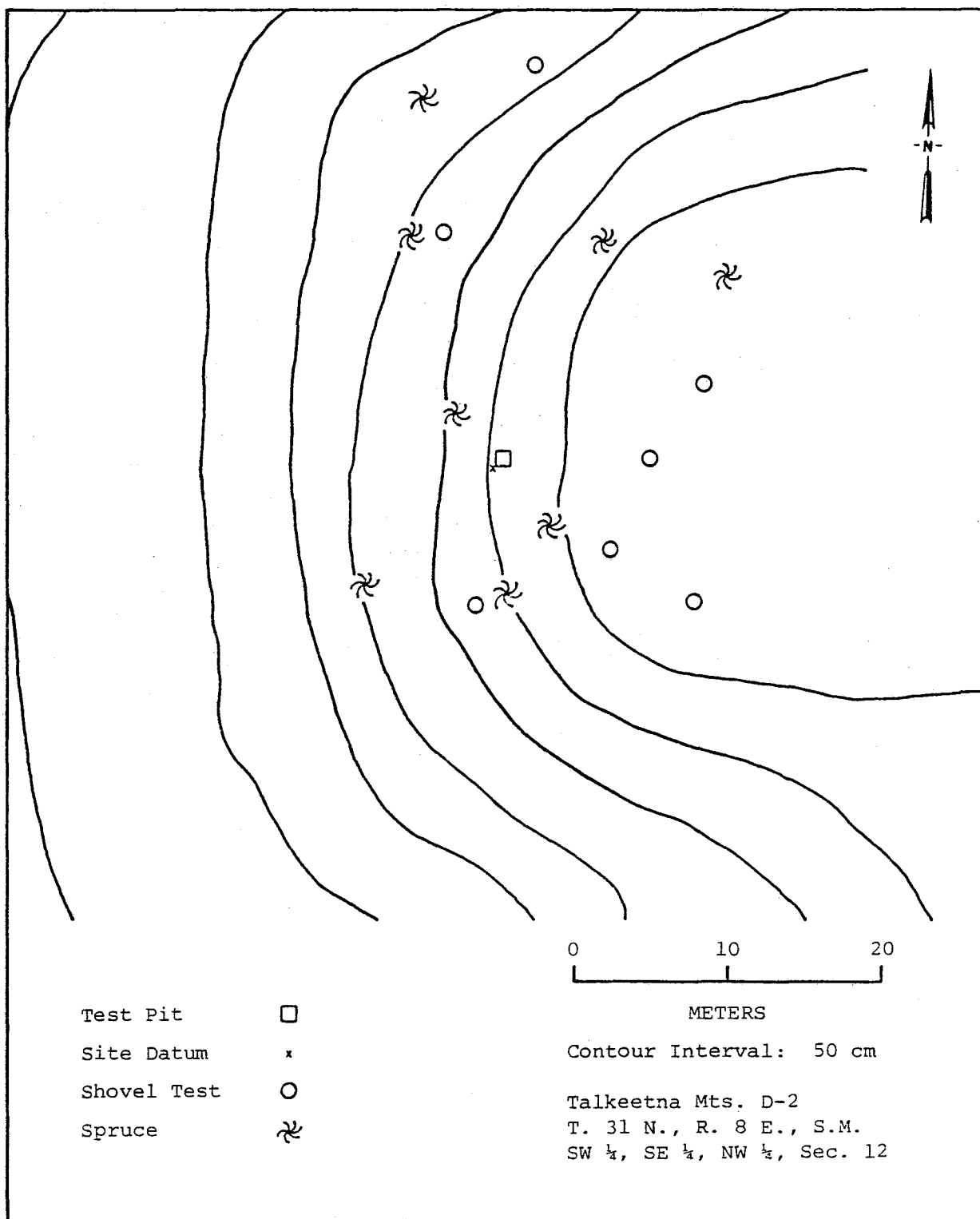


Figure 3.36. Site Map TLM 148.

(xxix) AHRS Number TLM 149, Accession Number UA82-89

Area: Laha Lake, West Side of Jay Creek, Survey Locale 131
Area Map: Figure A.4; Location Map: Figure A.34
USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 454800 Northing 6963700

Latitude 62°48'08" N., Longitude 147°53'04" W.

T. 31 N., R. 8 E., Seward Meridian
Sec. 1, NW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$

Site Map: Figure 3.37

Setting: TLM 149 is situated at approximately 808 m asl (2650 feet) on a low knoll, 2.8 km north of the mouth of Jay Creek. The knoll is crescent shaped with a 30 m long and 15 m wide southern portion oriented northwest-southeast. The northern portion is 20 m by 8 m oriented north-south. The site is situated in the middle of the northern knoll portion which is about 5 m above the surrounding terrain on its west side and about 1 m above the surrounding terrain on its east side. The site knoll is one of many knolls within a 200 m radius that vary between 800 m asl and 823 m asl. This large group of kame knolls trends east-west for approximately 1.2 km from the east side of Laha Lake. The site knoll is 500 m east of the easternmost tip of Laha Lake and 100 m north of a small unnamed creek. The view from the site to the north and northwest includes a series of kames, averaging 815 m asl, mountainous foothills 2 km distant, as well as mountain peaks reaching 6000 feet asl. View to the northeast is obscured by a higher knoll 40 m distant. Beyond kames to the east, high topography on the east side of Jay Creek is visible. To the southeast the kame topography descends gently for 100 m. The Susitna River drainage is visible 3 km distant as is high topography on its south side. A plateau on the east side of Jay Creek is also visible to the southeast. The creek (100 m distant) is not visible from the site, although it is audible. Site vegetation consists

of a white lichen mat, lowbush cranberry, crowberry, blueberry, Labrador tea, and low-lying dwarf birch, along with a few willow. One young black spruce is growing 4 m west of the site datum. Other knolls within a 200 m radius are similarly vegetated. Knoll slopes tend to exhibit exposed gravelly soil and are lichenous. Swales or shallow draws between knolls are covered with dwarf birch. Dense black spruce thickets stand in seasonal drainages between knolls. Other sites within this stretch of undulating kame topography east of Laha Lake are TLM 138, 146, 150, 151, 152, and 154.

Reconnaissance Testing: No surface artifacts were observed at TLM 149. The subsurface assemblage consists of burned bone (968 fragments) coming from a cultural layer between 5 cmbs to 10 cmbs in a 40 cm by 40 cm test pit (test pit 1). The cultural layer lies between the Devil and Watana tephra units. Dense bone concentrations were encountered in the south half of the test pit. Two small light brown rhyolite flakes were also located in association with the burned bone in the southwest quarter of the test pit. A charcoal sample was obtained from the northeast quarter of the test pit, which may provide a radiometric date for this stratigraphic contact. Three additional shovel tests placed on the knoll feature did not produce cultural material.

Collected Artifact Inventory

Subsurface:

2 Light brown rhyolite flakes
963 Long bone fragments, calcined, medium to large mammal
2 Phalanx, distal portion, small mammal
1 Metatarsal/metacarpal fragment, calcined, medium to large mammal
1 Carpal fragment, calcined, caribou (Rangifer tarandus)
1 Astragalus fragment, calcined, small mammal
C-14 sample (UA82-89-11)

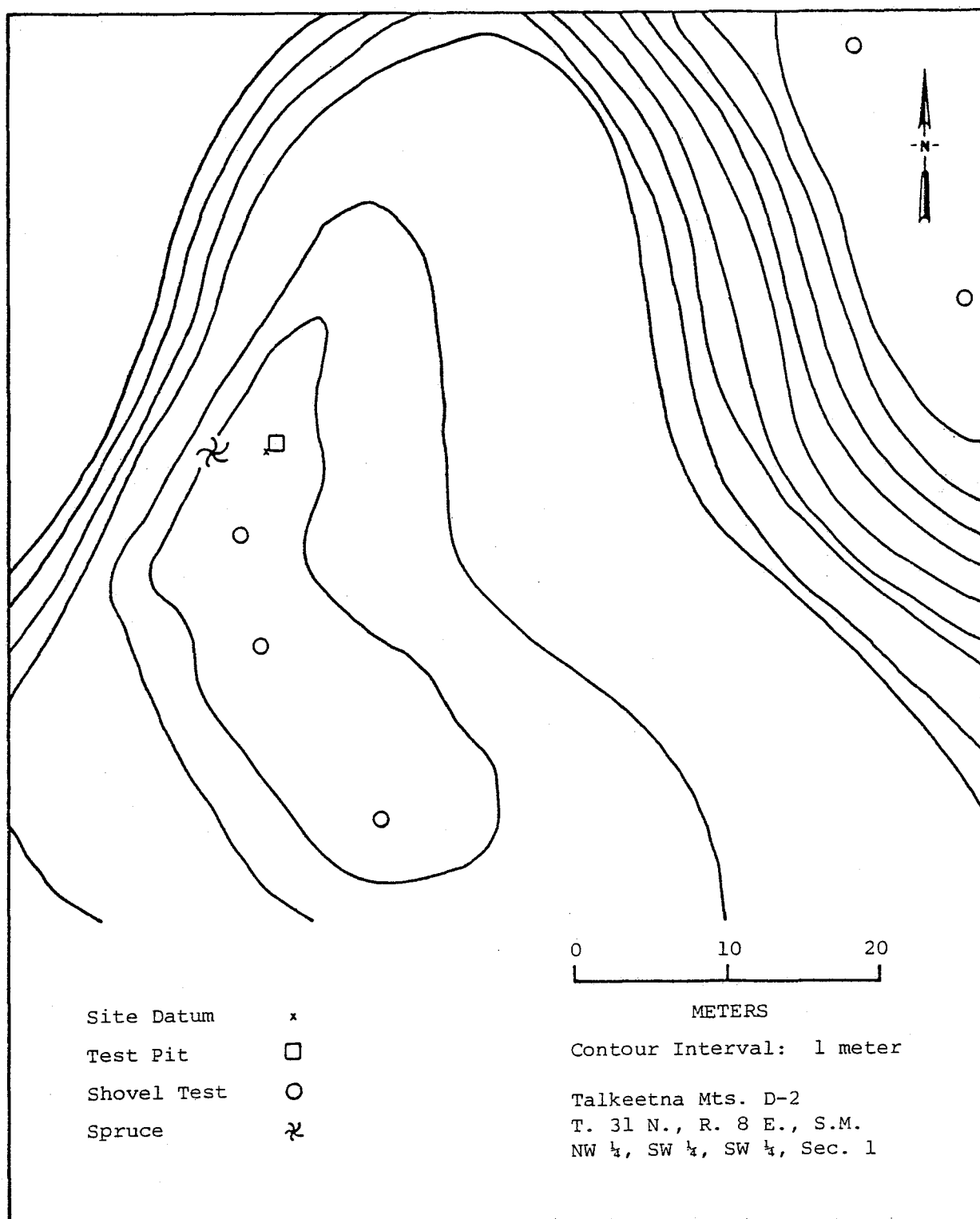


Figure 3.37. Site Map TLM 149.

(xxx) AHRS Number TLM 150, Accession Number UA82-90

Area: 2.6 km north of Jay Creek Mouth, Survey Locale 131
Area Map: Figure A.4; Location Map: Figure A.34
USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 454780 Northing 6963500

Latitude 62°48'00" N., Longitude 147°53'10" W.

T. 31 N., R. 8 E., Seward Meridian
Sec. 1, NE $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$

Site Map: Figure 3.38

Setting: Located on the crest of a small kame ridge, TLM 150 lies at an elevation of 802 m (2630 feet) asl, 2.6 km due north of the mouth of Jay Creek. The kame ridge is one of a series of similar kame ridges on an undulating terrace between Jay Creek, 750 m to the east, and Laha Lake, a 7 hectare lake 500 m to the west. The ridge is oriented roughly northeast-southwest, and is approximately 150 m long and 20 m to 30 m wide. It is fairly linear, broadly rounded in cross-section. The site is approximately 10 m southwest of the central high point of the ridge, on the flattened ridgetop. A slight swale, 1 m to 2 m lower in elevation than the ridgetop, separates the ridge from a slightly higher ridge to the west and northwest. Higher ground also lies to the southwest, approximately 75 m distant, across a dip 4 m deep. To the southeast and east across a relatively low drainage (7 m to 10 m lower than the site elevation) are similar but smaller kame ridges. Low kames and ridges are found to the northeast and north, approximately 75 m away. A small clear water creek, the outlet stream from a small pond northeast of Laha Lake, flows 100 m to the north. Beyond this creek, rolling uplands lead to hills of up to 1113 m (3650 feet) approximately 2.5 km to the north. From the site, a good view of the rolling kames to the east and north is available. The view to the south and west is partially to completely obscured by open spruce woodland and intervening terrain. Jay Creek

lies in a steep-walled drainage 750 m to the east. It is inaccessible, owing to the sheer walls. A mineral lick favored by game is reported from here, and numerous other archeological sites have been discovered in this area. The site and surrounding terrain are vegetated by dwarf birch scrub, with Labrador tea, blueberry and other low heath plants, and lichen providing a fairly continuous ground cover. Spruce are scattered on the kame top, and are denser in the lower swale areas.

Reconnaissance Testing: Cultural material was encountered in a single 40 cm by 40 cm test pit (test pit 1). Four black basalt flakes were found in an initial shovel test, beneath the organic mat and above 7.5 cmbs. Upon expansion of this test to test pit 1, 4 additional black basalt flakes were encountered between 4 cmbs to 6 cmbs, beneath the organic layer and within and above the underlying pink-gray silty Unit 2 (Devil tephra). At 9 cmbs to 12 cmbs, beneath Unit 4 (Watana tephra), 5 calcined small to large mammal long bone fragments were encountered. One piece, found at 9 cmbs in the west wall of test pit 1, was located within the gray silty Unit 5 (Oshetna tephra); the others were found within or at the upper contact of this unit. The stratigraphic distribution of cultural material in test pit 1 strongly suggests that the site contains more than one component. Despite extensive surface examination and the placement of eight additional shovel tests, no other artifactual material was found.

Collected Artifact Inventory

Subsurface:

8 Black basalt flakes

5 Bone fragments, calcined, small to large mammal

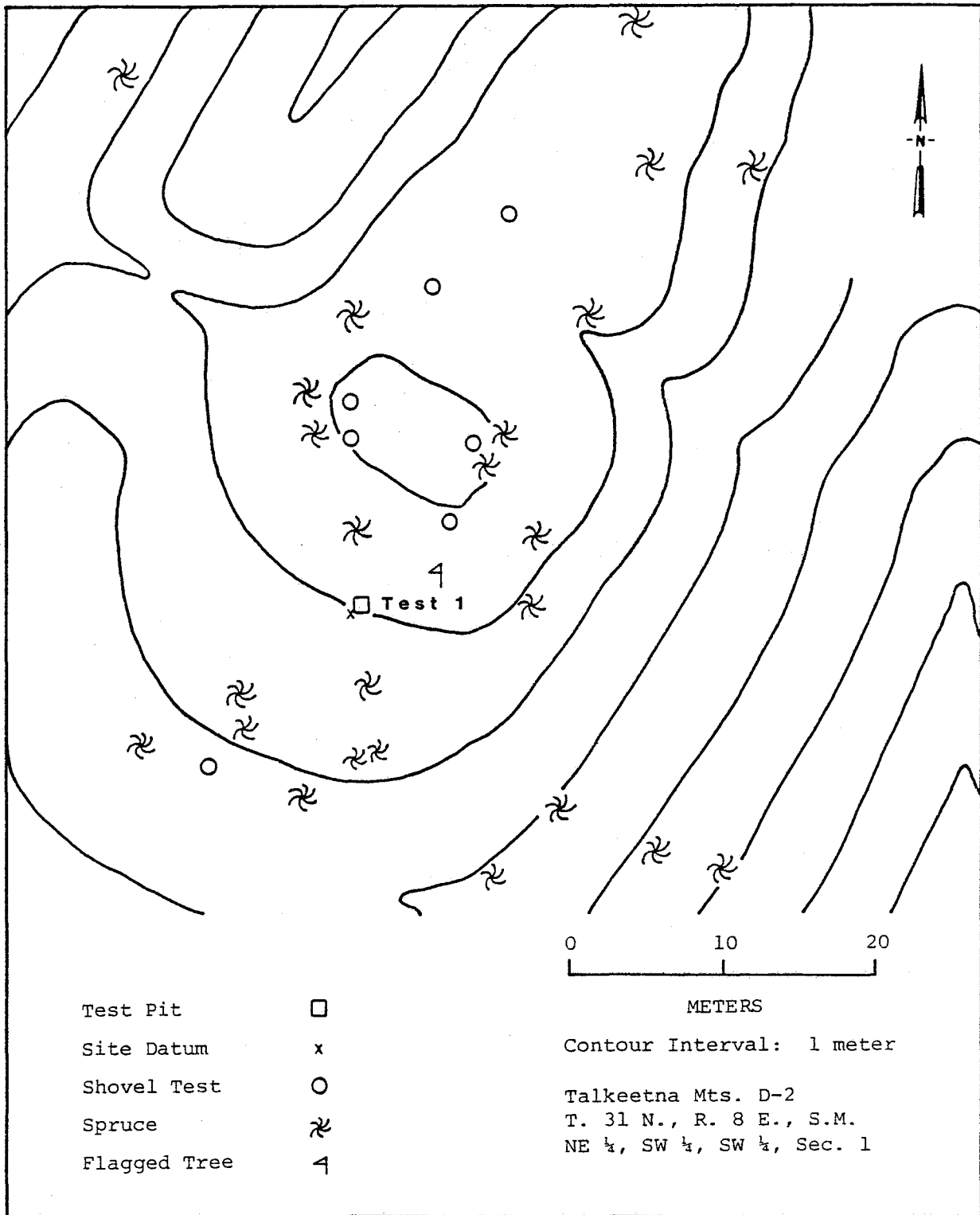


Figure 3.38. Site Map TLM 150.

(xxxi) AHRS Number TLM 151, Accession Number UA82-91

Area: ca. 2.5 km north of the Jay Creek Mouth, Survey Locale 131
Area Map: Figure A.4; Survey Locale Map: Figure A.34
USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 455100 Northing 6963450

Latitude 62°47'58" N., Longitude 147°52'45" W.

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

Sec. 1, SE $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$

Site Map: Figure 3.39

Setting: The site is located in an area characterized by kettle and kame topography ca. 2.5 km north of the Jay Creek and Susitna River confluence. The kame features are dissected by a series of swales, drainages and creeks. The kame feature on which this site is situated is approximately 100 m in length oriented northeast-southwest. The kame has the appearance of an elongated ridge with 3 discrete rises. The site is on a circular rise on the southwest end of the kame 732 m asl (2400 feet), 15 m by 6 m in area. A circular rise on the center of the kame and 1 m higher than TLM 151 is the highest point of topographic relief on this kame feature. The circular rise associated with TLM 151 is defined primarily by the slope of the south and west faces which descend 2 m to 3 m over a distance of 10 m. The kame feature is bordered on the north and south sides by swales, ca. 15 m in width, with creeks on both the western and eastern sides. There is excellent access from the site to the small creek on the west side of the kame ridge. This creek is an outlet for an unnamed kettle lake which is one of three kettle lakes 6 km to 8 km northwest of the site and is also a Jay Creek tributary. The creek flows south past the site, bending northwest 150 m upstream. The Jay Creek valley rim is ca. 500 m west of the site. At that location Jay Creek makes a sharp turn and an amphitheater formation is evident. This formation is the location of a mineral lick. The

location of this site in between the uplands to the north and northwest and Jay Creek to the east may be correlated to movement of game toward the mineral lick. Visibility from the site is partially obscured in all directions by scattered spruce trees. To the north, upland hills which attain elevations of ca. 1097 m (3600 feet) can be seen. Kame features are in view for 150 m to 250 m. The site vegetation consists of scattered spruce trees and brush including dwarf birch, blueberry, and heath. Lichen, mosses, and scattered grasses are common on the surface. Vegetation in the site area is similar to that on the site with denser brush in swales, drainages, and along creek margins.

Reconnaissance Testing: This site contains only subsurface material; there was no surface indication of the site. Fifteen bone fragments were recovered from a shovel test located on a level area on the eastern end of the kame feature. This shovel test was expanded into a 40 cm by 40 cm test (test pit 1). Five hundred and thirty-six calcined long bone fragments, one calcined medium to large mammal rib fragment, and 13 flakes representing 4 material types were found in this test. The material was associated with a cultural unit (7 cmbs to 20 cmbs) beneath a unit of dark brown finely sorted organics. The cultural matrix truncates a unit of yellowish-brown fine grained matrix (Watana tephra) which is stratigraphically lower than the cultural unit. This may indicate a cut and fill type of relationship and consequently a pit feature. The cultural unit itself had a mixed appearance with a reddish-brown silty matrix, a grayish matrix (tephra or cultural ash), and charcoal lenses and flecks. A carbon sample was collected (UA82-91-21) which could date the cultural unit. No additional subsurface testing was conducted in the 15 m by 6 m level area on which the site is situated.

Collected Artifact Inventory

Subsurface:

8 Basalt flakes

2 Gray chert flakes

2 Chalcedony flakes

1 Rhyolite flake

31 Long bone fragments, calcined, small to large mammal

519 Long bone fragments, calcined, medium to large mammal

1 Rib fragment, calcined, medium to large mammal

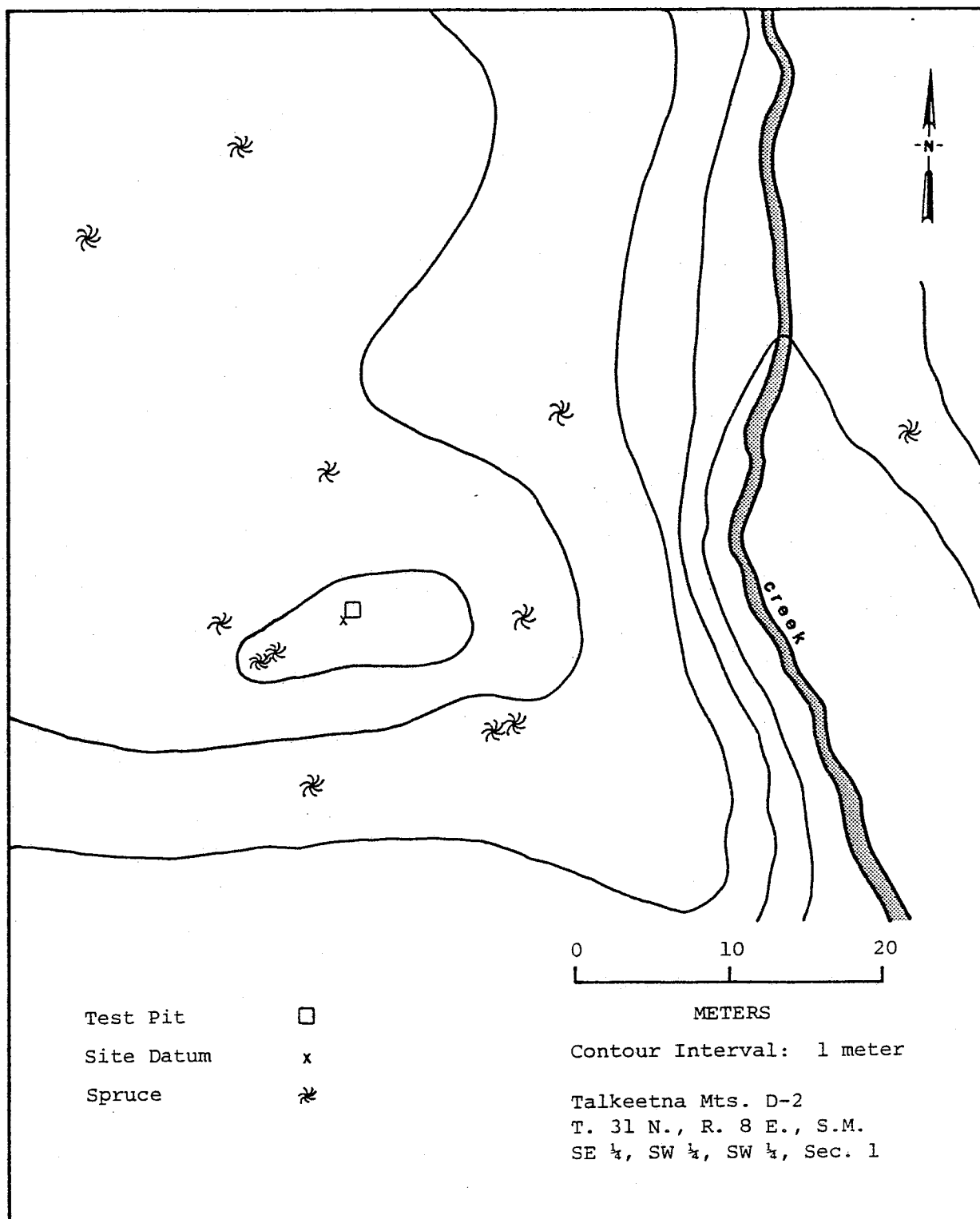


Figure 3.39. Site Map TLM 151.

(xxxii) AHRS Number TLM 152, Accession Number UA82-92

Area: ca. 2.7 km northwest of Jay Creek Mouth, Survey Locale 131
Area Map: Figure A.4; Location Map: Figure A.34
USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 454350 Northing 6963620

Latitude 62°48'05" N., Longitude 147°53'35" W.

T. 31 N., R. 8 E., Seward Meridian
Sec. 2, NW $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$

Site Map: Figure 3.40

Setting: TLM 152 is located in an area of ice contact features 2.7 km northwest of the Jay Creek and Susitna River confluence. The site, at an elevation of 802 m asl (2630 feet), is situated on a prominent elongate kame feature overlooking two kettle lakes. These lakes are ca. 2 and 7 hectares in size with the larger lake 100 m west and the smaller lake 50 m south of the kame feature. An additional 1 hectare kettle lake is located 125 m northeast of the site, but is obscured from view by intervening terrain. The kame, 50 m northeast-southwest by 20 m northwest-southeast, is separated from kame features to the east by an outlet stream which drains the 2 hectare lake and flows eastward eventually draining into Jay Creek. The site is situated on a rise, ca. .5 m higher in elevation, on the eastern portion of the kame. An additional rise, at the same elevation, is evident on the western end. The southern and eastern sides of the kame facing the drainage and lake have moderate slope angles dropping ca. 8 m to 10 m to the lake margin. Slopes in all other directions are more gradual and undulating in appearance. The view from the site encompasses a lake south of the site in addition to portions of a lake to the west. In all directions the terrain consists of kettle and kame topography. Visibility varies from 1 km to 5 km depending on the position of surrounding kames. There is a clear view to the southeast of the kame feature on which TLM 154 is

located. The site has a fairly continuous cover of blueberries, Labrador tea, crowberries, dwarf birch, and lichens. Small surface exposures are present. Vegetation in the surrounding area is similar to that of the site with denser brush along the outlet stream and small stands of spruce in lower areas between kame features.

Reconnaissance Testing: The site consists of a single gray chert flake located in a shovel test on the eastern upper extent of the kame feature. Surface reconnaissance and 5 shovel tests placed along the kame failed to reveal any additional artifactual material. The shovel test which contained the chert flake was expanded into a 40 cm by 40 cm test (test pit 1), with negative results.

Collected Artifact Inventory

Subsurface:

1 Chert flake

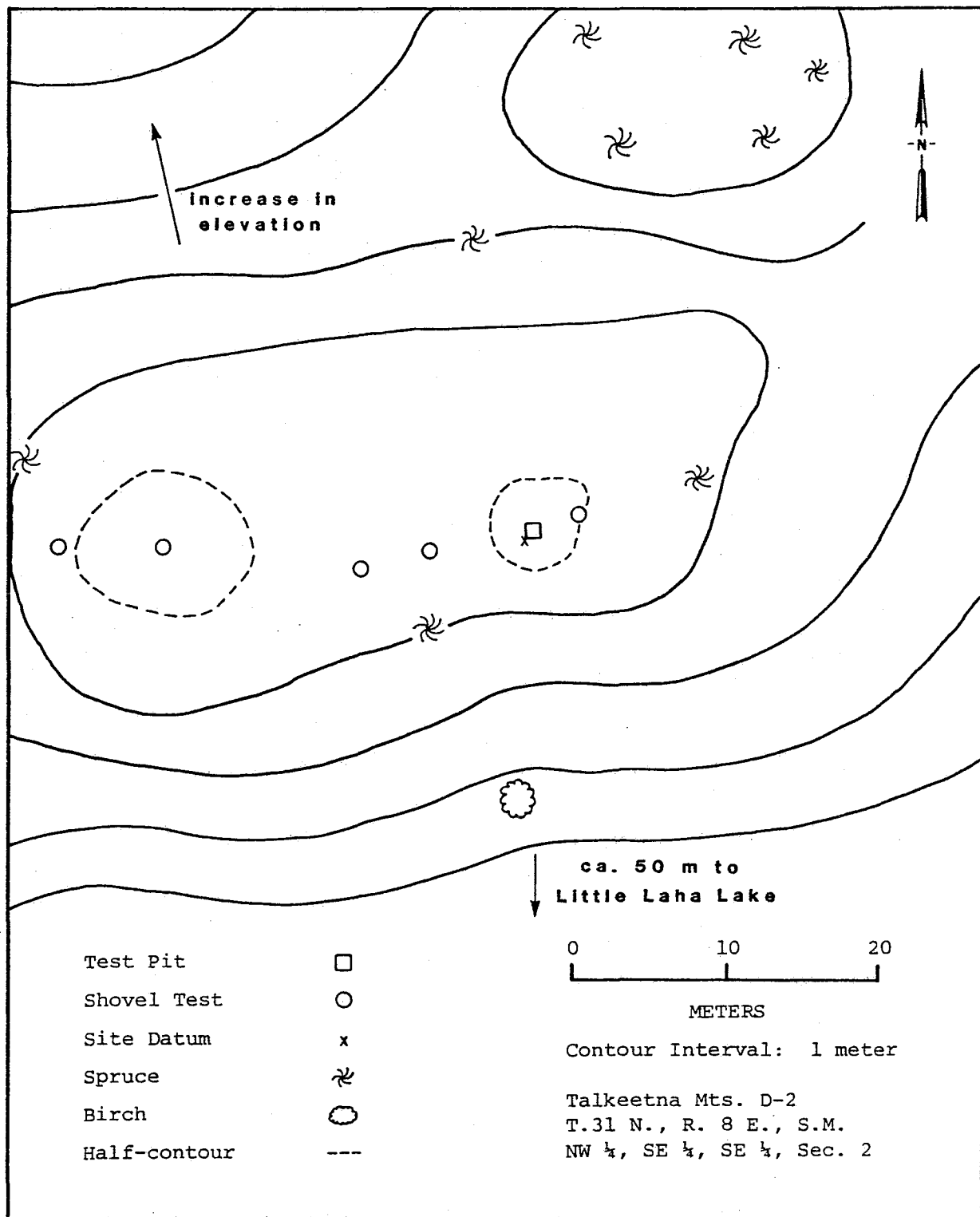


Figure 3.40. Site Map TLM 152.

(xxxiii) AHRS Number TLM 154, Accession Number UA82-94

Area: 2 km north of the mouth of Jay Creek, Survey Locale 131

Area Map: Figure A.4; Location Map: Figure A.34

USGS Map: Talkeetna Mts. D-2, Scale 1:63,360

Site Location: UTM Zone 6 Easting 454450 Northing 6963400

Latitude 62°47'58" N., Longitude 147°53'30" W.

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

Sec. 2, SW $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$

Site Map: Figure 3.41

Setting: TLM 154 is located at an elevation of ca. 808 m asl (2650 feet), on a south-facing kame ridge 250 m south of Laha Lake, ca. 2 km north of the mouth of Jay Creek (Figure A.4). The kame ridge lies 80 m to the south-southeast of the edge of a small (2 hectare) oval lake southeast of Laha Lake. The top of this ridge is 10 m higher than the level of the lake, and is 5 m higher than the elevation of the site. The ridge descends to the southwest in three separate finger ridges, each approximately 75 m long. The site is located along the broad flat crest of the middle finger ridge, 50 m southwest of the top of the kame ridge, which is approximately 20 m wide (northwest-southeast), and slopes gradually in an undulating fashion. It is surrounded by boggy areas 3 m to 5 m lower than the elevation of the site, 30 m to the southeast, 50 m to the southwest, and 10 m to the west. To the north 150 m beyond the kame ridge top, is the outlet stream to the small oval lake. This small sinuous clear water creek runs eastward, eventually emptying into Jay Creek canyon, 1.5 km to the east. The ground around the creek and small lake is also low and boggy in contrast to numerous well-drained kame ridges nearby. The regional kettle-and-kame topography surrounding the site has a local relief of from 5 m to 20 m; kames are larger and higher west of the site, near Laha Lake. From the site, view to the east, west, and northwest is restricted by the

irregular terrain. From the ridgetop, however, a panoramic view is available of the broad undulating kettle-and-kame topography on the terrace of the Susitna River valley to the south and east, as well as Laha Lake to the northwest. The Watana Hills can be seen further to the north, while Jay Creek canyon is visible to the east. The Susitna River canyon can be seen to the south. The region around the site, and the site itself, is vegetated with a fairly continuous cover of dwarf birch, low heath plants, blueberry, and lichens. Spruce are scattered in lower terrain. Bog grasses are found in low, damp areas. On the ridgetop large areas of exposed gravel are present, but not on the site itself.

Reconnaissance Testing: An initial shovel test revealed 12 flakes of two different material types. With expansion into a 40 cm by 50 cm test pit (test pit 1), 150 gray rhyolite and gray-white quartzite flakes were recovered. These flakes were found in two stratigraphic units within a dark humic layer beneath the organic mat (unit 2), and in the underlying gray-white silt (unit 3, Devil tephra). Six subsequent shovel tests were placed in the vicinity of test pit 1. In shovel test 2 (Figure 3.41), a lanceolate projectile point (UA82-94-4; Figure 3.50, f) was uncovered from an unknown stratigraphic position. In addition, 3 gray rhyolite flakes were found on the surface of a lichen mat, 40 m to the northwest of site datum. The gravel exposures on the ridgetop and other areas relatively clear of shrubby vegetation were carefully examined for additional surface artifacts, but none were found.

Collected Artifact Inventory

Surface:

3 Gray rhyolite flakes

Subsurface:

1 Gray rhyolite lanceolate projectile point (UA82-94-4; Figure 3.50, f)

17 Gray-white quartzite unmodified flakes

116 Gray rhyolite unmodified flakes

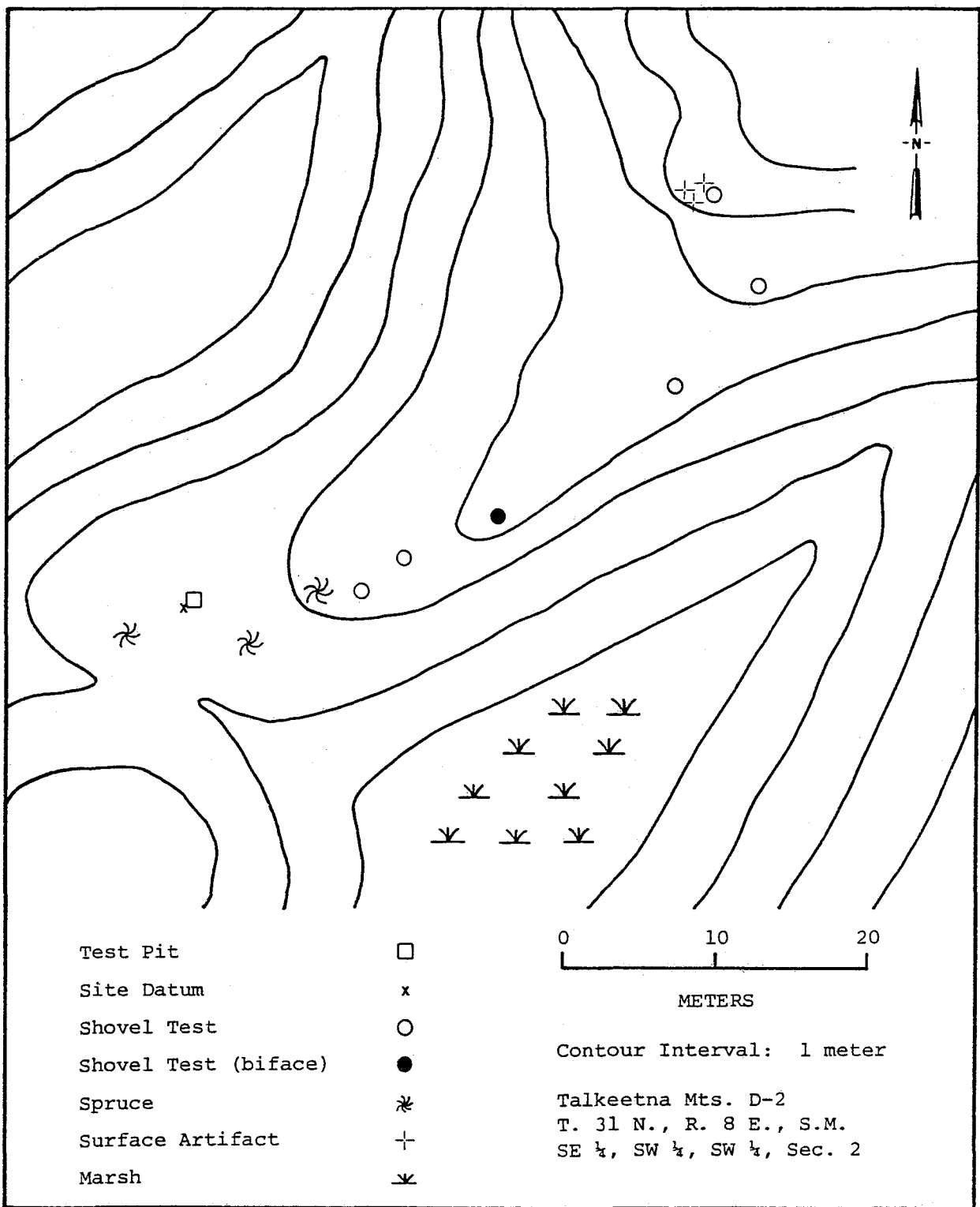


Figure 3.41. Site Map TLM 154.

(b) Historic Sites and Discussion

No historic sites were located in other portions of the study area during the 1982 field season.

3.6 - Systematic Testing

(a) Introduction

Three sites received systematic testing in 1982: TLM 128, TLM 130 and TLM 143. As with previous sites selected for systematic testing these sites were selected out of the sites located during the 1982 field season because they appeared to have the potential for providing information concerning the cultural chronology for this portion of Alaska.

(b) Sites

(i) Systematic Testing TLM 128--Jay Creek Ridge Site

Location: See section 3.5 (a-ix).

Testing: Systematic testing at TLM 128 consisted of three 1 m by 1 m test squares. These test squares were placed in the vicinity of a surface erosional feature located on the southern portion of the ridge (Figure 3.42). The test squares were positioned in a checkerboard pattern with one of the test squares superimposed over test pit 1, which was excavated during initial reconnaissance in the 1982 field season. Placement of the three test squares was designed to provide a 3 m continuous profile in an effort to define the content, extent and stratigraphic position of artifactual material recovered from surface reconnaissance and in test pit 1.

Discussion:

TLM 128 was initially identified by the presence of artifactual material in association with an erosional feature. This material included flakes of rhyolite and fine grained chert in addition to a chert biface fragment (UA82-68-3; Figure 3.49, a). Test pit 1 was placed adjacent to the erosional feature. Artifactual material recovered from this test pit was correlated with two different stratigraphic levels. This included additional rhyolite and chert flakes from the organic-Devil contact

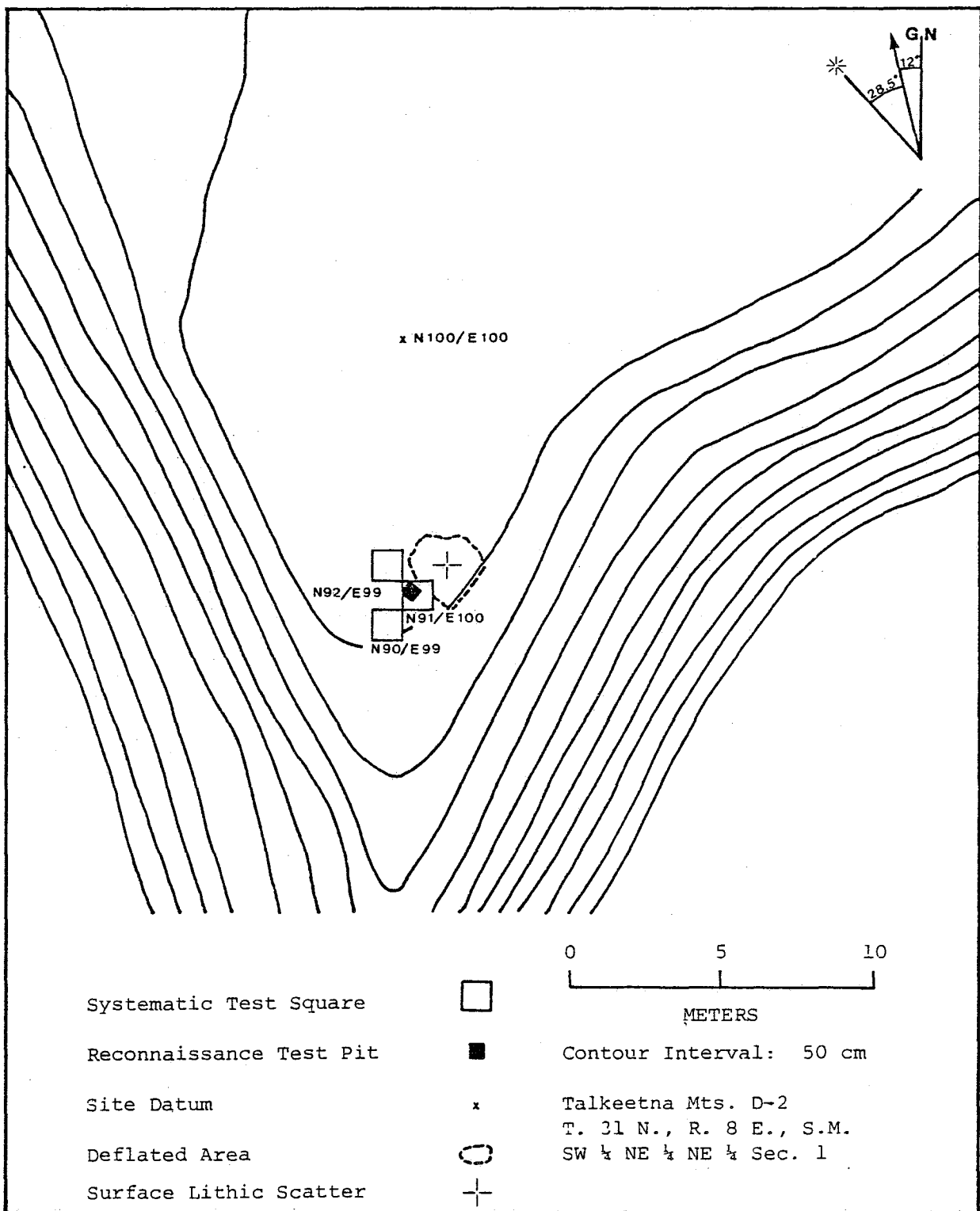


Figure 3.42. Site Map TLM 128.

(unit 1 to unit 2) and the proximal end of an obsidian microblade (UA82-68-15; Figure 3.49, b) found within silty sediments (unit 5) 33 cm below the surface and 2 cm to 5 cm above the paleosol (unit 6).

All three 1 m by 1 m test squares excavated at this site contained artifactual material. The collection of artifacts is summarized in Table 3.2, and their distribution by test square and stratigraphic unit is summarized in Table 3.4. Seven soil/sediment units were identified. A total of 4613 lithics and 12 bone fragments were collected during systematic testing, and two cultural components were defined.

Site stratigraphy can be discussed in two broad categories as the upper and lower stratigraphy. The upper stratigraphy includes three distinct tephra units and a surface layer of organic material (Figure 3.43). The three tephra units were defined on the basis of color and texture. At the contact between the Watana tephra (unit 3) and the lowermost Oshetna tephra (unit 4) a thin lens of charcoal fragments was frequently encountered. The upper stratigraphy of TLM 128 indicates that erosion has been prevalent on the ridge. While the surface organic material and all three tephra units are present in each test square they lack continuity. The uppermost Devil tephra (unit 2) is often absent or mixed with surface organic material. The discontinuous nature of the Devil tephra indicates erosion after the Devil tephra deposition. In addition, the Devil tephra rests unconformably on silty eolian sediments (unit 5) indicating that erosion was active prior to the deposition of the Devil tephra. The lowermost Oshetna tephra (unit 4) is only preserved in areas where there is the middle Watana tephra (unit 3) indicating that post Watana erosion was fairly extensive. Cryoturbation and rooturbation may have also contributed to disturbance of the upper stratigraphy.

The lower stratigraphic units at TLM 128 include fine silty-sandy eolian sediments (unit 5) which are underlain by glacial material within a silt matrix (unit 7). At the lower extent of the eolian sediment, 1 cm to 5 cm above the contact with the glacial drift, is a thin lens of very dark brown organic matrix with carbon. While this paleosol was present in all three of the test squares it had a patchy and discontinuous

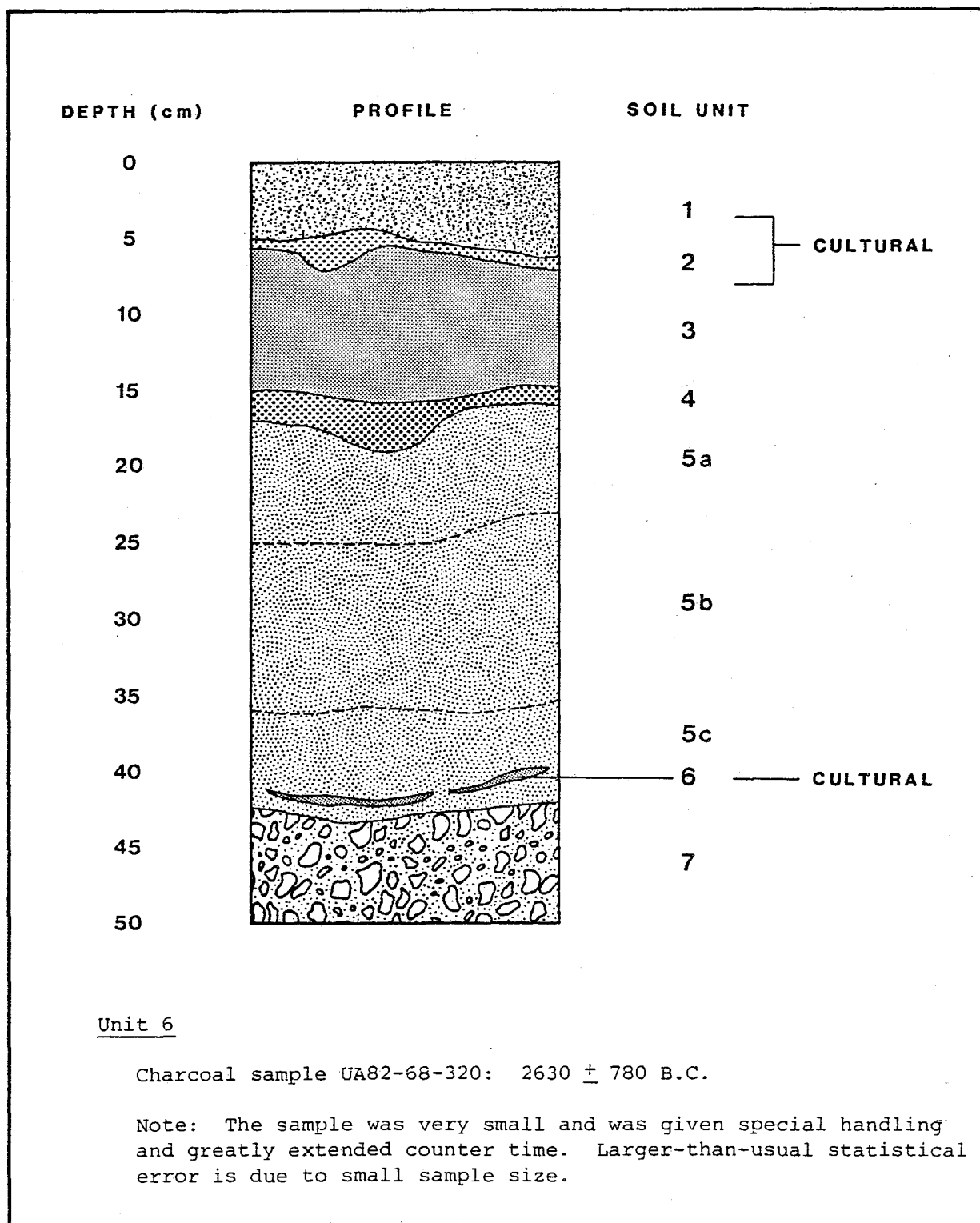


Figure 3.43. Composite Soil Profile TLM 128.

TABLE 3.1

SOIL DESCRIPTIONS FOR COMPOSITE SOIL PROFILE, TLM 128

Soil Unit	Description
1	Organic layer, surface organic layer and partially decomposed organics with dense fibrous root material (7.5 YR 3/2 dark brown); continuous unit although variable in thickness from 1 cm to 6 cm. Often mixed with unit 2 (10 YR grayish brown).
2	Tephra (Devil)/alluvial A horizon (7.5 YR 7/2 pinkish gray); very fine silt sized particles with fibrous root material. Discontinuous unit. Disturbance due to rooturbation and surface erosion. Often mixed with unit 1.
3	Tephra (Watana); variable in color depending on degree of oxidization. Upper zone (7.5 YR 4/6 strong brown) is .5 cm to 3 cm in thickness with granular structure. Oxidized zone grades into unaltered tephra (10 YR 6/4 light yellowish brown) which varies from 2 cm to 7 cm in thickness. Discontinuous unit. Indistinct contacts and mixing with units 2 and 5a. Where mixing is not evident contacts are sharp. Unit 3 was defined in all three test squares although often mixed with other soil units in N92/E99 and N91/E100. In N90/E99 this unit occurs only in the northern portion of the 1 m by 1 m unit.

TABLE 3.1 (Continued)

Soil Unit	Description
4	Tephra (Oshetna); very fine silt particles mixed with sand (10 YR 6/2 light brownish gray); clear contacts at both the upper and lower extent, with a thin discontinuous zone of charcoal flecks at the upper contact. Charcoal flecks extend into unit 4. This unit was recorded in all three of the test squares although discontinuous in horizontal extent. Variable thickness from 1 cm to 3 cm.
5a	Oxidized fine silty sand (10 YR 4/6 dark yellowish brown); continuous unit varying in thickness from 4 cm to 14 cm. Contact with the overlying unit (unit 4) is sharp. When unit 4 is absent the contact with the overlying matrix is clear. Lower boundary of this unit was gradational and defined on the basis of color.
5b	Unoxidized fine silty sand (2.5 Y 4/4 olive brown); same texture as the overlying unit (unit 5a). Continuous unit varying in thickness from 5 cm to 35 cm. Increase in the vertical depth of this sediment is evident along an east to west transect (5 cm thick along the east wall of N91/E100 and 35 cm thick along the west wall N92/E99). Gradational contacts.

TABLE 3.1 (Continued)

Soil Unit	Description
5c	<p>Fine silty sand similar in texture to unit 5a and unit 5b although mottled in appearance (2.5 Y 4/4 olive brown and 7.5 YR 4/6 strong brown). Mottled appearance is probably the result of oxidization. Contact with unit 6, which is within this unit, are sharp. The overlying contact with unit 5b is gradational while the underlying contact with the glacial drift (unit 7) is sharp. Continuous unit in all three of the test squares, thickness varies from 2 cm to 13 cm.</p>
6	<p>Finely divided organic material with charcoal (7.5 YR 3/2 dark brown); thin discontinuous layer .5 cm to 2 cm thick. Soil unit has a greasy texture. Sharp contacts with unit 5c. Located in all three of the test squares. Paleosol.</p>
7	<p>Gravels, cobbles and boulders within a silt matrix; maximum boulder size 55 cm. Decomposed rock was observed. Silt and gravels formed concretions. Excavation into this unit defined limit of excavation for the 1 m by 1 m test squares. Glacial deposit.</p>

appearance. The morphology of this paleosol conforms to the underlying glacial material. Its presence indicates a period of stability and accumulation of organic material. The thickness of the eolian sediment varied between the three test squares. The overall range of thickness was from 14 cm to 54 cm with the sediments being generally thicker in N92/E99. In addition, in that test square, boulders--the largest one measuring 55 cm in diameter--were encountered in the glacial deposit beneath the silty sediments. Boulders were not present in the other two test squares. Also in N92/E99 the glacial deposit and the paleosol slope abruptly from the southeast to the northwest corner of the unit. The surfaces of the overlying strata are generally horizontal suggesting that the surfaces which were associated with unit 6 and unit 7 did not conform to the present ridge morphology.

In summary the stratigraphy at TLM 128 represents three different sedimentary processes. The initial deposition was glacial in origin as represented by unit 7. This was followed by the second sedimentary process which was the deposition of fine silty sediments (unit 5). Interruption in eolian deposition of these sediments is indicated by a paleosol (unit 6). The final sedimentary process is represented by the deposition of three distinctive volcanic tephras.

The uppermost cultural component at TLM 128 can be correlated to the Devil tephra (unit 2). Lithic artifacts were recovered in association with this tephra in two of the test squares (N91/E100, N92/E99). Review of the stratigraphic position of this lithic material as summarized on Table 3.4 indicates that disturbance of the upper stratigraphic units may be too great to recover the exact stratigraphic position of this component. In other words, it can not be unequivocally determined if this component occurred prior to or after the deposition of the Devil tephra, although the paucity of material on the contact between the Devil and Watana units suggests a post Devil component.

A total of 42 flakes were collected from the upper component. The lithic specimens are small waste flakes representing rhyolite, white to gray chert, and basalt material types. While no tools were recovered

during systematic testing, a biface fragment of fine grained gray chert (UA82-68-3; Figure 3.49, a) which was surface collected during initial reconnaissance can be correlated to the upper component because the material type was not found in the lower component or in the lower stratigraphic units. An additional bifacially worked tool fragment (UA82-68-321; Figure 3.49, a) was found at the site after systematic testing. Unfortunately this tool was located on the surface of one of the backfilled test squares and consequently lacks provenience. The tool fragment articulates with the surface collected biface fragment to form a complete asymmetric biface which may have broken as a result of heat treatment (suggested by a glossy sheen and potlid fracture). Subsequent to breakage of the original biface the basal portion was modified with bifacial retouch at the corner formed by the medial break and the right edge of the original biface. Displacement of the tool was probably the result of backfilling in the vicinity of the erosional feature where original surface artifacts were found (Figure 3.42).

The lower component at this site is represented primarily by cultural material from one of the three test squares (N90/E99). Artifacts consisting of 4554 lithics and 12 bone fragments were recovered in association with a buried soil (unit 6) at the lower extent of the 1 m by 1 m unit. Only 11 flakes were found in a similar stratigraphic context in N91/E100 and no artifactual material was found in association with the paleosol in N92/E99. The spatial distribution of the lithic debitage indicates that this component does not extend in a northward direction. Its areal extent to the south would be limited as the ridge narrows considerably in that direction.

Flakes of green chert, brown translucent chert and basalt totaling 4503 in number account for 99.6% of the lithic debitage in this lower component with green chert representing the dominant material type (4138 flakes). The debitage is characterized by a size range of flakes from 7 cm to less than 4 mm in diameter. In addition, two large chunks of green chert (UA82-68-189, UA82-68-246) were recovered. As mentioned above, the majority of the material was of a green chert although examination of grain size suggests that two different material sources may be present.

Only 11 of the lithics found in the lower component exhibited evidence of modification. Most of these lithics can be described as flakes with either unifacial or bifacial marginal retouch (UA82-68-186, 187; Figure 3.49, d, e). A biface tip (projectile point tip?) of brown translucent chert (UA82-68-85; Figure 3.49, c) and a basalt biface fragment (UA82-68-222) were the only two artifacts where modification was not restricted to the margins. Two of the modified flakes (UA82-68-225, UA82-68-226; Figure 3.49, f) are blade-like in shape with evidence of retouch on the margins. UA82-68-226 is particularly interesting as it has been bifacially worked on three of the edges. At least three flakes (UA82-184, UA82-68-79, UA82-68-80) showed possible edge wear. The morphology of 31 of the lithics suggest the manufacture of blade-like flakes, however, given the quantity of lithic debitage these blade-like flakes may not be the result of a specific lithic technology.

While some of the lithic material was recovered from a stratigraphic context above the paleosol and some from below the paleosol vertical displacement appeared to be minimal. Artifacts were concentrated within the paleosol and many had greasy organic material on their basal surface. The topography of the paleosol and of the lower component was of interest as it sloped 20 cm to 25 cm down from the northwest and northeast corners of N90/E99 toward the central portion of the test square. The surface therefore had a trough-like appearance in the north half of the test square. Flakes were frequently lying flat on the paleosol surface but due to the steepness of the slope these flakes often had an upended appearance. The majority of the lithic material was located in the southern more level portion of this square. The slope of the paleosol conformed to the slope of the glacial material and was separated from the glacial deposit by 1 cm to 5 cm of silty sediment. The absence of a cultural stratigraphic unconformity suggests that this phenomena is geologic in origin.

Faunal material recovered at TLM 128 consists of 11 calcined small to large mammal bone fragments. The bone fragments were in association with the paleosol (unit 6), and lithic artifactual material in N90/E99 (Table 3.3).

Ten charcoal samples were collected for radiometric dating. These samples were collected from all three of the test squares in association with two different stratigraphic levels. Three samples were collected, one from each test square, in association with the contact between the Watana and Oshetna tephras (unit 3 to unit 4). These samples would provide an upper limiting date for the Oshetna tephra. The seven remaining samples were collected from the paleosol. Sample UA82-68-319 and sample UA82-68-320 were both collected from the same stratigraphic context in N90/E99. These samples were combined and produced a date of 4580 ± 780 years: 2630 B.C. (BETA-5362). Unfortunately this sample may have been too small to provide an accurate date for the paleosol and the lower cultural component.

Evaluation:

The topographic position of TLM 128 on a prominent ridge provides an excellent overlook of the area extending from the uplands down to the Jay Creek valley rim in the vicinity of a mineral lick. During reconnaissance survey the field crew observed both Dall sheep and caribou in this area. Artifacts, consisting primarily of waste flakes, recovered during systematic testing suggest that this site functioned as a hunting overlook where tool manufacture occurred.

Results of systematic testing were able to define two components. The vertical distribution of artifacts suggests that this site was occupied some time after the deposition of the Devil tephra (ca. 1800 B.P.) and prior to the deposition of the Oshetna tephra (ca. 3200-4700 B.P.). The majority of the artifactual material was found in association with the lower component stratigraphically positioned on a paleosol 23 cm to 49 cm below the Oshetna tephra. A radiometric determination on a charcoal sample collected from the paleosol tentatively dates this component to 4580 ± 780 years: 2630 B.C. (BETA-5362) although the accuracy of this date may be questionable due to the small sample size.

Unfortunately no diagnostic tools were recovered during systematic testing although the proximal end of an obsidian microblade was collected during initial site reconnaissance. The correlation of the microblade fragment to the lower component is problematic. The microblade, found in situ in test pit 1, was stratigraphically positioned 2 cm to 3 cm above the paleosol and represents the only obsidian artifact collected from this site. Microblades are frequently associated with the American paleoarctic tradition and may suggest an age for this component older than that suggested by the radiometric determination of a charcoal sample from the paleosol.

Further systematic testing at TLM 128 may enable more accurate dating of the lower component as there is an excellent possibility of collecting charcoal for radiometric dating. Additional excavation would also define more precisely the stratigraphic placement of the upper cultural component. Further investigation of the ridge north of the location of test squares excavated during systematic testing is required. The collection of diagnostic artifacts in association with the older occupation would be critical in the interpretation of this occupation, and its placement in the cultural chronology of the upper Susitna River. TLM 128 is unique among sites from the project area because it contains a well developed stratigraphic sequence below the Oshetna tephra.

TABLE 3.2

ARTIFACT SUMMARY, TLM 128

<u>Lithic Material</u>	
4139	Green chert flakes
245	Brown translucent chert flakes
125	Black basalt flakes
32	White rhyolite flakes
12	Brown opaque chert flakes
5	Black chert flakes
3	Gray rhyolite flakes
2	Gray chert flakes
1	Dark gray rhyolite flake
1	White chert flake
1	Greenish white rhyolite flake
1	Pinkish gray chert flake
8	Modified flakes, green chert (UA82-68-184, 186, 187, 79, 80, 81, 271, 226)
30	Blade-like flakes, green chert
2	Chunks green chert (UA82-68-189, 246)
1	Modified flake, brown translucent chert (UA82-68-86)
1	Blade-like flake, brown translucent chert (UA82-68-171)
1	Modified flake, pale brown rhyolite (UA82-68-261)
1	Biface (projectile point) tip, brown translucent chert (UA82-68-85)
1	Biface fragment, black basalt (UA82-68-222)
1	Bifacially worked gray chert tool fragment (UA82-68-321)
<hr/>	
Total: 4613	
<u>Faunal Material</u>	
12	Bone fragments

TABLE 3.3

FAUNAL MATERIAL, TLM 128

Soil Unit	Description
	N90/E99
5c, 6, 7	8 Long bone fragments, calcined, small to large mammal
5c, 6, 7	1 Long bone fragment, calcined, large mammal
6	3 Long bone fragments, calcined, small to large mammal

TABLE 3.4

ARTIFACT SUMMARY BY TEST SQUARE AND STRATIGRAPHIC UNIT, TLM 128

Soil Unit	Test Squares		
	N90/E99	N91/E100	N92/E99
1 (surface organic layer)	--	1 White chert flake 1 Black basalt flake	2 White rhyolite flakes
1 and 2 (organic and Devil tephra mixed)	--	3 White rhyolite flakes 1 Greenish-white rhyolite flake	8 White rhyolite flakes
Contact of 1 and 2 (organic and Devil tephra contact)	--	--	1 Gray chert flake
2 (Devil tephra)	--	--	15 White rhyolite flakes 1 Gray rhyolite flake 1 Gray chert flake
1 to 3 (organic to Devil tephra/Watana tephra contact)	--	1 White rhyolite flake 1 Black basalt flake	2 White rhyolite flakes 2 Gray rhyolite flakes 1 Basalt flake

TABLE 3.4 (Continued)

Soil Unit	Test Squares		
	N90/E99	N91/E100	N92/E99
Contact of 2 and 3 (Devil tephra and Watana tephra contact)	--	--	1 White rhyolite flake
Contact of 3 and 4 (Watana tephra and Oshetna tephra contact)	1 Black basalt flake Radiocarbon sample	1 Black basalt flake 1 Dark gray rhyolite flake Radiocarbon sample	Radiocarbon sample
4 (Oshetna tephra)	1 Green chert flake	--	--
5c above 6 (mottled silt above paleosol)	201 Green chert flakes 19 Brown translucent flakes 15 Black basalt flakes	5 Green chert flakes 1 Black basalt flake	--

TABLE 3.4 (Continued)

Soil Unit	Test Squares		
	N90/E99	N91/E100	N92/E99
1 Black chert flake			
1 Brown translucent chert biface (projectile point?) tip (UA82-68-85)			
1 Green chert blade-like flake with bifacial retouch on three margins (UA82-68-226)			
1 Brown translucent chert flake with marginal retouch (UA82-68-86)			
2 Green chert bladelike flakes (UA82-68-88, UA82-68-228)			
5c and possibly 6 (mottled silt above paleosol and possibly paleosol)	10 Green chert flakes 1 Brown translucent chert flake	--	--

TABLE 3.4 (Continued)

Soil Unit	Test Squares		
	N90/E99	N91/E100	N92/E99
5c and 6 (mottled silt and paleosol)	361 Green chert flakes 5 Brown translucent flakes 1 Black chert flake 1 Green chert flake with possible edge wear (UA82-68-184)	--	--
6 (paleosol)	684 Green chert flakes 15 Black basalt flakes 12 Brown translucent chert flakes 1 Brown chert flake with cortex 1 Black basalt biface fragment (UA82-68-222)	1 Black basalt flake 4 Radiocarbon samples	Radiocarbon sample

TABLE 3.4 (Continued)

Soil Unit	Test Squares		
	N90/E99	N91/E100	N92/E99
6 (paleosol continued)	1 Pale brown rhyolite flake with unifacial retouch along margin (UA82-68-261) 2 Green chert flakes with bifacial retouch along margin (UA82-68-186, UA82-68-187) 11 Green chert blade-like flakes 1 Green chert flake with modified edge (UA82-68-271) 2 Green chert chunks (UA82-68-189, UA82-68-246) 3 Calcined bone fragments 2 Radiocarbon samples		

TABLE 3.4 (Continued)

Soil Unit	Test Squares		
	N90/E99	N91/E100	N92/E99
5c below	1 Green	--	--
6, possibly	chert flake		
6 (mottled	2 Black		
silt below	basalt		
paleosol,	flakes		
possibly			
paleosol)			
5c, 6, to	2857 Green	--	--
contact	chert flakes		
with 7	203 Brown		
(paleosol	translucent		
to contact	flakes		
with the	85 Black		
drift)	basalt flakes		
	8 Brown opaque		
	chert flakes		
	1 Black chert		
	flake		
	17 Green chert		
	bladeliike flakes		
	(UA82-68-76,		
	(UA82-68-175)		

TABLE 3.4 (Continued)

Soil Unit	Test Squares		
	N90/E99	N91/E100	N92/E99
	2 Green chert flakes with edge wear (UA82-68-79, UA82-68-80)		
	1 Green chert flake with unifacial marginal retouch (UA82-68-81)		
	9 Bone fragments, calcined		
7 (Glacial drift)	1 Pinkish gray chert flake		
	2 Brown translucent chert flakes		
	2 Black chert flakes		

TABLE 3.4 (Continued)

Soil Unit	Test Squares		
	N90/E99	N91/E100	N92/E99
Rodent burrow unit 5c(?) (mottled silt)	1 Green chert blade-like flake with marginal retouch (UA82-68-225) 2 Green chert flakes 2 Brown translucent chert flakes	1 Green chert flake 3 Brown chert flakes	
5b, 5c, or b (silt, mottled silt or paleosol)	15 Green chert flakes 1 Brown translucent chert flake 1 Brown translucent chert blade-like flake (UA82-68-171) 1 Black basalt flake		
No Prove- nience	1 Bifacially worked gray chert tool fragment (UA82-68-321)	1 Green chert flake	

(ii) Systematic Testing TLM 130--Brown Scraper Kame Site

Location: See section 3.5 (a-xi).

Testing: Four 1 m by 1 m test squares were excavated during systematic testing (Figure 3.44). The four test squares were located on the southern portion of a kame where reconnaissance testing was conducted during the 1982 field season. These tests were placed in a checkerboard manner providing a 4 m continuous profile along the east 100 grid line from north 94 to north 98. The placement of these squares was designed to define the cultural component(s) identified during initial reconnaissance, and to obtain additional diagnostic artifacts.

Discussion:

All four of the test squares produced cultural material with three of the squares containing both lithic and faunal material and the fourth square containing lithic material only. Five soil units were identified above the glacial drift including the Devil, Watana, and Oshetna tephra sequence (Figure 3.45, Table 3.5). One or possibly two archeological components are represented at the site.

Site stratigraphy at TLM 130 site is composed of 15 cm to 20 cm of soil/sediments underlain by glacial deposits of sandy till with gravels, pebbles and cobbles (Figure 3.45, Table 3.5). Three tephra units were identified and referred to as the Devil, Watana and Oshetna tephra units. A thin lens of grayish-brown matrix was located within the Watana tephra in between the upper oxidized Watana and the lower yellowish-brown Watana tephra. This lens lacked continuity and was often patchy in appearance. Its stratigraphic position indicates that this site was occupied during the Watana tephra deposition or that there are at least two tephra depositions represented (i.e., upper and lower Watana). Mixed stratigraphy, the undulating appearance of the soil units, and gravels located in all stratigraphic units indicate that cryoturbation has been prevalent on the kame. A thin layer of

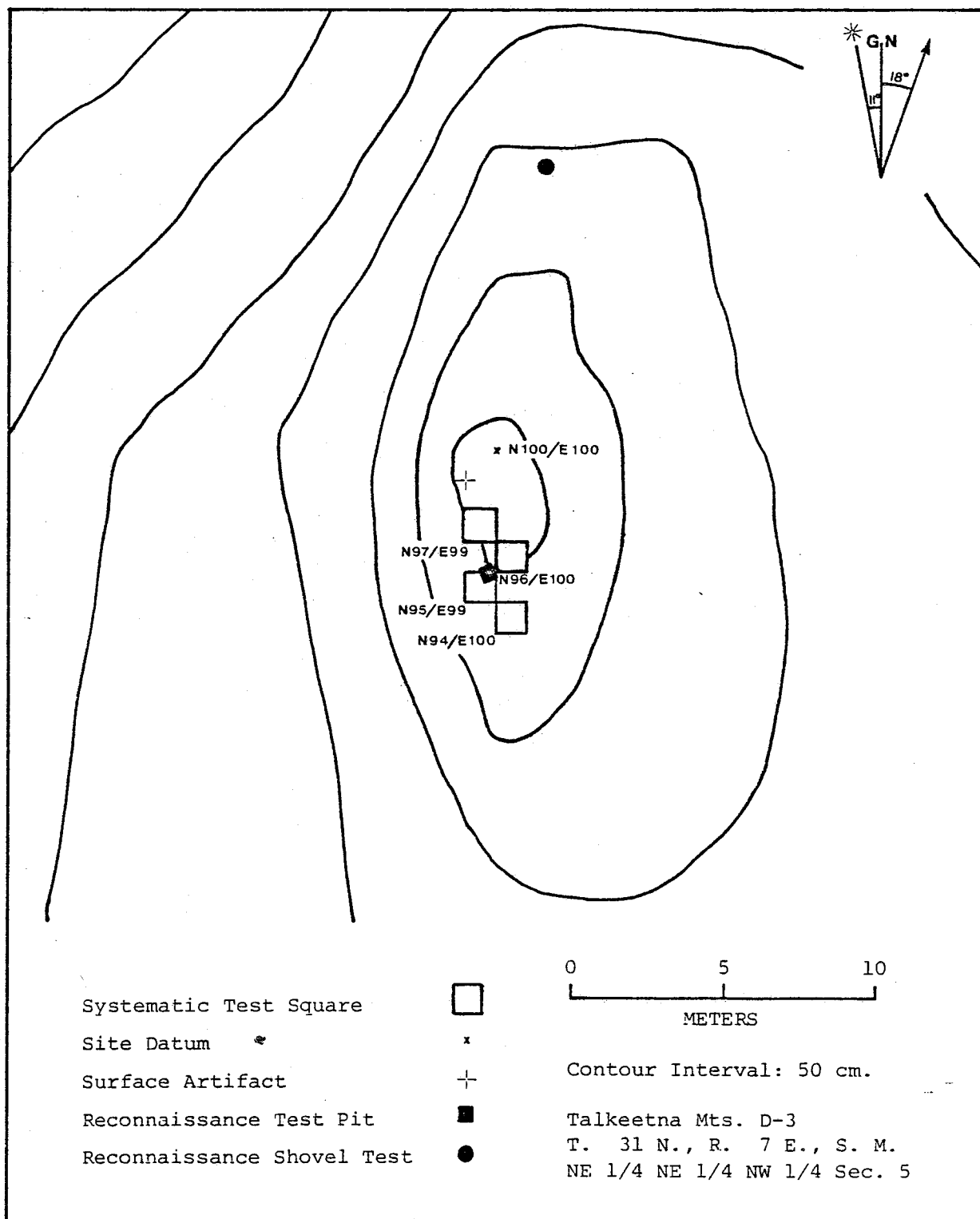


Figure 3.44. Site Map TLM 130.

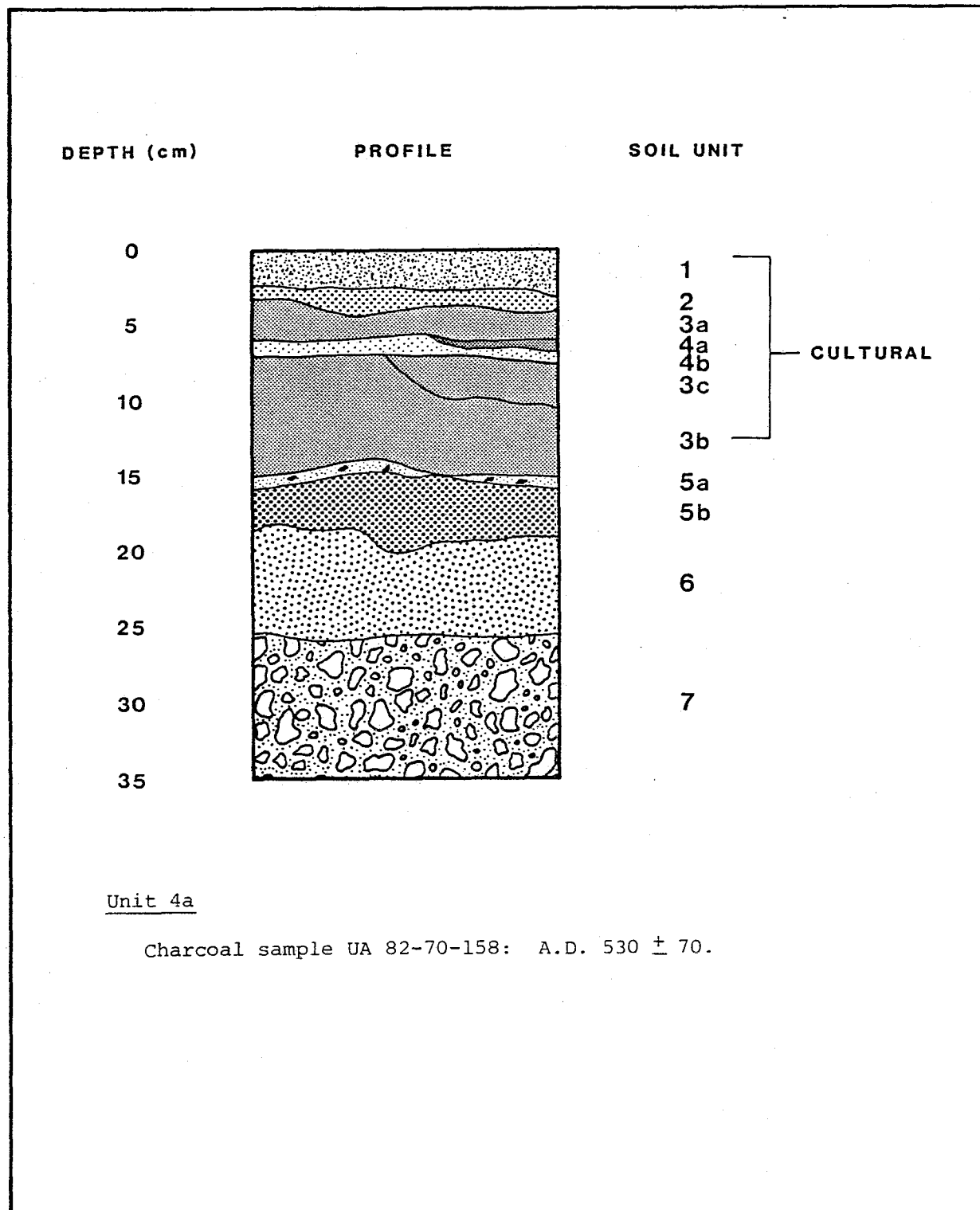


Figure 3.45. Composite Soil Profile TLM 130.

TABLE 3.5

SOIL DESCRIPTIONS FOR COMPOSITE SOIL PROFILE, TLM 130

Soil Unit	Description
1	Organic layer; roots, crowberry and lichen underlain by decomposed plant fragments and finely divided organic material (7.5 yr 3/2 dark brown) continuous unit 1 cm to 4 cm in thickness. Clear to sharp contacts with unit 2. Contains charcoal.
2	A horizon/tephra (Devil); very fine silt sized particles; (10 YR 6/2 light brownish gray) contains small charcoal flecks and a small number of gravels, variable in thickness and continuity; clear to sharp contacts with unit 3.
3a	Tephra (Watana); oxidized zone at upper extent of tephra unit (7.5 YR 4/6 strong brown) variable in color depending on degree of oxidization. Granular structure. Sharp upper boundary. Variation in depth from 1 cm to 3 cm.
3b	Tephra (Watana); very fine particles, unaltered tephra, (10 YR 6/4 light yellowish brown). Unit 3a, the oxidized zone or zone of iron accumulation, grades into 3b. Continuous unit throughout the site although variable in depth. Lower contact with unit 5 is sharp.

TABLE 3.5 (Continued)

Soil Unit	Description
3c	Tephra (Watana); similar in stratigraphic position to unit 3a. Cultural alteration with small charcoal flecks and bone fragments evident. Variable in color with portions that are grayish brown (10 YR 5/3) that grade into areas similar in color to unaltered tephra (10 YR 5/6). Contacts are clear to gradational. Located in units N94/E100, N96/E100 and N95/E99. This unit lacks continuity and does not extend into N97/E99. From 7 cm to 9 cm in thickness.
4	Very fine silt sized particles. Discontinuous lens located within the Watana tephra stratigraphically positioned in between units 3a and 3b. Variable in color possibly due to degree of cultural alteration (10 YR 5/2 grayish brown to 10 YR 6/4 light yellowish-brown). Thickness varies from .5 cm to 1.5 cm. Discontinuous unit which was observed in all test squares during horizontal excavation but only located in 3 of the test square profiles (N95/E99, N96/E100, N97/E99). Contacts with 3a and 3b were clear. May represent a cultural surface.
4a	Dark brown (10 YR 3/3) fine grained matrix located at the upper extent of unit 4 contained numerous bone fragments, in addition to charcoal, and possibly organic material. Only located in one test square (N95/E99).

TABLE 3.5 (Continued)

Soil Unit	Description
5a	Thin lens (less than 1 cm) of dark grayish-brown (10 YR 3/2) matrix which contains charcoal. Defines the upper extent of unit 5b which has sharp contacts with the overlying strata (unit 3). Located in all four test squares but lacks continuity.
5b	Tephra (Oshetna); gray in color (10 YR 5/1). Clear contacts at both upper and lower extents. Unit is discontinuous with an undulating appearance. Tephra has a granular structure and contains a small number of gravels. Varies in depth from 1.5 cm to 3 cm.
6	Silty sandy matrix with coarse sand particles and gravels. Variability in color depending on degree of oxidization (10 YR 5/8 yellowish-brown to 10 YR 4/6 dark yellowish-brown). Clear to sharp contact at upper boundary. Glacial drift.
7	Medium to coarse sand with gravels, pebbles and cobbles. Unconsolidated and dark grayish-brown in color (10 YR 4/2). This unit determined limit of excavation.

lichen and organic material at the upper extent may indicate that vegetation was not present to stabilize the surface. Surface frost features were evident along the kame edges with an erosional feature bordering the western portion of N97/E99.

Artifactual material was recorded from the upper stratigraphic units of the four test squares. These stratigraphic units include the surface organic layer, Devil tephra, Watana tephra and a lens of matrix within the Watana tephra. Material found in association with the Oshetna tephra appears to be the result of frost activity. Cryoturbation has probably mixed artifactual material through several stratigraphic levels, as was indicated by the apparent lack of concentration in the distribution of lithic artifacts and material types, flakes upended relative to stratigraphic contacts, and undulating stratigraphy. Although there is no clear separation, the vertical distribution of faunal material is lower than that of lithic material and may indicate that there are two components at the site.

The Upper Component at the site is associated with the upper stratigraphic levels including a surface organic unit (unit 1) and an underlying lithologic unit (Devil tephra unit 2) to the contact with the middle Watana tephra (unit 3a). Of a total of 143 flakes recovered from this site, 96 were in association with these stratigraphic units. In addition, 27 small bone fragments were recovered from the same stratigraphic context. This quantity of bone is minimal when compared to the lower units, and their provenience may be the result of vertical displacement. The lithic material includes seven different material types. The majority of the lithics are concentrated in two centrally positioned test squares, N95/E99 and N96/E100. While evidence for the Upper Component is based primarily on the quantity of lithics rather than the distribution of different material types, the separation appears valid when contrasted to the distribution of faunal remains at the site.

Artifactual material, including numerous calcined bone fragments and lithic debitage, was located throughout the middle (Watana) tephra to the contact with the lower (Oshetna) tephra in three of the four test

squares. Of the 1187 bone fragments recovered from this site, 1082 were in association with this stratigraphic unit. The spatial distribution of the faunal material indicates that this is a localized phenomena. The majority of bone fragments were recovered from N95/E99, although fragments were also recovered from N96/E100 and N94/E100. The horizontal distribution of bone fragments in N96/E100 defines a northern edge to this concentration of bone fragments at TLM 130, with almost all of the faunal material recovered from the southwest and southeast quadrants. In addition, bone from N94/E100 consisted of only 76 small fragments, with 73 of these fragments recovered from a small area in the northeast quadrant. This unit then defines a southern edge to the concentration, limiting the spatial extent of the bone concentration to an area of 2 m to 3 m in diameter. Of particular interest was a thin discontinuous lens, 1 cm or less in thickness, of grayish-brown matrix within the Watana tephra. This lens is stratigraphically positioned beneath the oxidized zone of the Watana tephra 1 cm to 3 cm below the Devil and Watana tephra contact. It was recognized in all four of the test squares, and was associated with faunal remains and lithics in three of the test squares. In N95/E99 dark stained organic matrix, associated with this lens, contained numerous bone fragments and charcoal. In both N94/E100 and N96/E100, bone was found on the upper contact of this unit with larger (ca. 5 cm to 7 cm) long bone fragments resting on the surface in N96/E100. While artifactual material was found both above and below this lens and horizontally beyond the extent of it, the lens appears to be part of an occupational surface. In portions of N94/E100, N95/E99 and N96/E100, the Watana tephra was altered and contained charcoal flecks with indistinct lenses of grayish-brown matrix, correlating stratigraphically with the grayish-brown unit.

Review of the collection of artifacts recovered from this site (summarized in Table 3.8) indicates that the stratigraphic position(s) of the cultural component(s) remains problematic. The lithic artifactual material occurs in highest frequency in upper stratigraphic units, but also occurs in lower stratigraphic units. There is no distinct division between lithic material types in the cultural strata (Figure 3.45). The

grayish-brown lens associated with a dense concentration of bone fragments clearly indicates site use during the interval between the deposition of the upper and lower Watana tephra. If an additional component is represented, the displacement of lithic material may be too great to define its original stratigraphic position or its correlation to the faunal material.

One radiocarbon determination on charcoal is available from the site. Sample UA82-83-64, collected from a dark organic matrix associated with the grayish brown lens, produced a date of 1420 ± 70 years: A.D. 530 (Beta-5363). The stratigraphic position of the sample dates the cultural component associated with the faunal material. Also, as the sample is from a stratigraphic position between the upper and lower Watana tephra, it should date the time interval between the deposition of these tephra. Other radiometric dates from the project area suggest that the upper Watana tephra was deposited prior to 1800 years B.P. while the date obtained from the TLM 130 sample suggests that the upper Watana tephra was deposited after 1400 years B.P. When considering the amount of cryoturbation observed at the site it is possible that the radiocarbon sample was contaminated and therefore does not provide a reliable date.

Lithic material, which was collected during both reconnaissance and systematic testing, represents at least seven different material types. During reconnaissance testing an endscraper (UA82-70-11; Figure 3.48, d) of yellowish-brown chert was found in situ in test pit 1 in association with the Watana tephra. During systematic testing 26 flakes of the same material as the scraper were located. Unfortunately, as with the other lithic material, these flakes came from a number of different stratigraphic levels. One of these flakes, located at the Devil-Watana tephra contact, exhibited unifacial retouch and may be a tool fragment (UA82-70-171). A possible burin spall fragment (UA82-70-210) of a gray chert was recovered from within the Watana tephra unit. The remaining lithic material included 143 flakes with no apparent retouch or modification. Material types and the number of flakes associated with each type are summarized on Table 3.6.

Faunal material from the site consisted of 1195 bone fragments, the majority of which were calcined, and ten tooth fragments. Most of the faunal material can be described as small unidentifiable fragments, but tooth fragments, teeth, and two calcined metapodial fragments were identified as caribou or possible caribou (Rangifer tarandus). The majority of the faunal material, including all identifiable specimens, is concentrated in the Watana tephra and the associated grayish-brown matrix. Only 3 bone fragments were found in the Devil tephra, and only 59 were found at the upper Watana tephra contact.

Evaluation:

The areal extent of the kame upon which the site is situated and the spatial extent and nature of the artifact assemblage indicate that TLM 130 probably functioned as a temporary campsite where tool manufacturing occurred. While a multicomponent site may be represented, systematic testing was only able to accurately define one component. Failure to clearly document either the presence or absence of an additional component may be attributed to cryoturbation and the subsequent distribution of lithic material types, with specimens intruding into a number of different stratigraphic layers.

The component which was defined at TLM 130 is situated stratigraphically within the Watana tephra. Numerous calcined bone fragments (unidentifiable mammal bone fragments and caribou), waste flakes, a yellow-brown chert endscraper, and a probable burin spall were located within the Watana tephra to the contact with the Oshetna tephra. The majority of this material was found in a grayish-brown lens which is stratigraphically positioned between the upper oxidized Watana tephra and the lower unaltered Watana tephra.

A radiocarbon determination of 1420 ± 70 years: A.D. 530 (Beta-5363) was obtained from a charcoal sample collected from the grayish-brown lens in the Watana tephra. As the sample is in association with artifactual material it should date the cultural component within the Watana tephra, and possibly the interval between the deposition of the upper

and lower Watana tephra. However, the date does not conform to the presently accepted date for the upper Watana/lower Watana contact (2700 B.P.). It is possible that the radiocarbon sample was contaminated and therefore does not provide a reliable date.

If an additional component is represented at this site it postdates the upper Watana/lower Watana contact. This component would be distinguished primarily by the fact that the majority of lithic artifacts were recovered throughout the stratigraphic levels above the contact.

While systematic testing has determined that the site area is limited, further excavation of the remaining area may provide data pertinent to the prehistory of the area. Specifically the location of diagnostic material could resolve questions regarding the Choris/Norton Tradition (ca. A.D. 500 to ca. 1500 B.C.). Further excavation may accurately determine the number of components at this site in addition to resolving questions regarding the date of the cultural component.

TABLE 3.6

ARTIFACT SUMMARY, TLM 130

<u>Lithic Material</u>	
50	Basalt flakes
39	Gray rhyolite flakes
26	Yellowish-brown chert flakes (UA82-70-171) Unifacially worked, tool fragment?
15	Dark reddish-brown chert flakes
6	Gray chert flakes (UA82-70-210) Probable burin spall
4	Black chert flakes
3	Clear obsidian flakes
<u>1</u>	Chalcedony flake
Total:	144
 <u>Faunal Material</u>	
1195	Bone fragments
10	Tooth fragments

TABLE 3.7

FAUNAL MATERIAL, TLM 130

Soil Unit	Description
	N96/E100
3a	<p>1 Tooth fragment, incisor, large mammal, possible caribou (<u>Rangifer tarandus</u>)</p> <p>3 Tooth fragments, molar, large mammal, possible caribou (<u>Rangifer tarandus</u>)</p> <p>108 Long bone fragments, calcined, medium-large mammal</p> <p>3 Long bone fragments, calcined, small-large mammal</p>
3b	12 Long bone fragments, calcined, medium-large mammal
3a/3c contact	6 Tooth fragments, molars, large mammal, caribou (<u>Rangifer tarandus</u>)
3c	70 Long bone fragments, calcined, medium-large mammal
3a/4 contact	1 Long bone fragment, calcined, small-large mammal
3c/4 contact	<p>27 Long bone fragments, calcined, medium-large mammal</p> <p>1 Long bone fragment, calcined, large mammal</p>

TABLE 3.7 (Continued)

Soil Unit	Description
4	2 Long bone fragments, calcined, medium-large mammal
	N94/E100
2/3 contact	34 Long bone fragments, calcined, small-large mammal
	1 Long bone fragment, calcined medium-large mammal
3a	1 Long bone fragment, calcined, medium-large mammal
3c	72 Long bone fragments, calcined, small-large mammal
4	2 Long bone fragments, calcined, medium-large mammal
3,5,6,7	1 Long bone fragment, calcined, medium-large mammal
	N95/E99
2	3 Long bone fragments, calcined, medium-large mammal

TABLE 3.7 (Continued)

Soil Unit	Description
1/3 contact	3 Long bone fragments, calcined, medium-large mammal
2/3 contact	21 Long bone fragments, calcined, medium-large mammal
3	1 Metatarsal/metacarpal fragment, calcined, large mammal, possible caribou (<u>Rangifer tarandus</u>) 493 Long bone fragments, calcined, medium-large mammal
3/4a contact	1 Metatarsal fragment, distal portion, calcined, large mammal, caribou (<u>Rangifer tarandus</u>)
4a	301 Long bone fragments, calcined, medium-large mammal
5	33 Long bone fragments, calcined, medium-large mammal

TABLE 3.8

ARTIFACT SUMMARY BY TEST SQUARE AND SOIL UNIT, TLM 130

Soil Unit	Test Squares			
	N94/E100	N95/E99	N96/E100	N97/E99
1 (surface organic layer)	1 Flake, black chert	5 Flakes, basalt 4 Flakes, dark reddish- brown chert 3 Flakes, yellowish-brown chert 1 Flake, gray rhyolite	2 Flakes, Gray rhyolite 1 Flake, clear obsidian	1 Flake, basalt
Contact of 1 and 2 (organic and Devil tephra contact)	1 Flake, rhyolite	3 Bone fragments (organic-Watana tephra contact)	4 Flakes, basalt 2 Flakes reddish-brown chert 2 Flakes, gray rhyolite 1 Flake, clear obsidian 1 Flake, gray chert	2 Flakes, basalt

TABLE 3.8 (Continued)

Soil Unit	Test Squares			
	N94/E100	N95/E99	N96/E100	N97/E99
2 (Devil tephra)	--	6 Flakes, basalt 6 Flakes, rhyolite 4 Flakes, yellowish-brown chert 1 Flake, reddish- brown chert 1 Flake unknown material 3 Bone fragments	2 Flakes, basalt 1 Flake, rhyolite 1 Flake, yellowish- brown chert	1 Flake, rhyolite 1 Flake basalt
Contact of 2 and 3 (Devil and Watana tephra)	5 Flakes, rhyolite 2 Flakes, yellowish- brown chert 1 Flake, reddish-brown chert	9 Flakes, rhyolite 5 Flakes, yellowish- brown chert 4 Flakes, reddish-brown chert	4 Flakes, gray rhyolite 2 Flakes, yellowish- brown chert 1 Flake, basalt	2 Flakes, gray rhyolite 1 Flake, yellowish- brown chert

TABLE 3.8 (Continued)

Soil Unit	Test Squares			
	N94/E100	N95/E99	N96/E100	N97/E99
Contact of 2 and 3 (Devil-Watana tephra contact)		4 Flakes, basalt 1 Tool fragment? uniaxially worked, yellowish-brown chert (UA82-70-171) 21 Bone fragments		
3 (Watana tephra) includes: 3A: Oxidized Watana 3B: Unaltered Watana 3C: Watana tephra with charcoal flecks	--	15 Flakes, basalt 4 Flakes, rhyolite 4 Flakes, yellowish- brown chert 1 Flake, black chert 1 Flake, gray chert 1 Flake, chalcedony 1 Possible burin spall fragment, gray chert (UA82-70-210) 482 Bone fragments	4 Flakes, basalt 2 Flakes, dark reddish- brown chert 1 Flake, yellowish-brown chert 1 Flake, gray chert 1 Flake, black chert 184 Bone fragments 9 Tooth fragments	

TABLE 3.8 (Continued)

Soil Unit	Test Squares			
	N94/E100	N95/E99	N96/E100	N97/E99
4 (very thin and Discontinuous grayish-brown lens within the Watana tephra)	1 Flake, basalt 73 Bone fragments	4 Flakes, basalt 2 Flakes, yellowish-brown chert 302 Bone fragments 1 Caribou metapodial Radiocarbon sample (Unit 4a)	2 Flakes, gray chert 1 Flake, black chert 1 Flake, dark reddish-brown chert 31 Bone fragments Radiocarbon sample (Units 3a, 3c, and 4)	--
5 (Oshetna tephra)	--	11 Bone fragments	--	--
Mixed 3, 5, 6 (Watana tephra, Oshetna tephra, and Glacial drift)	3 Bone fragments	4 Bone fragments 22 Bone fragments from organic matrix with Oshetna tephra -cryoturbation-	--	--

(iii) Systematic Testing TLM 143--Mineral Lick Site

Location: See section 3.5 (a-xxiii).

Testing: Five 1 m by 1 m test squares were excavated at the site during systematic testing. Three of the test squares were located on the southern portion of a kame in the vicinity of test pit 1, which was excavated during reconnaissance testing. The three test squares were placed in a checkerboard pattern providing a 3 m continuous profile along the E100 grid line from N93 to N96, with one of the test squares superimposed over reconnaissance test pit 1. The placement of the test squares was designed to further define the cultural component encountered during initial reconnaissance. Two additional test squares were placed off of the kame to define site extent (Figure 3.46).

Discussion:

During reconnaissance testing a scatter of lithic material was encountered in an area ca. 70 m by 20 m which borders the Jay Creek canyon rim. Surface artifacts were located in areas of soil exposures including game trails, rodent burrows, frost features, and areas of active downslope movement. A single test pit placed on a kame 30 m north of the canyon rim revealed a layer of cultural material, with ca. 1300 flakes, ca. 800 bone fragments, and two in situ projectile points (UA82-83-1, 2; Figure 3.51, a, b).

While all five of the test squares excavated during systematic testing contained artifactual material the majority of material was recovered from the three test squares located on the kame feature. A total of ca. 33,350 lithics, ca. 31,500 bone fragments, 38 fire cracked rock/hearth rocks, and 92 tools and/or tool fragments were collected. The collection of artifacts is summarized on Table 3.10, distribution by stratigraphic unit is summarized on Table 3.13, and distribution by test square and stratigraphic unit is summarized on Table 3.14.

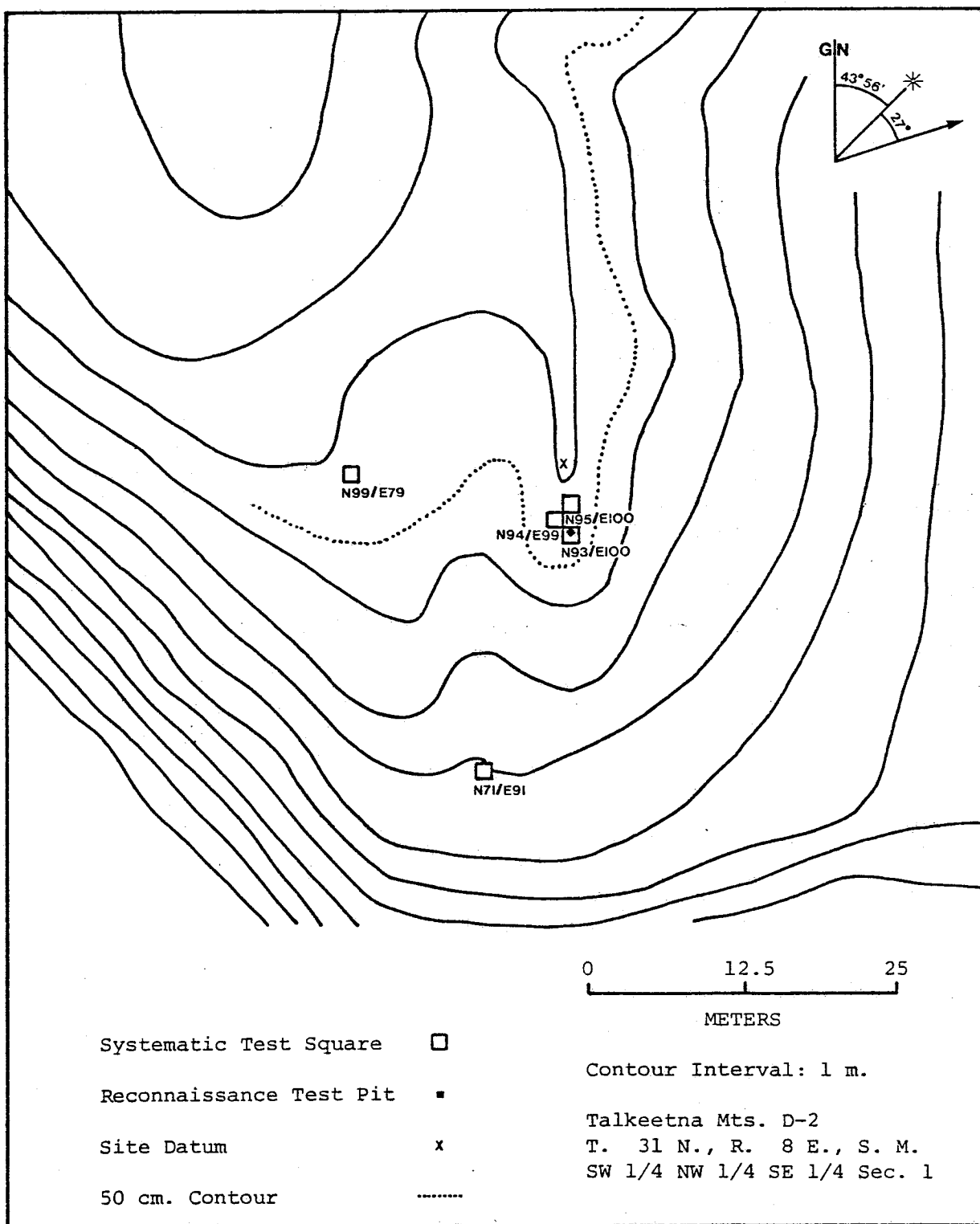


Figure 3.46. Site Map TLM 143.

Six main material types have been recognized in the lithic tools and debitage collected at the site, including basalt, rhyolite, chert, obsidian, chalcedony, and quartz. The classification is designed to reflect lithic traits of light transmission and grain size, with further subdivisions based on Munsell Soil Color Chart colors. While the terminology may contain petrological inaccuracies (for example, in the use of the term "rhyolite" to designate a probable sedimentary material) it is sufficient to establish that a number of lithic sources are represented in the site collection.

Nine soil/sediment units were identified at TLM 143 (Figure 3.47, Table 3.9). No individual test square contained all nine of the recognized units although five of the units were present in all of the test squares. Variability in stratigraphy between the test squares located on the kame compared to the test squares located off of the kame was observed. The stratigraphy of the three test squares located on the kame was generally uniform with less post-depositional disturbance than observed in the two test squares located off the kame, where the processes of downslope movement and reworking of stratigraphic units were evident, particularly in N71/E91.

Three major kinds of stratigraphic units can be identified at the site: natural depositional units, the contacts between them, and a cultural unit. In general, the stratigraphy consists of glacial drift deposits (unit 9) overlain by fine silty eolian sediments (unit 7), which are overlain by silty sediments that have been interpreted as being volcanic in origin. Two and possibly three tephra units were recognized, with the lowermost Oshetna tephra (unit 6b) only defined in one of the test squares (N71/E91), where it showed evidence of reworking. The middle Watana tephra (unit 4) and the uppermost Devil tephra (unit 3) form a continuous unit across the site. The entire stratigraphic sequence is overlain by surface organic material (unit 1).

In addition to the above mentioned units a number of localized units were also recorded. At the contact between the surface organic mat and the Devil tephra a thin lens of very dark brown finely sorted organic

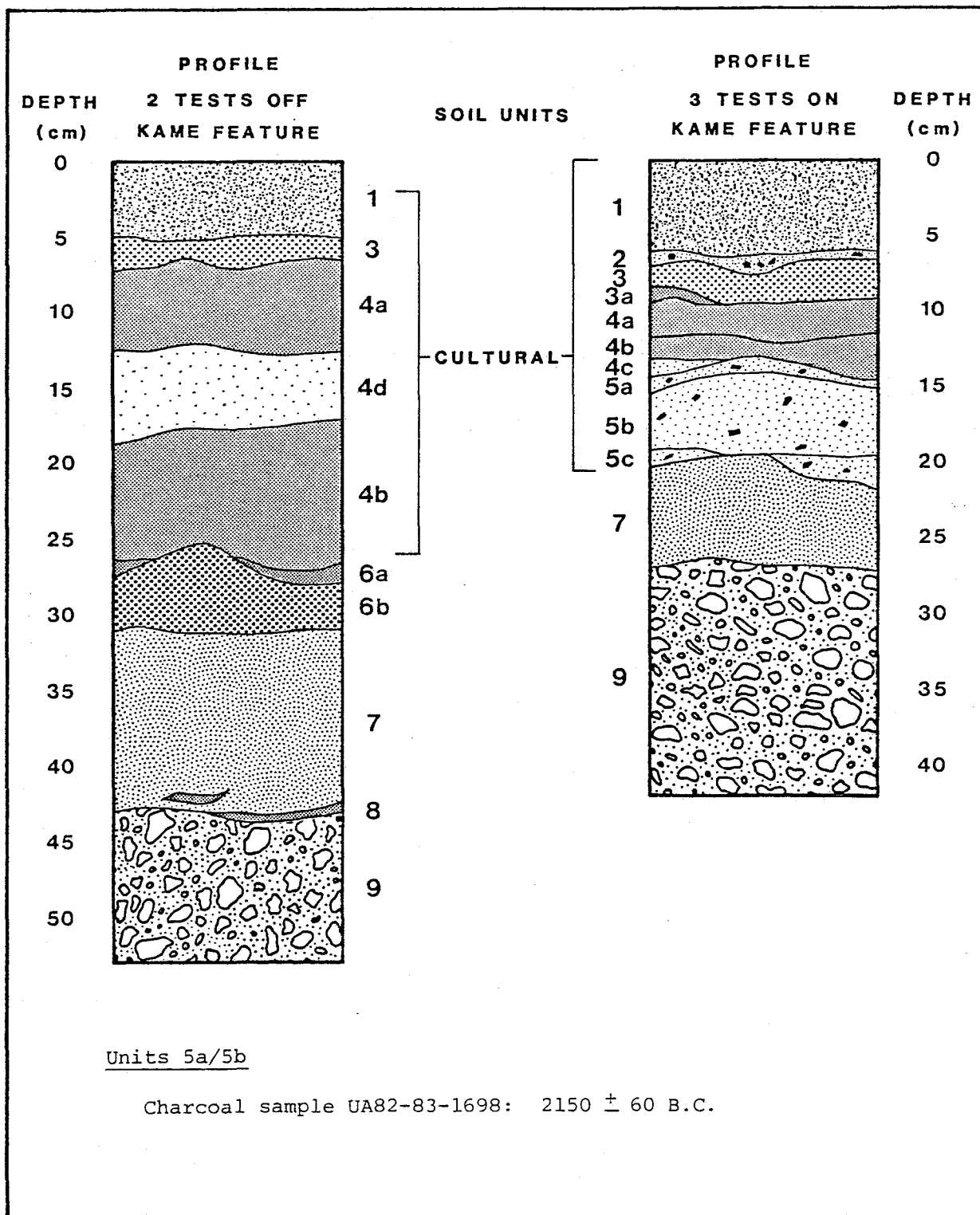


Figure 3.47. Composite Soil Profile TLM 143.

TABLE 3.9

SOIL DESCRIPTIONS FOR COMPOSITE SOIL PROFILE, TLM 143

Soil Unit	Description
1	Organic layer; lichen, crowberry, and sphagnum moss underlain by poorly consolidated soil with roots and finely divided organic material (5 YR 3/2 dark reddish brown). Thickness of organic unit is partially dependent on the type of surface organics, i.e., up to 16 cm in areas where surface organic material consists of sphagnum moss; to 2-6 cm in depth where lichen cover is on the surface.
2	Very fine sandy matrix with finely sorted organic material and small charcoal pieces (5 YR 2.5/1 black). Thin discontinuous lens between the surface organics (unit 1) and the Devil tephra (unit 3). Leaching of carbon and organic material into the underlying tephra was evident. This unit was not observed in the two test squares located off the kame feature.
3	A horizon/tephra (Devil); very fine silt sized particles consolidated by roots and rootlets. Continuous unit across site varying in thickness from 1 cm to 5 cm. Variation in color dependent on degree of leaching from overlying units (10 YR 5/1 gray to 5 YR 6/2 pinkish gray). Sharp contact with underlying unit 4. Extensive reworking of this unit was evident in N71/E91. A small amount of charcoal was observed within this unit.

TABLE 3.9 (Continued)

Soil Unit	Description
3a	Fine grained organic matrix with small charcoal pieces (7.5 YR 4/2 dark brown); very thin, approximately 1 cm thick, and discontinuous lens stratigraphically positioned between units 3 and 4. This unit was only observed in the north wall profile of N94/E99.
4a	B horizon/tephra (Watana); oxidized zone at upper extent of tephra unit (7.5 YR 4/6 to 7.5 YR 5/8 strong brown). Fine to medium grained silt. Medium to coarse sand sized granule concretions in the most highly oxidized zones. A generally continuous unit 1-2 cm thick in the test squares on the kame (N93/E100, N94/E99, N95/E100) and 1-10 cm thick in the test squares off the kame (N71/E91, N99/E79). Sharp contact with the overlying strata (unit 3).
4b	Tephra (Watana); very fine silt sized particles (10 YR 5/6 yellowish brown). Gradational and undulating contact with oxidized tephra at the upper extent of this tephra unit. Identified in all five of the test squares although reworking of this soil was evident in N71/E91 and in N99/E79. Thickness of the unit in these squares varied from 1-11 cm off the kame feature to 1-6 cm in the three contiguous test squares on the kame feature. While some mixing with other units was evident in the test squares located on the kame this unit had a generally continuous and horizontal appearance.

TABLE 3.9 (Continued)

Soil Unit	Description
4c	Very fine silty matrix similar in texture and stratigraphic position to unit 4b although variable in color (7.5 YR 5/8 strong brown). This unit was only identified in N95/E100 stratigraphically positioned above 5a, above a concentration of charcoal. Possibly the result of thermal oxidization of unit 4b.
4a	Fine silty brown matrix (10 YR 3/3) with a mixed and mottled appearance. This unit was only identified in N71/E91 which had considerable evidence of re-working of the soil units. Discontinuous unit stratigraphically positioned above unit 4b, and varying in thickness from 2-21 cm.
5a	Fine silt sized particles (2.5 YR 4/2 dark grayish brown to 10 YR 4/3 brown/dark brown). Thin, 1-2 cm, continuous lens defined in the three test squares located on a low kame. Sharp contact with the overlying unit (unit 4). Defined on the basis of color, texture, and the quantity of artifactual material. Contains charcoal. This stratigraphic unit defines the upper extent of Feature 2.

TABLE 3.9 (Continued)

Soil Unit	Description
5b	Oxidized silt similar in texture to unit 5a (7.5 YR 4/6 to 7.5 YR 5/8 strong brown). The unit is continuous in the three test squares situated on the kame and is associated with numerous artifacts, fire cracked rock, and carbon. This unit varies from 2 cm to 6 cm in thickness and is associated with Feature 2, a cultural component, and Feature 3, a hearth feature within Feature 2. Contacts are variable, i.e., sharp contact between unit 5b and unit 7, and diffuse contact between unit 5b and unit 5d, and unit 5a and unit 5b.
5c	Silty matrix which underlies unit 5b and is associated with Feature 3 (5 YR 4/4 reddish brown to 10 YR 3/3 dark brown). Contains numerous bone fragments, carbonized matrix and fire cracked rock. Indistinctive unit observed in the east and south walls of N95/E100 and the north wall of N93/E100. The unit was observed during excavation of N94/E99 although not defined in the test square profiles. Sharp contact with underlying units 7 and 9.
6a	Thin lens of organic matrix and charcoal (10 YR 3/1 very dark gray). Varies in thickness from 1 to 3 cm and occurs at the upper contact of unit 6b. Only defined in one of the test squares (N71/E91).

TABLE 3.9 (Continued)

Soil Unit	Description
6b	Tephra (Oshetna); very fine silt sized particles (10 YR 4/2 dark grayish brown). Only defined in N71/E91. This unit had an undulating and irregular appearance which may be the result of reworking of the soil and sediment units.
7	Silt sized particles with some sand (2.5 Y 4/4 olive brown). Continuous unit across site area. Contacts vary from sharp to gradational with sharp contacts evident when unit 5b or 5c are at its upper extent. Thickness varied from 1 to 10 cm in test squares on the kame and 4 to 20 cm in test squares off the kame. Sediment is possibly eolian in origin.
8	Fine silty organic matrix with charcoal (10 YR 3/1 very dark gray to 10 YR 2/1 black). This unit lacks continuity and where it is present it is both thin (1 cm or less) and discontinuous. Possibly a buried soil. Located in N99/E79 and N71/E91.
9	Coarse sand with gravels, cobbles and small boulders. Maximum boulder size 35 cm. The majority of cobbles were rounded, 7 to 13 cm in diameter. Frost shattering observed in some rocks but was not extensive. Weathered rock and grus also observed. Excavation into this unit determined limit of excavation for the test squares.

material with charcoal (unit 2) was identified in the test squares on the kame. The unit may be the result of soil processes as indicated by the variation between the O and A horizons. In N71/E91 where the Oshetna tephra was observed, a thin layer of finely divided organic material was present at the upper contact of the tephra (unit 6a). In both N71/E91 and N99/E79 a very thin and discontinuous lens of a fine silty organic matrix with charcoal (unit 8) was recorded in the lower extent of the silty sediments and/or on the contact with the glacial drift. This lens may represent a paleosol.

Unit 5, a cultural unit, was identified in the three test squares located on the kame feature. The unit was stratigraphically positioned immediately beneath the Watana tephra and composed of fine silty sediments which contained an abundance of artifactual material throughout its excavated extent. The silt within the unit was often intensely oxidized and contained carbonized matrix and charcoal. The absence of the Oshetna tephra in the test squares located on the kame feature may indicate that the Feature 2 occupation occurred shortly after the deposition of that tephra with the tephra itself becoming incorporated into the cultural unit. Radiocarbon analysis on charcoal from this unit produced a date of 4100 ± 60 years: 2150 B.C. (Beta 5364).

Cultural material at TLM 143 was associated with five of the nine soil/sediment units (Figure 3.47) and the site appears to be multicomponent with at least two and possibly three components represented. The exact stratigraphic positions of the uppermost and middle components are difficult to determine at this time as artifacts were located in the organic horizon (units 1, 2), the Devil tephra (unit 3), the Upper Watana tephra (unit 4a), and at the contacts between them. The lower component (unit 5) was stratigraphically well defined, separated from those above it by the lower Watana tephra which contained very little artifactual material except in the central portion of N95/E100 where the lower Watana tephra was absent.

Upper Component:

The uppermost cultural component can be correlated to the Devil tephra (unit 3). Lithic artifacts were recovered in association with the Organic-Devil tephra contact and within the Devil tephra in all five of the test squares (Table 3.14). A total of 134 lithics were recovered from the Organic-Devil tephra contact and 174 lithics from within the Devil tephra. Lithic artifacts consisted primarily of small waste flakes, the majority of which were basalt and rhyolite, although chert and obsidian flakes were also recovered. The only tool associated with the Devil tephra was a bifacially retouched basalt flake (UA82-83-33).

Middle Component:

The distribution of artifactual material at the upper contact of the Upper Watana tephra suggests that a middle component is represented in all five test squares at the site. While sterile strata do not separate the artifactual material from the middle and upper components, a number of factors indicate that they are distinct. These include the increase in quantity of artifactual material at the Watana tephra contact, the conformable nature of the stratigraphic units on the kame feature, indicating minimal post-depositional disturbance, and consequently, minimal movement of artifacts from their original stratigraphic positions, and the presence of Feature-1 which was defined in N95/E100.

The Feature 1 designation was assigned to a possible occupation surface associated with the Upper Watana tephra. Numerous lithic artifacts and small pieces of charcoal were observed at the contact between the Devil tephra and Upper Watana tephra (unit 3, 4a) and within the Upper Watana. Definition of occupations was complex in this area of the site and the Feature 1 designation was used in N95/E100 as a field procedure to assist in defining components at the site. Feature 1 was a continuous lens across the horizontal extent of the test square. In the northern and southern portion of the square, Feature 1 was separated from the underlying component, Feature 2, by the lower Watana tephra (unit 4b). In the central portion of the test square this separation was not

evident and Feature 1 articulated with Feature 2. The lower boundary of Feature 1 was defined by the contact with the lower Watana tephra or, where this stratigraphic unit was not present, with the contact with a grayish brown lens which is the upper extent of Feature 2.

A total of 817 lithics, 150 bone fragments, and 5 tools are associated with the stratigraphic units which define the middle component. Of these, 378 of the lithics, 115 bone fragments, and 3 tools were recorded as part of feature 1 in N95/E100. The lithic material consisted of small waste flakes of basalt, rhyolite, obsidian, and chert. The faunal material included small calcined bone fragments.

Two of the five tools, a retouched basalt flake (UA82-83-90; Figure 3.59, a) and a rhyolite biface (UA82-83-193; Figure 3.55, a) were recovered from the Devil tephra/Watana tephra contact in N99/E79. The remaining three tools included a retouched basalt flake (UA82-83-375), a retouched rhyolite flake (UA82-83-376), and a rhyolite biface fragment (UA82-83-377; Figure 3.52, g). These three tools were located within the upper oxidized Watana in N95/E100 and were recorded as Feature 1.

Lower Component:

The highest density of artifactual material is associated with the lower cultural component, a discrete stratigraphic unit 4 cm to 12 cm thick (Figure 3.47, unit 5), which was defined only in the three test squares located on the kame and includes Feature 2. Feature 2 was a continuous layer which contained numerous tools, lithic debitage, bone fragments, fire cracked rock and charcoal. Feature 3, a hearth feature, was associated with the lower extent of Feature 2.

The lower component is stratigraphically between the Watana tephra (unit 4) and a silty eolian sediment (unit 7). Both the upper and lower boundaries of Feature 2 were distinct during excavation and in the unit profiles. The upper boundary was defined by a grayish-brown matrix which contained an abundance of artifactual material, and the lower boundary was distinguished by its contact with a silty eolian sediment

or glacial drift. In general, the stratigraphy of the lower component includes a thin discontinuous lens of reddish-brown to dark brown matrix (unit 5c) which is correlated with the hearth feature, Feature 3. This unit is overlain by a continuous fine silty matrix, strong brown in color (unit 5b), possibly due to oxidization. A thin continuous lens of grayish-brown matrix (unit 5a) was defined at the upper extent of the component. While three different stratigraphic units were recognized within Feature 2, these units were not defined until the test square profiles were exposed because of the indistinctive nature of the boundaries between these units.

The Feature 2 component was excavated in three arbitrary levels to handle the quantity of artifactual material and to look at the vertical distribution of artifactual material within the component. Collection 1 included material from the upper 2 cm to 4 cm, collection 2 included material from the middle 2 cm to 4 cm, and collection 3 included material from the lower 2 cm to 4 cm of the feature. Photographs were taken and a horizontal plan drawn at the surfaces of each of the three collection units. Three point provenience was recorded for tools, large flakes, and C-14 samples. Fire cracked rocks/hearth rocks were mapped with basal elevations. The remaining material was screened with 1/8-inch screen, bagged, and later sorted. A rodent burrow in N94/E99 was excavated, screened and recorded separately.

Feature 3 was used to define an area of fire cracked rocks and/or hearth rocks at the lower extent of Feature 2. The feature was defined primarily in the eastern half of N94/E99 and the southern portion of N95/E100, but was also defined along the northern edge of N93/E100. The feature designation was applied at the surface of collection 3. The tops of the rocks associated with Feature 3 were initially exposed at the surface of collection 1 but it was not until collection 3 that the area was defined as a feature since the occupation associated with this feature would be associated with the basal elevations of the rocks. A boundary was defined to encompass the large rocks in addition to carbonized matrix (unit 5c?) which contained numerous flakes, tools, and bone fragments. The remainder of collection 3 outside the boundary of

Feature 3 was included in Feature 2. In general, Feature 3 includes the area encompassing the rocks and Feature 2 includes the area outside of the rocks.

The configuration of rocks, highly oxidized matrix, carbonized matrix, and charcoal suggests that Feature 3 represents a hearth feature associated with the initial occupation of TLM 143 and the Feature 2 component. A total of 38 fire cracked rocks/hearth rocks were collected in association with Feature 3. The largest rock measured 52 cm by 19.5 cm by 12 cm. Many of the larger rocks were not cracked but were charred or stained. Numerous small gravel-sized angular rock fragments were also collected and may possibly be rock spalls.

The basal elevation of the larger rocks correlated to the lower boundary of the cultural component. Beneath several of the rocks in this feature was a very thin lens of carbonized matrix with artifactual material including flakes, bone fragments and a projectile point (UA82-83-364; Figure 3.51, f). When the large rocks were removed the silty matrix (unit 7) surrounded the rocks with carbonized matrix in the slightly concave depressions. The estimated dimension of this hearth feature is 2 m in diameter with the three test squares intersecting the northern, western, and southern boundaries.

Artifacts collected as part of Feature 2 and 3, and artifacts associated with the upper and lower boundaries of these features consisted of ca. 24,660 flakes, ca. 31,200 bone fragments, 38 small pieces of red ochre (?), and 81 tools and/or tool fragments. Six major categories of lithic material have been defined with a number of sources represented by each of these categories. See Table 3.13 for a listing of artifacts associated with each of the features, and the contacts between these features.

A variety of tools and diagnostic artifacts were recovered during excavation of Feature 2 and Feature 3. These were representative of several lithic material types and various tool functions. Table 3.11, Tools and Tool Fragments by Stratigraphic Unit, provides a description for each

artifact that showed signs of secondary modification, use modification or manufacture for a specific purpose (i.e., projectile points). The majority of tools consist of flakes with unifacial and/or bifacial marginal retouch. In addition a number of bifaces, scrapers and side-notched projectile points were collected. Other tool types include flake core, burin, tchi thos, and blade-like flakes (photographs of a selection of artifacts may be found in Figures 3.51 through 3.60. Use of the terms: scraper, burin, or tchi-thos, are tentative functional descriptions used here only for the purpose of classification and distinction from other tool categories present at the site.

In N99/E79, which is located ca. 20 m west of the kame feature, 35 flakes, 14 bone fragments, and a rhyolite projectile point tip (UA82-83-273; Figure 3.52, a) were collected from the contact between the Watana tephra (unit 4) and a silty sediment (unit 7) and from within the silty sediment. The stratigraphic position of this artifactual material suggests that it may be correlated with the Feature 2 component.

Faunal remains associated with Feature 2 and 3 consisted of ca. 31,200 bone and teeth fragments, with the majority (ca. 31,150) being calcined medium to large mammal long bone fragments, one of which has cut marks. Thirty-five large mammal molar fragments were found, some of which may be from caribou (Rangifer tarandus). Three calcined medium-large to large mammal phalanx fragments were also found, which may represent caribou (Rangifer tarandus) or Dall sheep (Ovis dalli), as well as a calcined small mammal astragalus. Most of the faunal material was concentrated within unit 5, with only ca. 500 fragments recovered from the upper and lower contacts (Table 3.12).

The occurrence of artifactual material in all five test squares suggests that the site extends over a large area. In N71/E91, located 7 m north of the canyon rim, only 5 flakes were recovered and reworking of the stratigraphic units was evident, indicating that this area of the site was unstable. Surface material recovered on the slope leading into the canyon and in the vicinity of N99/E79 indicates that the canyon rim defines the southern boundary of the site although this area appears to

be characterized by low densities of artifactual material. The limits of the site to grid north, east and west remain unknown as all the test squares contained cultural material. The artifact densities for the upper and middle components did not vary significantly between the three test squares located on the kame feature (N93/E100, N94/E99, N95/E100) and the test square 20 m west of the kame (N99/E79). The only tool associated with the upper component and two of the five tools associated with the middle component were located in N99/E79. The lower component appears to be focused on the kame feature and the quantity of artifacts suggests intensive use of this area of the site during the occupation(s) associated with the lower component.

Twelve C-14 samples were collected for radiocarbon dating. All 12 samples were collected from the three test squares located on the kame feature and represent four stratigraphic units. These include the surface organic layer (unit 1, 2), the organic-Devil tephra contact (unit 1, 3), the cultural horizon (unit 5), and the contact between the cultural horizon and the underlying silt (unit 7). Unfortunately, many of the samples are too small for reliable dating. One of the samples (UA82-83-1698) was submitted for radiocarbon determination and produced a date of 4100 ± 60 years: 2150 B.C. (Beta 5364). The sample was collected from unit 5 and consequently dates the Feature 2 component.

Evaluation:

TLM 143 is located on the edge of Jay Creek canyon directly north and west of the steep canyon walls in the vicinity of a mineral lick. Dall sheep coming from the uplands down to the mineral lick presently pass over the site, as observed by the field crew. Caribou were also frequently observed in the immediate vicinity of the site. The strategic location of the site in conjunction with the content of the artifact assemblage suggests that TLM 143 functioned as a hunting camp, exploiting the fauna attracted by the mineral lick. The high frequency of lithic debitage indicates intensive tool manufacture and modification occurred at the site.

Three cultural components were defined during systematic testing. A radiocarbon determination of a charcoal sample collected from the lower component yielded a date of 4100 ± 60 years: 2150 B.C. (Beta 5364). The upper and middle components can be tentatively dated based on the stratigraphic position of each component relative to the three tephra defined at the site. Although artifactual material from the middle component occurred within the upper Watana tephra, the interval of occupation probably occurred between the Watana and Devil tephra deposition, ca. 2300 B.P. The upper component occurs at the upper extent of, and within, the Devil tephra. Thus, the minimum limiting date of this component is probably not earlier than ca. 2300 B.P.

The majority of artifactual material recovered at TLM 143 was derived from the lower component. This component can be ascribed to the Northern Archaic Tradition (ca. 1500 B.C. - ca. 3000 B.C.) on the basis of stratigraphic position, radiocarbon dating, and diagnostic elements of the artifact assemblage. The lower component is stratigraphically below the Watana tephra and a single radiocarbon determination of 2150 B.C., falls within the temporal range of this cultural tradition. The component contained side notched projectile points, endscrapers, and a variety of bifaces, all of which are characteristic of the Northern Archaic Tradition.

While no structures were located during systematic testing of three 1 m by 1 m squares on the kame, evidence that the site functioned as more than hunting overlook during the occupation(s) associated with the lower component is suggested by the presence of a wide range of tools, i.e., 44 modified flakes, 5 scrapers, 9 bifaces, a flake core, a burin, a tchithos, and 17 projectile points. These tools, in association with more than 24,000 waste flakes, suggest various stages of tool manufacture, repair, and a variety of activities. Large rocks, mammal bone (caribou and probably Dall sheep), lithic detritus, and tools were distributed about a hearth. It is possible that the large rocks, while apparently associated with the hearth, may constitute the remains of a larger feature or structure which at present cannot be defined based on the extremely limited extent of the testing.

The distribution of surface and subsurface artifactual material may indicate that the site extends over at least a 50 square meter area. The site is topographically restricted to the south by the steep slope of the Jay Creek canyon. The occurrence of subsurface material beyond the excavated test squares is not known. The correlation of artifactual material between the test squares suggests that the upper and middle components occur over a vast portion of the site, while the lower component is possibly localized or focused on the kame. Alternately, this pattern may indicate that areas of intensive use associated with the upper components have not been located at this time.

The presence of three components indicates repeated use of this site over more than 4000 years. Further systematic testing could potentially address questions regarding the transition/replacement between the Northern Archaic Tradition and Choris/Norton Tradition peoples. Presently only very limited systematic testing has been conducted over this large site and additional testing is necessary to identify patterns relating to activity areas within the site. TLM 143 is probably one of the most significant sites yet discovered during the course of the Susitna Hydropower project cultural resource management program for the following reasons: 1) it is unique, in that it is the first archeological site discovered in Alaska to document human exploitation of fauna attracted by a mineral lick, 2) it is the largest site yet discovered within the Upper Susitna study area, 3) it has produced the highest frequency of artifactual material per test unit of any site yet discovered within the project area and is probably one of the most productive noncoastal sites ever discovered in Alaska, and 4) the site is multicomponent and the nature of the components may lead to an understanding of the Northern Archaic/Choris Norton contact.

TABLE 3.10

ARTIFACT SUMMARY, TLM 143

Lithic Material

ca. 17560	Rhyolite flakes (white to brown to gray)
ca. 13165	Basalt flakes (red, gray, black)
ca. 2530	Chert flakes (red, gray-brown, brown, black)
56	Obsidian flakes (green, gray, black)
31	Chalcedony flakes (white, gray, brown)
2	Quartz flakes (white)
5	Basalt projectile points (UA82-83-347, 349, 358, 364, 410)
1	Rhyolite projectile point (UA82-83-313)
1	Chert projectile point (UA82-83-1220) and tang (UA82-83-330)
3	Rhyolite projectile point tips (UA82-83-273, 403, 1339)
3	Rhyolite projectile point bases (UA82-83-319, 370, 377)
1	Basalt projectile point tip (UA82-83-398)
1	Basalt projectile point base (UA82-83-306)
1	Chert projectile point tip (UA82-83-316)
1	Chert tool: burin (UA82-83-346)
3	Basalt tools: scrapers (UA82-83-340, 352, 387)
2	Chert tools: scrapers (UA82-83-327, 339)
1	Basalt biface/flake core (UA82-83-324)
1	Basalt biface (UA82-83-348)
1	Rhyolite biface (UA82-83-193)
4	Basalt biface fragments (UA82-83-310, 365, 371, 417)
2	Rhyolite biface fragments (UA82-83-325, 357)
3	Chert biface fragments (UA82-83-351, 359, 921)
1	Basalt bifacially retouched flake (UA82-83-33)

TABLE 3.10 (Continued)

Lithic Material

1	Rhyolite bifacially retouched flake (UA82-83-326)
2	Basalt blade-like flakes (UA82-83-343, 416)
3	Rhyolite blade-like flakes (UA82-83-328, 362, 413)
1	Chert blade-like flake (UA82-83-341)
2	Basalt fragments with retouch (UA82-83-386, 897)
1	Chert fragment with retouch (UA82-83-399)
21	Rhyolite retouched flakes (UA82-83-285, 307, 308, 309, 312, 317, 320, 331, 334, 350, 356, 368, 376, 385, 1704, 407, 408, 419, 421, 422, 423)
15	Basalt retouched flakes (UA82-83-90, 305, 332, 335, 345, 366, 367, 375, 384, 390, 395, 396, 400, 404, 414)
7	Chert retouched flakes (UA82-83-314, 315, 333, 338, 369, 373, 394)
1	Tabular slate fragment (UA82-83-372)
1	Sandstone tabular rock, modified (UA82-83-355)
1	Quartzite tool: Tchi thos (UA82-83-360)

Faunal Material

ca. 31500 Small bone fragments and tooth fragments

Other

182	Rock chips, fire cracked (?)
38	Fire cracked rocks/hearth rocks
38	Pieces of red ochre (?)

TABLE 3.11

TOOLS AND TOOL FRAGMENTS BY STRATIGRAPHIC UNIT, TLM 143

Contact between organic horizon and Devil tephra (units 1/3):

N99/E79

UA82-83-33 Gray basalt flake with bifacial retouch or edge wear along one margin.

Contact between the Devil tephra and the Watana tephra (units 3/4):

N99/E79

UA82-83-90 Black basalt flake which is unifacially worked along two margins. Fine retouch with parallel flake scars along the left lateral margin. Unifacial retouch is on alternate faces of the flake (Figure 3.59, a).

UA82-83-193 Brownish gray rhyolite biface ca. 7 cm in length Figure 3.55, a).

FEATURE 1:

Oxidized zone at the top of the Watana tephra (unit 4a):

N95/E100

UA82-83-375 Amorphous black basalt flake with unifacial retouch along two margins of dorsal surface.

UA82-83-376 Light gray rhyolite flake with edge wear or unifacial retouch on longest margin.

TABLE 3.11 (Continued)

UA82-83-377 Light brown rhyolite biface fragment. Possibly a point base (Figure 3.52, g).

Lower Watana tephra 1 cm above underlying silt (unit 4 above unit 6):

N99/E79

UA82-83-273 Pale brown rhyolite biface (projectile point) tip (Figure 3.52, a).

FEATURE 2:

Collection 1 - Lower Watana tephra and excavation into underlying cultural unit (unit 4/5 and unit 5):

N93/E100

UA82-83-305 Black basalt flake tool. Continuous unifacial retouch on the lateral margins and distal end of the flake. Retouch is on the dorsal face of the flake and the flake measures ca. 4.3 cm from the proximal to the distal end (Figure 3.59, b).

UA82-83-306 Black basalt projectile point base, concave base with basal thinning (Figure 3.52, b).

UA82-83-307 Brownish gray banded rhyolite flake with continuous unifacial retouch along left lateral margin of the dorsal face. Lithic material has numerous white inclusions. Numerous hinge fractures are also evident (ca. 4 cm in length).

TABLE 3.11 (Continued)

UA82-83-308	Light brownish gray rhyolite flake tool (this material may be a fine siltstone). Unifacial retouch is continuous along three margins of the dorsal face of the flake. Tool is roughly rectangular in shape with a projection on the proximal end (measures ca. 7.7 x 4.7 cm). Proximal end is broken and retouch extends up to point of breakage indicating that the tool was manufactured prior to breakage (Figure 3.56, a).
UA82-83-309	Light brownish gray rhyolite tool fragment. Has the appearance of the distal end of a blade-like flake. Convex margin with unifacial retouch on the dorsal surface. Retouch is moderately steep on the convex portion (measures ca. 2.5 x 2.2 cm). Possibly a scraper tool (Figure 3.53, a).
UA82-83-310	Black basalt biface fragment with fine unifacial retouch on dorsal lateral margins.
UA82-83-312	Grayish brown rhyolite (?) flake with unifacial retouch on the lateral margins of the dorsal face. Numerous hinge fractures on the proximal end of the ventral surface (ca. 5.1 cm from proximal to distal end).
UA82-83-1339	Pale brown rhyolite biface tip (projectile point tip). Triangular in shape measuring 5.5 cm from the tip to location of breakage. Patination is evident on one of the surfaces (Figure 3.52, j).
<u>N94/E99</u>	
UA82-83-326	Proximal portion of a light brownish gray rhyolite flake. Possible bifacial retouch along a small portion of the broken distal edge.

TABLE 3.11 (Continued)

UA82-83-328	Distal portion of a pale brown rhyolite blade-like flake/microblade fragment.
UA82-83-358	Dark gray basalt projectile point. Side-notched, concave base with basal thinning. Broken at the tip. The point measures ca. 4.3 cm from the base to the point of breakage. Basalt has white inclusions (Figure 3.51, e).
UA82-83-359	Gray chert biface fragment. Patination and step fracturing are evident on dorsal and ventral surfaces. Lateral margins are bifacially retouched. Angular break at the base. Ovate in shape and bi-convex in crosssection. Measures 4.8 cm along its longest axis (Figure 3.55, c).
UA82-83-373	Gray banded chert tool, possibly a scraper. Tool is roughly discoidal ca. 4 cm in diameter. Unifacial retouch along curved margins on the dorsal face with steep unifacial retouch on the convex distal margin. Large flakes with hinge fractures are evident on the distal portion of the ventral side of the tool. Prominent bulb of percussion (Figure 3.54, a).
<u>N95/E100</u>	
UA82-83-384	Black basalt flake fragment with retouch and/or edge wear along slightly convex margin.
UA82-83-385	Gray rhyolite (?) flake with unifacial retouch on lateral margins of the dorsal face.
UA82-83-390	Unifacially worked basalt fragment with cortex and large flake scars. Fine unifacial retouch along lateral margin of dorsal surface. Measures ca. 5.8 cm along its longest axis.

TABLE 3.11 (Continued)

Collection 2 - Excavation within cultural unit (unit 5):

N93/E100

- UA82-83-314 Light brownish gray rhyolite flake with possible unifacial retouch. Hinge fractures on the dorsal surface and on the broken proximal edge.
- UA82-83-315 Large light gray chert flake with unifacial retouch. Ventral face of flake has an undulating surface with pronounced percussive rings, fissure scars and erailure scar. Retouch is on the proximal edge of the flake, with possible use-retouch on lateral margin. The flake measures 8.3 cm along its longest axis.
- UA82-83-897 Angular black basalt fragment with possible unifacial retouch along one edge.

N94/E99

- UA82-83-330 Black chert projectile point tang. Fits with UA82-83-1220 (Figure 3.51, h).
- UA82-83-331 Yellowish brown rhyolite flake with retouch and/or edge wear on distal margin. Flake is incomplete and proximal end is broken.
- UA82-83-332 Dark gray basalt flake with very fine continuous unifacial retouch along the lateral margins. The lateral margins are slightly concave and slightly convex. Retouch is on the patinated dorsal surface. Breakage is evident on the distal

TABLE 3.11 (Continued)

	end of the flake with retouch extending to the point of breakage indicating that breakage occurred after modification. The flake measures ca. 4.3 cm along its longest axis.
UA82-83-333	Gray chert flake, irregular in shape, unifacially worked, with almost all of the edges exhibiting breakage. Unifacial retouch or edge wear on the ventral surface.
UA82-83-334	Irregular angular light brownish gray banded rhyolite flake with unifacial retouch or edge wear on the lateral margin. Fissures extend from the lateral margin on the ventral surface from the location of possible retouch. Flake measures 6.2 cm along its longest axis.
UA82-83-335	Dark gray basalt flake unifacially worked along the distal and one of the lateral margins. Retouch is on the ventral face of the flake which measures 3.9 cm from the proximal to distal end.
<u>N95/E100</u>	
UA82-83-386	Subtriangular chunk of basalt with cortex and large flake scars. Minor unifacial retouch along one margin. Measures 4.4 cm along its longest axis. Similar to UA82-83-390.
UA82-83-387	Black basalt tool fragment. Unifacial retouch along one of the lateral margins, and steep unifacial retouch along the other, slightly convex, margin. The other two edges are broken (Figure 3.59, e).
UA82-83-394	Small dusky red chert flake with unifacial retouch (?). Possibly a tool fragment.

TABLE 3.11 (Continued)

UA82-83-1704 Light yellowish brown rhyolite (siltstone?) flake with flake scars on the distal edge of the ventral and dorsal surface of the flake. Breakage is evident along both sides of the lateral margins.

Collection 3 - Excavation of cultural unit to the contact with underlying silt or drift (unit 5 to unit 7 or unit 5 to unit 9):

N93/E100

UA82-83-319 Base of a brown rhyolite side notched projectile point with concave, thinned proximal margin. Irregular fracture on the midsection which is possibly the result of thermal spalling (Figure 3.52, e).

UA82-83-320 Light brownish gray rhyolite flake with parallel flake scars on dorsal surface. Measures 1.8 cm along its longest axis.

N94/E99

UA82-83-339 Black chert discoid shaped tool (ca. 2.5 cm in diameter). Cortex or patination on the dorsal face. Retouch is evident on the curved lateral margins of the ventral face. No retouch observed on the distal and proximal edges (Figure 3.59, c).

UA82-83-340 Black basalt endscraper. Distal end of a blade-like flake. Steep unifacial retouch on the distal end of the dorsal face of the flake with retouch extending up the lateral margins. Distal end is convex with bevel formed by unifacial working (Figure 3.53, b).

TABLE 3.11 (Continued)

UA82-83-341	Dark gray chert blade-like flake with inclusions. Proximal end with flake measuring 3.5 x 1.8 cm. Lateral sides are parallel.
UA82-83-346	Dark red chert burin. Two edges removed parallel to the long axis of the tool with an additional edge removed perpendicular to these two edges. The remaining edge has steep unifacial retouch which extends to the parallel burin flake scars. The retouch indicates that this tool was possibly a scraper prior to manufacture into a burin. Tool is roughly rectangular in shape measuring ca. 5.5 x 2.5 cm. Burin was found <u>in situ</u> , fractured into two pieces separating the dorsal and ventral surfaces. 52 potlid flakes were collected from interior facies indicating thermal fracture (Figure 3.54, b).
UA82-83-347	Dark gray basalt projectile point, side notched with basal thinning on concave base. Complete with the exception of small break at the tip (Figure 3.51, c).
UA82-83-348	Black basalt plano-convex biface with cortex on the dorsal surface. Biface was found in two pieces, broken near midsection. This tool measures 5.6 cm along its longest axis (Figure 3.55, b).
UA82-83-349	Black basalt projectile point base, side notched with basal thinning. Distal third of projectile point is missing (Figure 3.51, d).
UA82-83-350	Sub-triangular light brownish gray rhyolite flake with possible unifacial retouch along two edges. Material is of poor quality with many inclusions and apparent cleavage plane running diagonally across the flake. Edge-retouch occurs primarily along distal edges of dorsal surface. Flake scars are poorly defined.

TABLE 3.11 (Continued)

UA82-83-351	Large irregular white and dark red banded chert flake with retouch on both the ventral and dorsal surface. Material is the same as UA82-83-346. Retouch is primarily on the right lateral margin of dorsal face of the flake. Cortex present.
UA82-83-352	Dark gray basalt endscraper. Convex edge with a bevel formed by steep unifacial retouch on the dorsal face. Retouch continues up the curved margins. Roughly circular in shape ca. 2.7 cm in diameter. Smaller in size but similar to UA82-83-340 (Figure 3.53, c).
UA82-83-355	Tabular fragment of dark gray sandstone with possible retouch. 18 cm in length.
UA82-83-366	Dark gray basalt flake with unifacial retouch. Retouch is on dorsal surface which exhibits cortex. Snap fracture at distal margin.
UA82-83-367	Dark gray basalt bifacially retouched flake. Continuous retouch along the lateral margin of the dorsal and ventral faces. Retouch continues along the distal end of the flake. Unifacial retouch is also evident along the other lateral margin but is confined to the ventral surface of the flake. Flake measures 3.5 cm along its longest axis.
UA82-83-368	Light brownish gray rhyolite blade-like flake with possible retouch or edge wear on the lateral margin of the ventral face of the flake. Potlid fracture present.

TABLE 3.11 (Continued)

N95/E100

UA82-83-400 Black basalt flake with unifacial retouch on the lateral margins. Retouch is on the dorsal face of the flake. Flake is broken at the distal end. Measures 4.4 cm along longest axis.

UA82-83-403 Pale brown rhyolite point tip. This tip is narrow and unlike other projectile points collected from Feature 2 or Feature 3. Measures 5.2 cm in length and 2 cm in width at the point of breakage. Possibly from a lanceolate shaped point. Small notch along one of the margins (Figure 3.52, i).

UA82-83-396 Black basalt flake unifacially retouched on both the dorsal and ventral faces of the flake. Flake has cortex along proximal margin.

UA82-83-398 Black basalt biface tip (projectile point tip?). 2.2 cm from tip to point of breakage (Figure 3.52, h).

UA82-83-399 Angular piece of black chert with irregular flake scars. Possibly a core fragment.

FEATURE 3: Hearth feature within Feature 2.

Collection 3 - Excavation of cultural unit to contact with underlying silt or drift (unit 5 to unit 7 or unit 5 to unit 9):

TABLE 3.11 (Continued)

N93/E100

- UA82-83-313 Light brownish gray rhyolite side notched projectile point with concave base. Point is broken at the tip and one tang is missing. Plano-convex flake scars are present on both surfaces of the point, (one a probable pot lid fracture) (Figure 3.52, c).
- UA82-83-316 Light gray banded triangular chert biface fragment (possible projectile point tip) (Figure 3.52, d).
- UA82-83-317 Proximal end of a very pale brown rhyolite flake with unifacial retouch on the broken edge.
- UA82-83-324 Ovate black basalt flake core/core biface. Concavo-convex in cross section with large flake scars and patination on the dorsal face. Tool is bifacially retouched on right lateral margin and unifacially retouched dorsal left lateral margin. Red staining present. Measures 12 x 9 x 3.5 cm (Figure 3.57).
- UA82-83-325 Two articulating fragments of a brownish gray rhyolite biface. Bifacially worked with large flake scars on the ventral and dorsal surfaces. Generally ovate in shape with irregular breakage and angular planes of fracture (Figure 3.56, b).

N94/E99

- UA82-83-338 Grayish brown angular chert flake with possible edge wear along margins. 6.8 cm in length.

TABLE 3.11 (Continued)

UA82-83-343	Basalt blade-like flake. Distal end missing.
UA82-83-345	Black basalt flake with continuous unifacial retouch on the convex lateral margin of the dorsal face of the flake (Figure 3.59, d).
UA82-83-356	Irregular brown rhyolite flake with continuous unifacial retouch on curved margin. The surface of the flake is characterized by plano-convex flake scars characteristic of potlid fractures (Figure 3.53, d).
UA82-83-357	Brown rhyolite angular biface fragment exhibiting retouch or edge wear along lateral margins. Hinge fracture present.
UA82-83-360	Light gray quartzite tool. Semi-lunate in shape with possible retouch or edge wear along curved margin. Step fractures present on distal end (possible tchi thos). Dimensions of the tool are ca. 12.4 x 6.5 x 1 cm (Figure 3.58).
UA82-83-361	Light gray banded chert scraper. Tool is ovate in shape. Continuous unifacial retouch on the parallel margins and steep unifacial retouch on the convex distal margin. Retouch is on the dorsal face of the tool (Figure 3.53, e).
UA82-83-362	Distal portion of a light gray rhyolite blade-like flake. Triangular in crosssection and approximately 5.5 cm in length and 1 cm in width. The lateral margins are curved but roughly parallel with possible retouch or edge wear on one of the lateral margins. Fissure scars are evident on the ventral face of the flake.

TABLE 3.11 (Continued)

UA82-83-364	Dark gray basalt projectile point. Side notched with a slightly concave base, and slight basal thinning. Measures ca. 5 cm from the base to the point of breakage at the tip (Figure 3.51, f).
UA82-83-365	Dark gray basalt bifacially worked tool. Tear shaped with continuous steep unifacial retouch along one of the margins. Flake scars are present on both the ventral and dorsal surfaces (Figure 3.55, d).
UA82-83-369	Brown translucent chert flake with continuous unifacial retouch along one of the lateral margins on the dorsal face. Flake is irregular in shape with a projection at the distal end.
<u>N95/E100</u>	
UA82-83-395	Black basalt triangular flake. Bifacial retouch along left lateral margin. Cortex present on right lateral margin of dorsal face of flake (Figure 3.59, f).
UA82-83-404	Black basalt triangular flake with thin white quartzite band across medial section of flake. Unifacial retouch or use-retouch along distal end of dorsal face.
UA82-83-407	Brownish gray sub-rectangular rhyolite flake with continuous unifacial retouch along proximal, lateral, and distal margins of the dorsal face of the flake. Retouch steepens along distal edge. Snap fracture is evident along left lateral margin (Figure 3.60, a).
UA82-83-408	Medium gray rhyolite flake with unifacial retouch along lateral margins of dorsal face. Snap fractures evident across proximal and distal margins (Figure 3.60, b).

TABLE 3.11 (Continued)

UA82-83-410	Black basalt projectile point. Side notched with basal thinning on concave base (Figure 3.51, g).
UA82-83-413	Gray rhyolite blade-like flake, triangular in cross-section.
UA82-83-414	Black basalt triangular flake with fine retouch or use wear. Modified distal edge.
UA82-83-416	Black basalt microblade/blade-like flake.
UA82-83-417	Black basalt biface fragment. Continuous unifacial retouch along proximal and lateral margins of dorsal face. Medial snap fracture terminates flake. Subsequent edge modification absent (Figure 3.55, f).
UA82-83-419	Amorphous angular pale brown rhyolite flake with unifacial retouch along left lateral margin of dorsal face. Flake exhibits hinge fractures on dorsal surface (Figure 3.60, c).
UA82-83-421	Light gray rhyolite blade-like medial section of a flake with modified lateral margin. Possible use wear or retouch.
UA82-83-422	Gray rhyolite flake with continuous modification along right lateral margin. Proximal margin is crushed and steep.
UA82-83-423	Triangular brownish gray rhyolite flake with unifacial retouch along straightest margin. Retouch is on dorsal face of the flake. Snap fracture along distal margin (Figure 3.60, d).

TABLE 3.11 (Continued)

UA82-83-1220 Black chert side-notched projectile point midsection. Distal third is missing. Point is patinated on one face. Snap fractures on proximal and distal margins, fits with tang, UA82-83-330 (Figure 3.51, h).

Feature 2 and 3 mixed:

N93/E100 only

UA82-83-921 Black chert biface fragment. Angular, sub-ovate, bifacially worked fragment. Possible flake core fragment (Figure 3.55, g).

Tools and Tool Fragments from Rodent Burrow within Features 2 and 3:

N94/E99

UA82-83-370 Pale brownish gray rhyolite projectile point base. Includes tangs and thinned concave base. Snap fracture terminates point base (Figure 3.52, f).

UA82-83-371 Black basalt biface fragment, bifacially flaked and re-roughed. Patination on ventral surface and distal margin (Figure 3.55, e).

UA82-83-372 Gray tabular slate fragment. Triangular with edge modification along convex margin. Red staining present.

UA82-83-327 Gray chert subrectangular flake. Unifacial retouch along left lateral margin of ventral surface. Possible use-retouch along opposite lateral margin. Pronounced bulb of percussion at proximal end (Figure 3.54, c).

TABLE 3.12

FAUNAL MATERIAL, TLM 143

Soil Unit	Description
N99/E79	
4a	5 Long bone fragments, calcined, medium-large mammal
4a/b	7 Long bone fragments, calcined, medium-large mammal
4b	3 Long bone fragments, calcined, medium-large mammal
4b/7	5 Long bone fragments, calcined, medium-large mammal
7	5 Long bone fragments, calcined, medium-large mammal
N95/E100	
4 and 4/5 contact	2 Tooth fragments, molar, large mammal, possible caribou (<u>Rangifer tarandus</u>) 115 Long bone fragments, calcined, medium-large mammal
4/5 contact	21 Long bone fragments, calcined, medium-large mammal
5 (collection 1)	539 Long bone fragments, calcined, medium-large mammal
5 (collection 2, Feature 2)	1 Tooth fragment, molar, large mammal, possible caribou (<u>Rangifer tarandus</u>) 1326 Long bone fragments, calcined, medium-large mammal
5 (collection 3, Feature 2)	561 Long bone fragments, calcined, medium-large mammal

TABLE 3.12 (Continued)

Soil Unit	Description
5 (collection 3, Feature 3)	1 Tooth fragment, molar, large mammal, possible caribou (<u>Rangifer tarandus</u>) 7258 Long bone fragments, calcined, medium-large mammal
5/7 (collection 3, Feature 3)	237 Long bone fragments, calcined, medium-large mammal N94/E99
3/4 contact	2 Long bone fragments, calcined, medium-large mammal
4a	29 Long bone fragments, calcined, medium-large mammal
4/5 contact	94 Long bone fragments, calcined, medium-large mammal
5 (collection 1, Feature 2)	1 Tooth fragment, molar, large mammal 630 Long bone fragments, calcined, medium-large mammal
5 (collection 2, Feature 2)	11 Tooth fragments, molar, large mammal 1 Phalanx fragment, calcined, large mammal 760 Long bone fragments, calcined, medium-large mammal

TABLE 3.12 (Continued)

Soil Unit	Description
5 (collection 3, Feature 2)	6 Tooth fragments, molar, large mammal 1 Astragalus, calcined, small mammal 8739 Long bone fragments, calcined, medium-large mammal (one with cut marks)
5/7, 9 contact Rodent Burrow (in unit 5)	214 Long bone fragments, calcined, medium-large mammal 205 Long bone fragments, calcined, medium-large mammal N93/E100
4	3 Long bone fragments, calcined, medium-large mammal
4a	1 Long bone fragment, calcined, medium-large mammal
4c	2 Long bone fragments, calcined, small-large mammal
4b and 4b/5 contact	4 Long bone fragments, calcined, medium-large mammal 18 Long bone fragments, calcined, small-large mammal N93/E100

TABLE 3.12 (Continued)

Soil Unit	Description
5 (collection unit 1, Feature 2)	12 Tooth fragments, molar, large mammal 1 Phalanx fragment, calcined, medium-large mammal 11 Long bone fragments, calcined, small-medium mammal 2 Long bone fragments, calcined small-large mammal 2559 Long bone fragments, calcined, medium-large mammal
5 (collection unit 2, Feature 2)	1 Phalanx fragment, calcined, large mammal 2030 Long bone fragments, calcined, medium-large mammal
5 (collection unit 3, Feature 2)	2800 Long bone fragments, calcined, medium-large mammal
5 (collection unit 3, Features 2 and 3)	3264 Long bone fragments, calcined, medium-large mammal
5 (collection unit 3, Feature 3)	1 Tooth fragment, molar, large mammal
5 and 5/7 contact	1 Phalanx fragment, calcined, large mammal, possible caribou (<u>Rangifer tarandus</u>), possible Dall Sheep (<u>Ovis dalli</u>)

TABLE 3.13

ARTIFACT SUMMARY BY STRATIGRAPHIC UNIT, TLM 143

Organic layer (unit 1)	6 Basalt flakes 3 Rhyolite flakes
Organic to Devil tephra, Watana tephra (unit 1/3, 1/3-4a, 1/4a)	80 Basalt flakes 31 Rhyolite flakes 4 Chert flakes 7 Obsidian flakes 1 Bifacially retouched basalt flake (UA82-83-33) 2 Rock chips
Devil tephra (unit 3)	93 Basalt flakes 75 Rhyolite flakes 1 Chert flake 4 Obsidian flakes 1 Rock chip
Devil-upper Watana tephra (unit 3/4a, includes Feature 1 material)	51 Basalt flakes 70 Rhyolite flakes 1 Chert flake 1 Retouched basalt flake (UA82-83-90) 1 Rhyolite biface (UA82-83-193) 2 Bone fragments
Upper Watana tephra (unit 4a)	105 Basalt flakes 86 Rhyolite flakes 7 Chert flakes 1 Retouched basalt flake (UA82-83-375) 1 Retouched rhyolite flake (UA82-83-376) 1 Rhyolite biface fragment (UA82-83-377) 27 Bone fragments

TABLE 3.13 (Continued)

Upper Watana tephra/ lower Watana tephra (unit 4a/4b, includes Feature 1 material)	16 Rhyolite flakes 13 Basalt flakes
Watana tephra upper and lower mixed (unit 4a/4b)	36 Basalt flakes 93 Rhyolite flakes 10 Bone fragments 1 Rock chip
Lower Watana tephra (unit 4b)	2 Basalt flakes 4 Rhyolite flakes 1 Rhyolite projectile point tip (UA82-83-273)
Upper Watana/cultural unit (unit 4a/5)	183 Basalt flakes 134 Rhyolite flakes 15 Chert flakes 1 Obsidian flake 111 Bone fragments
Watana tephra/cultural unit Feature 2 surface (unit 4/5)	359 Basalt flakes 439 Rhyolite flakes 20 Chert flakes 2 Obsidian flakes 1 Chalcedony flake 100 Bone fragments 7 Fire cracked rock fragments

TABLE 3.13 (Continued)

Cultural unit	ca. 7050 Basalt flakes
Feature 2 (unit 5)	ca. 5510 Rhyolite flakes
	ca. 900 Chert flakes
	40 Obsidian flakes
	31 Chalcedony flakes
	2 Quartz flakes
	17 Pieces of red ochre (?)
	134 Gravel sized rock chips; FCR (?)
	5 FCR/Hearth rocks
	ca. 12550 Bone fragments
	9 Retouched basalt flakes (UA-82-83-305, 384, 390, 332, 335, 366, 367, 396, 400)
	11 Retouched rhyolite flakes (UA82-83-307, 308, 309, 312, 385, 331, 334, 320, 350, 1704, 368)
	4 Retouched chert flakes (UA82-83-314, 333, 394, 315)
Cultural unit	1 Retouched sandstone tabular rock
Feature 2 (unit 5)	(UA82-83-355)
	1 Bifacially flaked rhyolite flake
	(UA82-83-326)
	1 Chert blade-like flake (UA82-83-341)
	2 Basalt biface fragments (UA82-83-310, 330)
	1 Rhyolite biface fragment (UA82-83-1339)
	2 Chert biface fragments (UA82-83-359, 351)
	2 Basalt fragments with retouch
	(UA82-83-386, 897)
	1 Chert fragment with retouch (UA82-83-399)
	3 Basalt tools: scrapers (UA82-83-340, 352, 387)

TABLE 3.13 (Continued)

	2 Chert tools: scrapers (UA82-83-327, 339)
	1 Chert tool: burin (UA82-83-346)
	3 Basalt projectile points (UA82-83-347, 349, 358)
	1 Basalt projectile point base (UA82-83-306)
	1 Basalt projectile point tip (UA82-83-398)
	1 Rhyolite projectile point tip (UA82-83-403)
	1 Rhyolite projectile point base (UA82-83-319)
	1 Rhyolite blade-like flake (UA82-83-328)
	1 Basalt biface (UA82-83-348)
Cultural unit	ca. 3795 Basalt flakes
Feature 3 (unit 5)	ca. 2455 Rhyolite flakes
	990 Chert flakes
	12 Obsidian flakes
	3 Chalcedony flakes
	6 Pieces of red ochre (?)
	27 FCR/Hearth rocks
	ca. 15090 Bone fragments
	4 Retouched basalt flakes (UA82-83-345, 404, 414, 395)
	8 Retouched rhyolite flakes (UA82-83-356, 407, 408, 419, 421, 422, 423, 317)
	1 Retouched chert flake (UA82-83-369)
	2 Basalt blade-like flakes (UA82-83-343, 416)
	2 Rhyolite blade-like flakes (UA82-83-413, 362)
	2 Basalt biface fragments (UA82-83-365, 417)

TABLE 3.13 (Continued)

	2 Rhyolite biface fragments (UA82-83-325, 357) 1 Quartzite tool: Tchi Thos (UA82-83-360) 2 Basalt projectile points (UA82-83-364, 410) 1 Chert projectile point (UA82-83-1220) 1 Basalt biface/flake core (UA82-83-324) 1 Rhyolite projectile point (UA82-83-313) 1 Chert tool: scraper (UA82-83-361) 1 Chert projectile point tip (UA82-83-316) 1 Chert flake with possible edge wear (UA82-83-338)
Cultural unit Feature 2 and Feature 3 mixed (N93/E100) (unit 5)	ca. 830 Basalt flakes ca. 790 Rhyolite flakes ca. 320 Chert flakes 1 Chalcedony flake 10 Pieces of red ochre (?) 37 Gravel sized rock chips; FCR (?) 6 FCR/Hearth rocks ca. 3250 Bone fragments 1 Chert biface fragment (UA82-83-921)
Cultural unit to contact with underlying silt or glacial drift and material in silt (unit 5/7, 9)	ca. 530 Basalt flakes 365 Rhyolite flakes 213 Chert flakes 5 Pieces of red ochre (?) ca. 510 Bone fragments
Contact between Watana tephra and sandy silt (unit 4b/7)	3 Basalt flakes 6 Rhyolite flakes 9 Bone fragments

TABLE 3.13 (Continued)

Sandy silt (unit 7)	5 Basalt flakes 20 Rhyolite flakes 1 Chert flake 5 Bone fragments
Rodent burrow in Feature 2 and Feature 3	ca. 140 Basalt flakes ca. 170 Rhyolite flakes 17 Chert flakes ca. 205 Bone fragments 1 Retouched chert flake (UA82-83-373) 1 Tabular slate fragment (UA82-83-372) 1 Basalt biface fragment (UA82-83-371) 1 Rhyolite projectile point base (UA82-83-370)

TABLE 3.14

ARTIFACT SUMMARY BY TEST SQUARE AND STRATIGRAPHIC UNIT, TLM 143

Soil Unit	Test Squares				
	N71/E91	N99/E79	N93/E100	N94/E99	N95/E100
Surface				1 Bone fragment	
1 (surface organic layer)		2 Basalt flakes (dark gray)	3 Basalt flakes (black) C-14 Sample UA82-83-1692	1 Basalt flake (black) 3 Rhyolite flakes (light brownish gray)	
1/3 (organic to Devil tephra contact)		4 Basalt flakes (black) 5 Rhyolite flakes (white to pale brown) 1 Rock chip 1 Bifacially retouched basalt flake (UA82-83-33)	11 Rhyolite flakes (white to light gray) 8 Basalt flakes (dark gray, black)	8 Basalt flakes (black) 6 Rhyolite flakes (white to light gray) C-14 Sample (UA82-83-1693)	56 Basalt flakes (gray to black) 6 Rhyolite flakes (white to gray) 3 Chert flakes (gray, brownish gray) 7 Obsidian flakes (black) C-14 sample (UA82-83-1693)
1/3-4a (beneath organic above Devil and/or Watana tephra)		1 Basalt flake (black) 3 Rhyolite flakes (white to pale brown) 1 Chert flake (light gray) 1 Rock chip			

TABLE 3.14 (Continued)

Soil Unit	Test Squares				
	N71/E91	N99/E79	N93/E100	N94/E99	N95/E100
1/4a (contact between surface organics and Watana tephra)		3 Basalt flakes (gray to black)			
3 (Devil tephra)	3 Rhyolite flakes (pale brown to gray)	33 Basalt flakes (light gray to black) 31 Rhyolite flakes (white to pale brown) 1 Rock chip	11 Basalt flakes (gray to black) 15 Rhyolite flakes (white to grayish-brown)	10 Basalt flakes (gray to black) 17 Rhyolite flakes (white to light gray) 1 Chert flake (black)	39 Basalt flakes (gray to black) 9 Rhyolite flakes (white to pale brown) 4 Obsidian flakes (black)
3/4a (contact between Devil and Upper Watana)		29 Basalt flakes (gray to black) 42 Rhyolite flakes (white to pale brown) 2 Rock chips 1 Retouched basalt flake (UA82-83-90) 1 Rhyolite biface (UA82-83-193)	1 Basalt flake (dark gray)	20 Basalt flakes (dark gray to black) 27 Rhyolite flakes (white to gray/brown) 1 Chert flake (black) 2 Bone fragments	(Feature 1) 1 Basalt flake (dark gray) 1 Rhyolite flake (grayish-brown)

TABLE 3.14 (Continued)

Soil Unit	Test Squares				
	N71/E91	N99/E79	N93/E100	N94/E99	N95/E100
4a (Upper oxidized Watana)	2 Rhyolite flakes (brown)	(see 4a & 4b)	13 Basalt flakes (gray to black) 14 Rhyolite flakes (white to pale brown) 1 Chert flake (light brown)	44 Basalt flakes (light gray to black) 44 Rhyolite flakes (white to yellowish brown) 5 Chert flakes (grayish-brown, black) 25 Bone fragments	(Feature 1) 48 Basalt flakes (gray to black) 28 Rhyolite flakes (white to grayish-brown) 1 Chert flake (dark red) 1 Retouched basalt flake (UA82-83-375) 1 Retouched rhyolite flake (UA82-83-376) 1 Rhyolite biface fragment (UA82-83-377) 2 Bone fragments
4a/4b (contact between upper oxidized and lower Watana)		2 Rhyolite flakes (pale brown)	5 Basalt flakes (dark gray) 10 Rhyolite flakes (white to pale brown)	8 Basalt flakes (dark gray to black) 4 Rhyolite flakes (yellowish brown)	

TABLE 3.14 (Continued)

Soil Unit	Test Squares				
	N71/E91	H99/E79	H93/E100	H94/E99	H95/E100
4a & 4b (upper Watana and lower Watana mixed)		36 Basalt flakes (dark gray to black) 93 Rhyolite flakes (white to grayish-brown) 1 Rock chip 10 Bone fragments			
4b (Watana tephra)		1 Rhyolite flake (light gray) 1 Rhyolite projectile point tip (UA82-83-273)		2 Basalt flakes (dark gray to black) 3 Rhyolite flakes (light gray to pale brown)	
4a/5 (contact between upper oxidized Watana and cultural unit)			11 Basalt flakes (dark gray) 7 Rhyolite flakes (pale brown to yellowish brown)		(Feature 1) ca. 170 Basalt flakes (gray to black, dusky red) 124 Rhyolite flakes (light gray to yellowish brown) 15 Chert flakes (light gray, dark gray, black, pale red) 1 Obsidian flake (black) 111 Bone fragments

TABLE 3.14 (Continued)

Soil Unit	Test Squares				
	N71/E91	N99/E79	N93/E100	N94/E99	N95/E100
4/5 (contact between Hatana and cultural unit - Feature 2 surface)			113 Basalt flakes (dark gray to black) 176 Rhyolite flakes (white to pale brown) 3 Chert flakes (gray, black) 1 Obsidian flake (dark gray) 22 Bone fragments C-14 Sample (UA82-83-1695)	191 Basalt flakes (gray to black) 232 Rhyolite flakes (white to pale brown) 15 Chert flakes (gray, black, dusky red) 1 Chalcedony flake (yellowish-brown) 58 Bone fragments C-14 Sample Feature 2 (UA82-83-1696) C-14 Sample Feature 2 (UA82-83-1697) C-14 Sample Feature 3 (UA82-83-1702)	55 Basalt flakes (gray, dusky red) 31 Rhyolite flakes (white to pale brown) 2 Chert flakes (gray, dusky red) 1 Obsidian flake (black) 7 FCR fragments (?) 20 Bone fragments C-14 sample (UA82-83-1698) C-14 Sample Feature 2 (UA82-83-1699) C-14 Sample Feature 2 (UA82-83-1700) C-14 Sample Feature 2 (UA82-83-1701) C-14 Sample Feature 3 (UA82-83-1702)
5 (cultural unit: Feature 2 and Feature 3)					

TABLE 3.14 (Continued)

Soil Unit	Test Squares				
	N71/E91	N99/E79	N93/E100	N94/E99	N95/E100
5 (cultural unit: feature 2 and feature 3) feature 2 Collection 1			ca. 945 Basalt flakes (gray to black) ca. 1170 Rhyolite flakes (white to grayish brown) ca. 160 Chert flakes (white, grayish brown, reddish brown, black) 8 Chalcedony flakes (white, light gray) 1 Obsidian flake (black) 17 Rock chips 7 Pieces of red ochre (?) 43 Gravel sized rock chips/FCR (?) 1 Retouched basalt flake (UA82-83-305) 4 Retouched rhyolite flakes (UA82-83-307, 308, 309, 312) 1 Basalt biface fragment (UA82-83-310)	ca. 675 Basalt flakes (gray to black) ca. 440 Rhyolite flakes (white to pale brown) 13 Chert flakes (light gray, dark gray, pale red) 2 Chalcedony flakes (light gray) 1 Obsidian flake (black) 1 Rhyolite blade-like flake (UA82-83-328) 1 Bifacially retouched rhyolite flake (UA82-83-326) 1 Chert biface fragment (UA82-83-359) 1 Chert tool-scraper (UA82-83-327) 1 Basalt projectile point (UA82-83-358)	ca. 605 Basalt flakes (gray to black, dusky red) ca. 305 Rhyolite flakes (white to grayish brown) 44 Chert flakes (light gray, grayish brown, dusky red) 21 Obsidian flakes (black) 1 Quartz flake (white) 1 Chalcedony flake (pale brown) 1 Piece of red ochre (?) 19 FCR fragments (?) 2 Retouched basalt flakes (UA82-83-384, 390) 1 Retouched rhyolite flake (UA82-83-385) ca. 115 Bone fragments

TABLE 3.14 (Continued)

Soil Unit	Test Squares				
	N71/E91	N99/E79	N93/E100	N94/E99	N95/E100
Feature 2 Collection 2			1 Rhyolite biface fragment (UA82-83-1339) 1 Basalt projectile point base (UA82-83-306) ca. 2775 Bone fragments 12 Tooth fragments	ca. 400 Bone fragments	
			ca. 565 Basalt flakes (gray to black) ca. 450 Rhyolite flakes (white to grayish-brown) ca. 145 Chert flakes (white, gray-brown, reddish brown, black) 1 Obsidian flake (black) 1 Quartz flake (white) 5 Pieces red ochre 3 Rock chips 23 Gravel sized FCR (?) 1 Retouched chert flake (UA82-83-314)	ca. 770 Basalt flakes (gray to black) ca. 570 Rhyolite flakes (white to pale brown) 39 Chert flakes (light gray, gray-brown reddish brown, dark red, black) 2 Obsidian flakes (black) 1 Chalcedony flake (gray) 3 Gravel sized FCR (?) 2 Retouched basalt flakes (UA82-83-332, 335)	ca. 755 Basalt flakes (gray to black) ca. 440 Rhyolite flakes (light gray to yellowish brown to gray brown) 164 Chert flakes (gray, grayish-brown, olive gray, black) 11 Obsidian flakes (gray, black) 5 Chalcedony flakes (white) 3 Pieces red ochre (?) 13 Gravel sized FCR (?)

TABLE 3.14 (Continued)

Soil Unit	Test Squares				
	N71/E91	N99/E79	N93/E100	N94/E99	N95/E100
Feature 2 Collection 3			1 Retouched basalt fragment (UA82-83-897) ca. 2030 bone fragments	2 Retouched rhyolite flakes (UA82-83-331, 334) 1 Retouched chert flake (UA82-83-333) 1 Basalt biface fragment (UA82-83-330) ca. 1560 Bone fragments	1 Retouched rhyolite flake (UA82-83-395) 1 Retouched chert flake (UA82-83-394) 1 Angular basalt fragment with retouch (UA82-83-386) 1 Basalt tool fragment: scraper (UA82-83-387) ca. 1310 Bone fragments
			ca. 480 Basalt flakes (gray to black) ca. 465 Rhyolite flakes (pale brown to olive gray) ca. 140 Chert flakes (light gray, reddish brown, black) 3 Chalcedony flakes (light gray) 20 Gravel sized FCR (?)	ca. 1510 Basalt flakes (gray to black) ca. 1475 Rhyolite flakes (white to pale brown to grayish brown) ca. 100 Chert flakes (light gray, olive brown, dark gray, pale red, reddish brown, black) 1 Chalcedony flake (white)	ca. 745 Basalt flakes (gray to black, dusky red) ca. 195 Rhyolite flakes (white to pale brown to grayish brown) 94 Chert flakes (gray, grayish-brown, reddish brown) 4 Obsidian flakes (black) 10 Chalcedony flakes (white to light brown)

TABLE 3.14 (Continued)

Soil Unit	Test Squares				
	N71/E91	N99/E79	N93/E100	N94/E99	N95/E100
			5 FCR/hearth rocks (?); largest, 10 x 10 x 4 cm 1 Retouched rhyolite flake (UA82-83-320) 1 Rhyolite projectile point base (UA82-83-319) ca. 1800 bone fragments	2 Retouched basalt flakes (UA82-83-366, 367) 2 Retouched rhyolite flakes (UA82-83-350, 368) 1 Retouched sandstone tabular rock (UA82-83-355) 1 Chert blade-like flake (UA82-83-341) 1 Basalt biface (UA82-83-348) 2 Basalt tools: end scrappers (UA82-83- 340, 352) 1 Chert biface fragment (UA82-83-351) 2 Basalt projectile points (UA82-83-347, 349) 1 Chert tool: scraper (UA82-83-339) 1 Chert tool: burin (UA82-83-346) ca. 1920 Bone fragments	1 Piece red ochre (?) 12 gravel sized to small pebble sized FCR (?) 2 Retouched basalt flakes (UA82-83-396, 400) 1 Retouched chert fragment (UA82-83-399) 1 Rhyolite projectile point tip (UA82-83-403) 1 Basalt projectile point tip (UA82-83-397) 1 Retouched chert flake (UA82-83-315) ca. 210 Bone fragments

TABLE 3.14 (Continued)

Soil Unit	Test Squares				
	N71/E91	N99/E79	N93/E100	N94/E99	N95/E100
Feature 2 and Feature 3 mixed Collection 3			ca. 830 Basalt flakes (gray to black) ca. 790 Rhyolite flakes (light gray to grayish brown) ca. 320 Chert flakes (light gray, grayish brown, reddish brown) 1 Chalcedony flake (light gray) 10 Pieces red ochre 37 gravel sized FCR (?) 6 FCR/hearth rocks; largest 43 x 24 x 9 cm 1 Retouched chert flake (UA82-83-315) 1 Chert biface fragment (UA82-83-921) ca. 3250 Bone fragments		

TABLE 3.14 (Continued)

Soil Unit	Test Squares				
	N71/E91	N99/E79	N93/E100	N94/E99	N95/E100
Feature 3			1 Rhyolite projectile point (UA82-83-313)	ca. 935 Basalt flakes (gray to black)	ca. 2860 Basalt flakes (gray to black)
Collection 3			1 Basalt biface/flake core (UA82-83-324)	ca. 810 Rhyolite flakes (white to pale brown to grayish brown)	ca. 1645 Rhyolite flakes (light gray to grayish brown)
			1 Broken rhyolite biface fragment (UA82-83-325)	82 Chert flakes (gray, grayish brown, dark brown, red, black)	ca. 910 Chert flakes (white, gray, grayish brown, dark brown, dusky red, black)
			1 Chert projectile point tip (UA82-83-316)	3 Obsidian flakes (dark green)	9 Obsidian flakes (black)
			1 Retouched rhyolite flake (UA82-83-317)	1 Chalcedony flake (yellowish brown)	2 Chalcedony flakes (white)
			1 Chert flake with edge wear (UA82-83-338)	11 FCR/hearth rocks; largest, 52 x 19.5 x 12 cm	6 Pieces of red ochre (?)
				1 Retouched basalt flake (UA82-83-345)	16 FCR/hearth rocks; largest
				1 Retouched rhyolite flake (UA82-83-356)	43 x 24 x 9 cm
				1 Retouched chert flake (UA82-83-369)	2 Retouched basalt flakes (UA82-83-401, 414)

TABLE 3.14 (Continued)

Soil Unit	Test Squares				
	N71/E91	N99/E79	N93/E100	N94/E99	N95/E100
				1 Basalt blade-like flake (UA82-83-343)	6 Retouched rhyolite flakes (UA82-83-407, 408, 419, 421, 422, 423)
				1 Rhyolite blade- like flake (UA82-83-362)	1 Retouched basalt flake (UA82-83-395)
				1 Basalt biface fragment (UA82-83-365)	1 Basalt blade-like flake (UA82-83-416)
				1 Rhyolite biface fragment (UA82-83-357)	1 Rhyolite blade-like flake (UA82-83-413)
				1 Quartzite tool: Tchi Thos (UA82-83-360)	1 Basalt biface fragment (UA82-83-417)
				1 Chert tool: scraper (UA82-83-361)	1 Basalt projectile point (UA82-83-410)
				1 Basalt projectile point (UA82-83-364)	1 Chert projectile point (UA82-83-1220)
				ca. 8010 Bone fragments	ca. 7000 Bone fragments

TABLE 3.14 (Continued)

Soil Unit	Test Squares				
	N71/E91	N99/E79	N93/E100	N94/E99	N95/E100
5/7, 9 feature 2 to contact with underlying sandy silt or glacial drift			27 Basalt flakes (gray to black) 15 Rhyolite flakes (pale brown to gray) 38 Chert flakes (light gray, dark brownish gray) 55 Bone fragments	ca. 175 Basalt flakes (gray to black) ca. 180 Rhyolite flakes (light gray to pale brown) 25 Chert flakes (gray, dusky red, black) 3 Pieces of red ochre (?) ca. 220 Bone fragments	ca. 230 Basalt flakes (gray to black) ca. 170 Rhyolite flakes (white to pale brown) ca. 150 Chert (light gray, dark gray) 2 Pieces of red ochre (?) ca. 235 Bone fragments
4a & 4b/7 contact of mixed Watana and sandy silt N99/E79 only		2 Rhyolite flakes (gray, olive gray) 9 Bone fragments			
4b/7 contact between Watana and sandy silt		3 Basalt flakes (black) 4 Rhyolite flakes (white to pale brown)			

TABLE 3.14 (Continued)

Soil Unit	Test Squares				
	N71/E91	N99/E79	N93/E100	N94/E99	N95/E100
7 sandy silt		5 Basalt flakes (gray to black) 20 Rhyolite flakes (white to pale brown) 1 Chert flake (light brown) 1 Rhyolite projectile point tip (UA82-83-273) 5 Bone fragments			
Rodent Burrow in feature 2 and feature 3				ca. 140 Basalt flakes (gray to black, dusky red) ca. 170 Rhyolite flakes (pale brown to gray) 17 Chert flakes (gray, grayish brown, reddish brown, black) 1 Retouched chert flake (UA82-83-373)	

TABLE 3.14 (Continued)

Test Squares					
Soil Unit	N71/E91	N99/E79	N93/E100	N94/E99	N95/E100
				1 Tabular slate fragment (UA82-83-372) 1 Basalt biface fragment (UA82-83-371) 1 Rhyolite projectile point base (UA82-83-370) ca. 205 Bone fragments	

KEY TO FIGURES 3.48 - 3.60

Figure	Site	Accession Number, Description
3.48 a	TLM 115	UA82-95-1, projectile point
b	TLM 124	UA82-64-1, projectile point
c	TLM 124	UA82-64-2, endscraper
d	TLM 130	UA82-70-11, endscraper
e	TLM 133	UA82-73-1, projectile point
f	TLM 134	UA82-74-1, 2, 3, 3 articulating fragments, large retouched flake
3.49 a	TLM 128	UA82-68-3, 321, biface
b	TLM 128	UA82-68-15, microblade
c	TLM 128	UA82-68-85, projectile point tip
d	TLM 128	UA82-68-186, retouched flake
e	TLM 128	UA82-68-187, retouched flake
f	TLM 128	UA82-68-226, retouched flake
3.50 a	TLM 135	UA82-75-1, projectile point
b	TLM 136	UA82-76-1, retouched flake
c	TLM 140	UA82-80-5, modified flake
d	TLM 140	UA82-80-6, biface fragment
e	TLM 144	UA82-84-1, projectile point
f	TLM 154	UA82-94-4, projectile point
g	HEA 210	UA82-101-2, scraper
3.51 a	TLM 143	UA82-83-1, projectile point
b	TLM 143	UA82-83-2, projectile point
c	TLM 143	UA82-83-347, projectile point
d	TLM 143	UA82-83-349, projectile point
e	TLM 143	UA82-83-358, projectile point
f	TLM 143	UA82-83-364, projectile point
g	TLM 143	UA82-83-410, projectile point
h	TLM 143	UA82-83-1220, 330, projectile point and tang

KEY TO FIGURES (Continued)

Figure	Site	Accession Number, Description
3.52 a	TLM 143	UA82-83-273, projectile point tip
b	TLM 143	UA82-83-306, projectile point base
c	TLM 143	UA82-83-313, projectile point
d	TLM 143	UA82-83-316, projectile point tip
e	TLM 143	UA82-83-319, projectile point
f	TLM 143	UA82-83-370, projectile point base
g	TLM 143	UA82-83-377, projectile point base
h	TLM 143	UA82-83-398, projectile point tip
i	TLM 143	UA82-83-403, projectile point tip
j	TLM 143	UA82-83-1339, projectile point tip
3.53 a	TLM 143	UA82-83-309, endscraper
b	TLM 143	UA82-83-340, endscraper
c	TLM 143	UA82-83-352, endscraper
d	TLM 143	UA82-83-356, endscraper
e	TLM 143	UA82-83-361, endscraper
3.54 a	TLM 143	UA82-83-373, retouched flake
b	TLM 143	UA82-83-346, burin
c	TLM 143	UA82-83-327, retouched flake
3.55 a	TLM 143	UA82-83-193, bi face
b	TLM 143	UA82-83-348, bi face
c	TLM 143	UA82-83-359, bi face
d	TLM 143	UA82-83-365, bi face
e	TLM 143	UA82-83-371, bi face
f	TLM 143	UA82-83-417, bi face
g	TLM 143	UA82-83-921, bi face

KEY TO FIGURES (Continued)

Figure	Site	Accession Number, Description
3.56 a	TLM 143	UA82-83-308, retouched flake
b	TLM 143	UA82-83-325, bi face
3.57	TLM 143	UA82-83-324, bi face/flake core
3.58	TLM 143	UA82-83-360, tchi thos
3.59 a	TLM 143	UA82-83-90, retouched flake
b	TLM 143	UA82-83-305, retouched flake
c	TLM 143	UA82-83-339, endscraper
d	TLM 143	UA82-83-345, retouched flake
e	TLM 143	UA82-83-387, endscraper
f	TLM 143	UA82-83-395, retouched flake
3.60 a	TLM 143	UA82-83-407, retouched flake
b	TLM 143	UA82-83-408, retouched flake
c	TLM 143	UA82-83-419, retouched flake
d	TLM 143	UA82-83-423, retouched flake

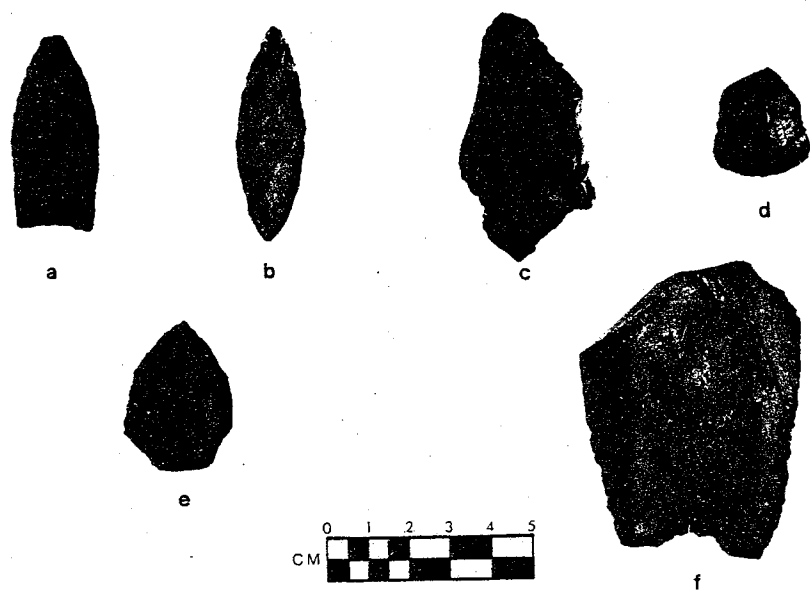


Figure 3.48. Artifacts from sites UA82-95 (TLM 115) a, UA82-64 (TLM 124) b-c, UA82-70 (TLM 130) d, UA82-73 (TLM 133) e, UA82-74 (TLM 134) f.

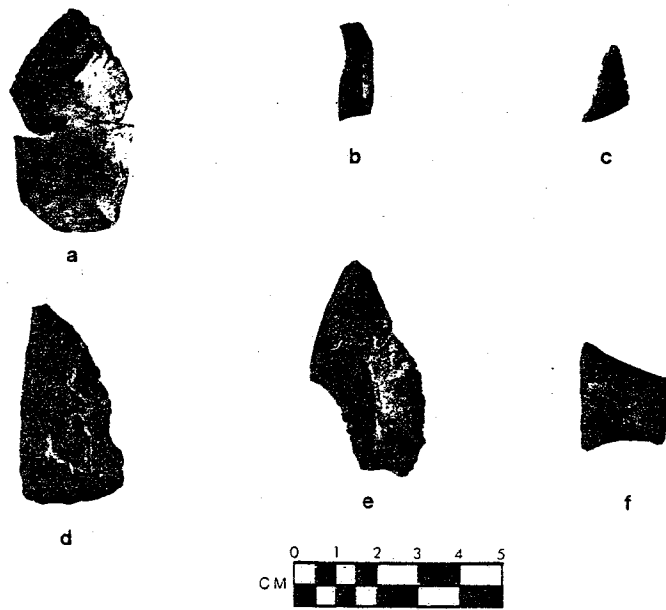


Figure 3.49. Artifacts from site UA82-68 (TLM 128).

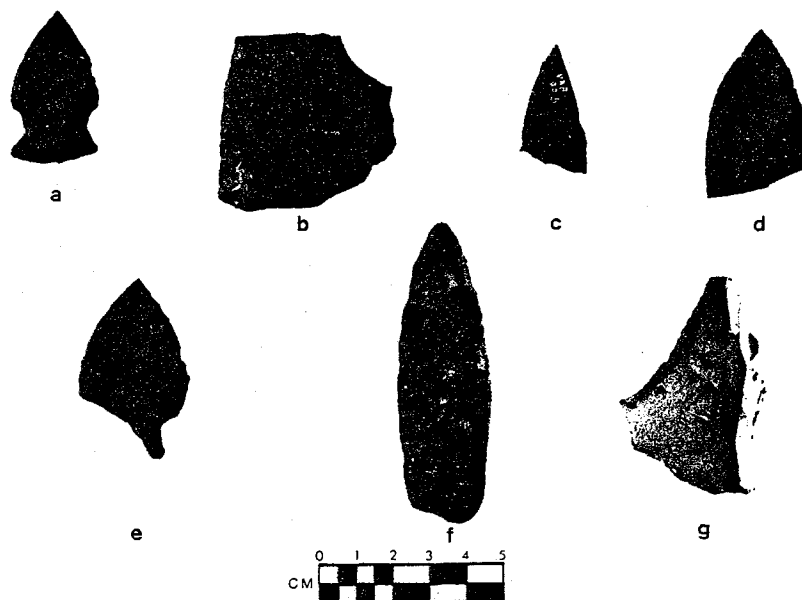


Figure 3.50. Artifacts from sites UA82-75 (TLM 135) a, UA82-76 (TLM 136) b, UA82-80 (TLM 140) c-d, UA82-84 (TLM 144) e, UA82-94 (TLM 154) f, UA82-101 (HEA 210) g.



Figure 3.51. Artifacts from site UA82-83 (TLM 143).

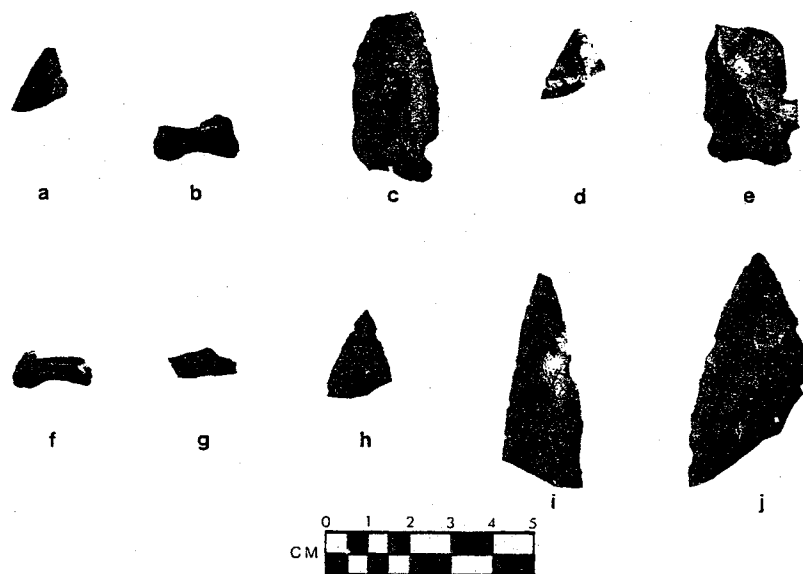


Figure 3.52. Artifacts from site UA82-83 (TLM 143).

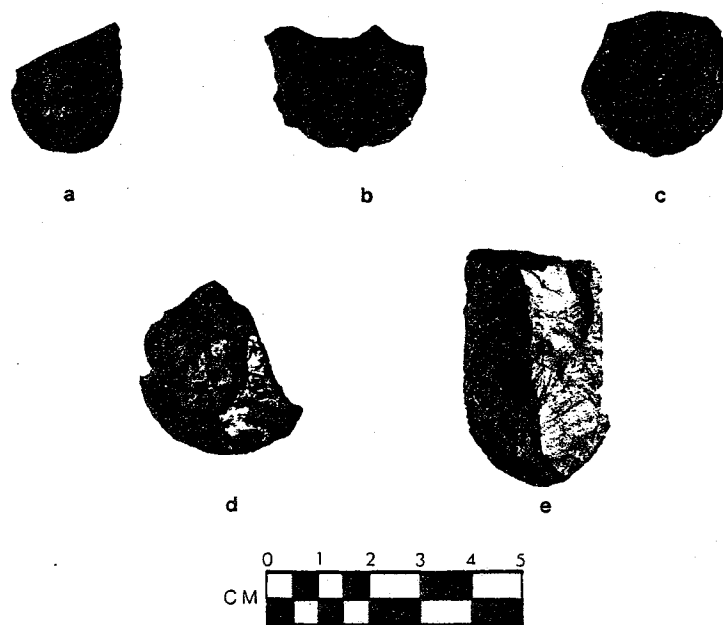


Figure 3.53. Artifacts from site UA82-83 (TLM 143).



Figure 3.54. Artifacts from site UA82-83 (TLM 143).

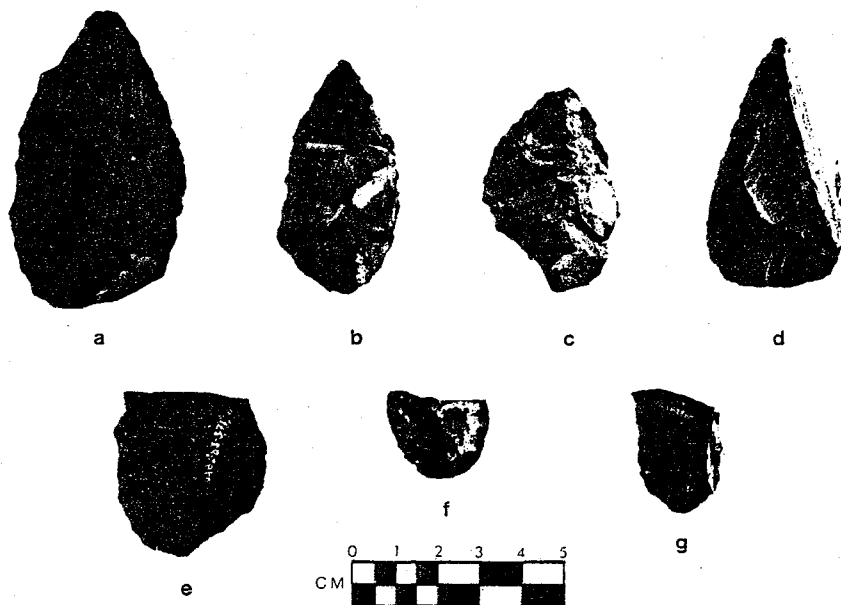


Figure 3.55. Artifacts from site UA82-83 (TLM 143).



Figure 3.56. Artifacts from site UA82-83 (TLM 143).

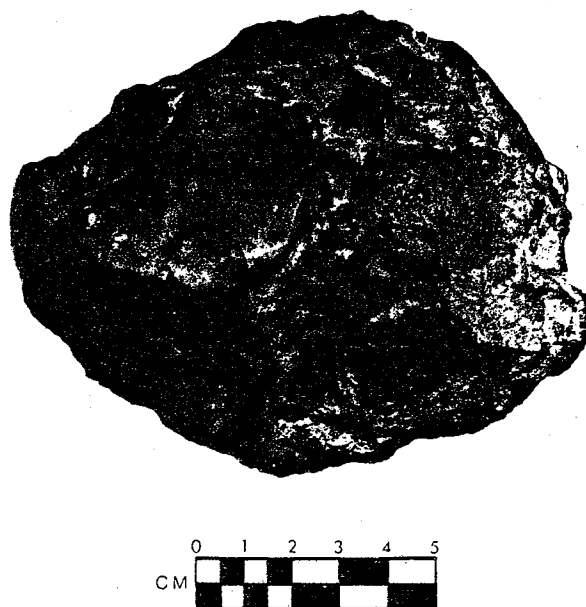


Figure 3.57. Artifact from site UA82-83 (TLM 143).

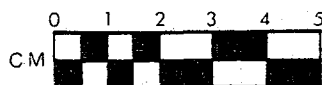


Figure 3.58. Artifact from site UA82-83 (TLM 143).

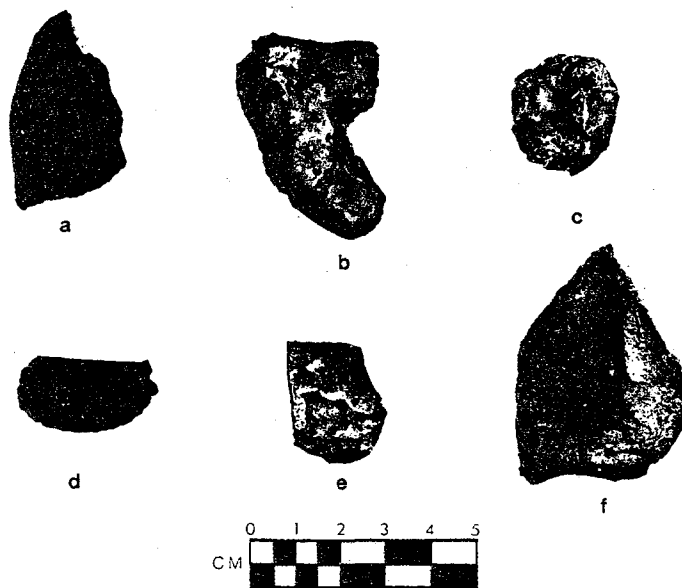
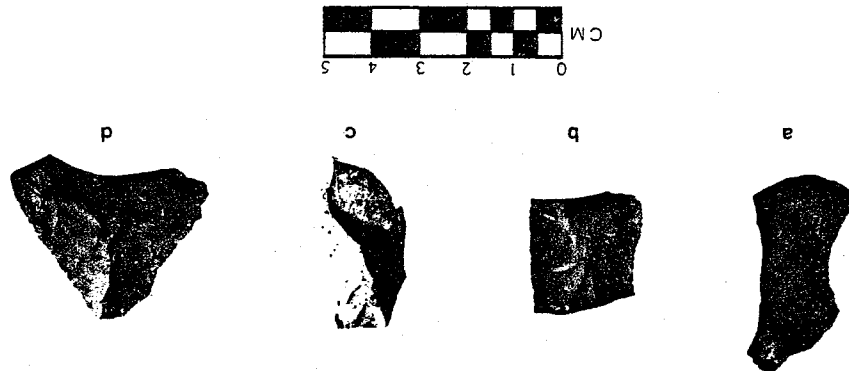


Figure 3.59. Artifacts from site UA82-83 (TLM 143).

Figure 3.60. Artifacts from site UA82-83 (TLM 143).





4 - GEOARCHEOLOGY, TEPHROCHRONOLOGY

4.1 - Introduction

Tephra (volcanic ash) layers were identified at most of the 167 sites found to date. At least three and possibly four tephra were identified in the field and samples were collected from various sites within the study area.

The petrographic study discussed here was conducted to: 1) determine whether the tephra identified in the field were tephra, 2) characterize the mineralogy and glass shard morphology of the tephra, and 3) determine the number of tephra present. Successful discrimination of the tephra would provide a method to correlate and date archeological components within the Susitna River Valley.

The 29 samples analyzed were selected from systematically tested sites. The samples were distributed across 48 kilometers, from TLM 042 to TLM 043 (Figure 4.1). Sample distribution, both within the stratigraphic section and geographically, should provide a representative suite of samples (Table 4.1). Analysis of these samples should accurately characterize the tephra present in the valley.

4.2 - Analytical Methods

The samples were prepared following the procedure suggested by Steen-McIntyre (1977). The volume of material used and the color of each sample (when moistened) was recorded. The samples were then rinsed several times in distilled water, and the suspended fines and floating organic material were decanted off. Three to five times the sample's volume of sodium hypochlorite (household bleach) was then added to each sample and the mixture heated in a boiling water bath for 15 minutes to remove any organic cementing agents (Steen-McIntyre, 1977). The liquid was then decanted off and the sample was rinsed once with distilled water. Suspended fines were again decanted off. 6 N hydrochloric acid was then added to the samples to dissolve iron oxide cement. After the

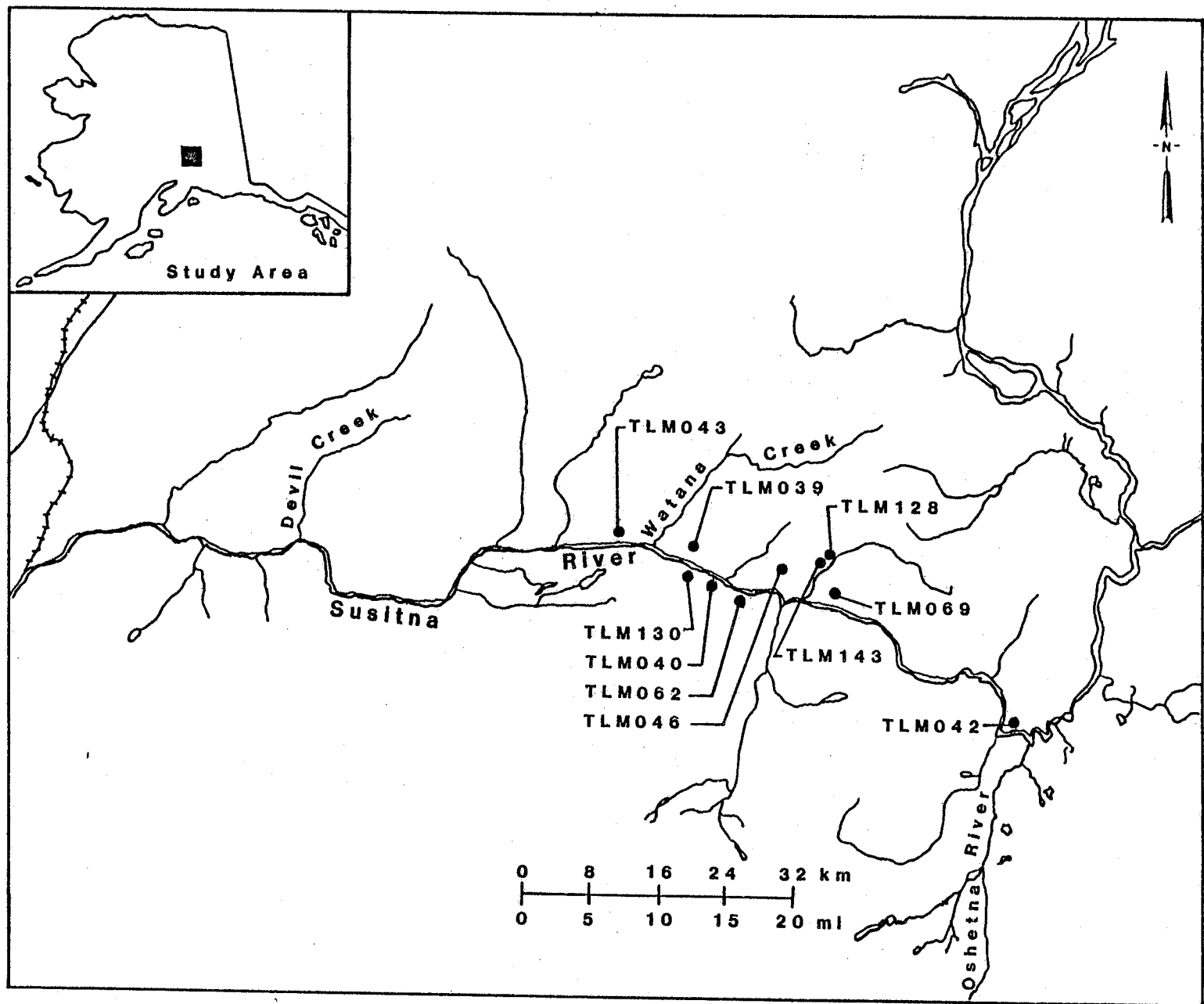


Figure 4.1. Sample Location Map.

TABLE 4.1

STRATIGRAPHIC LOCATION OF SAMPLES FROM THE SUSITNA TEPHRA

Strati- graphic Location	Sample Sites									
	TLM 039	TLM 040	TLM 042	TLM 043	TLM 046	TLM 062	TLM 069	TLM 128	TLM 130	TLM 143
Devil	X	X		X	X	X		X	X	X
Upper Watana	X		X					X	X	X
Lower Watana	X				X		X	X	X	X
Oshetna	X	X		X	X	X	X	X	X	X

acid was decanted off, the sample was rinsed twice with distilled water and air dried. After drying, the samples were sieved using 16 mesh (1 mm), 32 mesh (0.5 mm), 60 mesh (0.25 mm), and 250 mesh (0.062 mm) sieves. The volume of each size fraction was recorded. The sample size used in the petrographic analysis consisted of grains between 60 and 250 mesh (0.25 and 0.062 mm). This fraction was washed in distilled water in a sonic cleaner for 10 to 15 minutes. The procedure was then repeated using acetone, and then the sample was air dried. Once dry, this fraction was again screened using a 250 mesh sieve. The -250 mesh fraction was discarded, while the +250 mesh fraction was stored for analysis.

Grain mounts were made by mixing a small portion of each sample with several drops of histoclad on a glass slide, and allowing the histoclad to set. Each sample was mixed thoroughly before a small scoop of it was taken in an attempt to get a representative split.

Each sample was examined under binocular and petrographic microscopes. Four hundred to six hundred grain counts were made of 16 samples using Galehouse's (1969) area method. All grains within the field of view at 100x magnification were counted, and each sample had four fields of view counted. The percentage of mineral grains in each sample were then calculated.

Nineteen samples from the Devil, Upper Watana, and Lower Watana tephras had 98 to 160 grain counts of their glass fraction to characterize the glass shard morphology of the tephra. Three samples were counted three times to test the reproducibility of the grain counts. The results are listed in Table 4.2 and suggest that the grain counts are precise to within ± 6 percent.

Eight samples were examined using a scanning electron microscope (SEM) to make a high magnification study of glass shard morphology. The eight samples were glued to aluminum stubs using a thinned carbon adhesive, and then coated with a thin layer of gold using an SPI sputter coater. The coater was run for eight minutes to reduce the amount of sample

TABLE 4.2

REPRODUCIBILITY OF GLASS SHARD COUNTS

Sample	Count 1		Count 2		Count 3		Standard Mean Deviation	
	% Scoria	% Vesic.	% Scoria	% Vesic.	% Scoria	% Vesic.		
ATC- 0006	28.8	71.1	43.8	56.2	42.2	57.8	38.3	6.7
ATC- 0015	28.7	71.3	50.5	49.5	51.5	48.5	43.6	10.5
ATC- 0019	86.6	13.4	91.1	8.9	89.4	10.6	89.04	1.8

Where % scoria = percent scoriaceous glass shards -- % vesic. = percent vesicular glass shards.

charging. Samples were scanned at 100x and then photographs were taken at higher magnification (220x to 1000x).

4.3 - Granulometric Analysis

Granulometric analyses were conducted on 15 samples. Many of the samples were too small (less than 5 milliliters) to conduct acceptable analyses. The results are listed in Table 4.3 and are shown graphically in Figure 4.2. The small standard deviation of the Upper Watana tephra is due to the small number of samples, and not to high precision of the data. The analyses indicate that the tephra are dominated by the fine silt and clay-sized fraction (-250 mesh). The coarse sand fraction generally represented an insignificant portion of the sample.

4.4 - Appearance Under Binocular Microscope

Glass appears as white grains under a binocular microscope. Transparent and translucent grains exhibit both cleavage surfaces and conchoidal fracture, suggesting that a portion of the transparent grains are feldspar.

(a) Devil Tephra

This tephra is dominated by white angular grains, followed in decreasing abundance by transparent and translucent grains, green laths, and opaque minerals. The white glass commonly mantles the green laths.

(b) Upper Watana Tephra

White glass shards are the dominant grain followed by transparent and translucent grains, green laths, and opaque minerals. White glass commonly mantles the green laths. Red-brown biotite is a very minor component of this tephra.

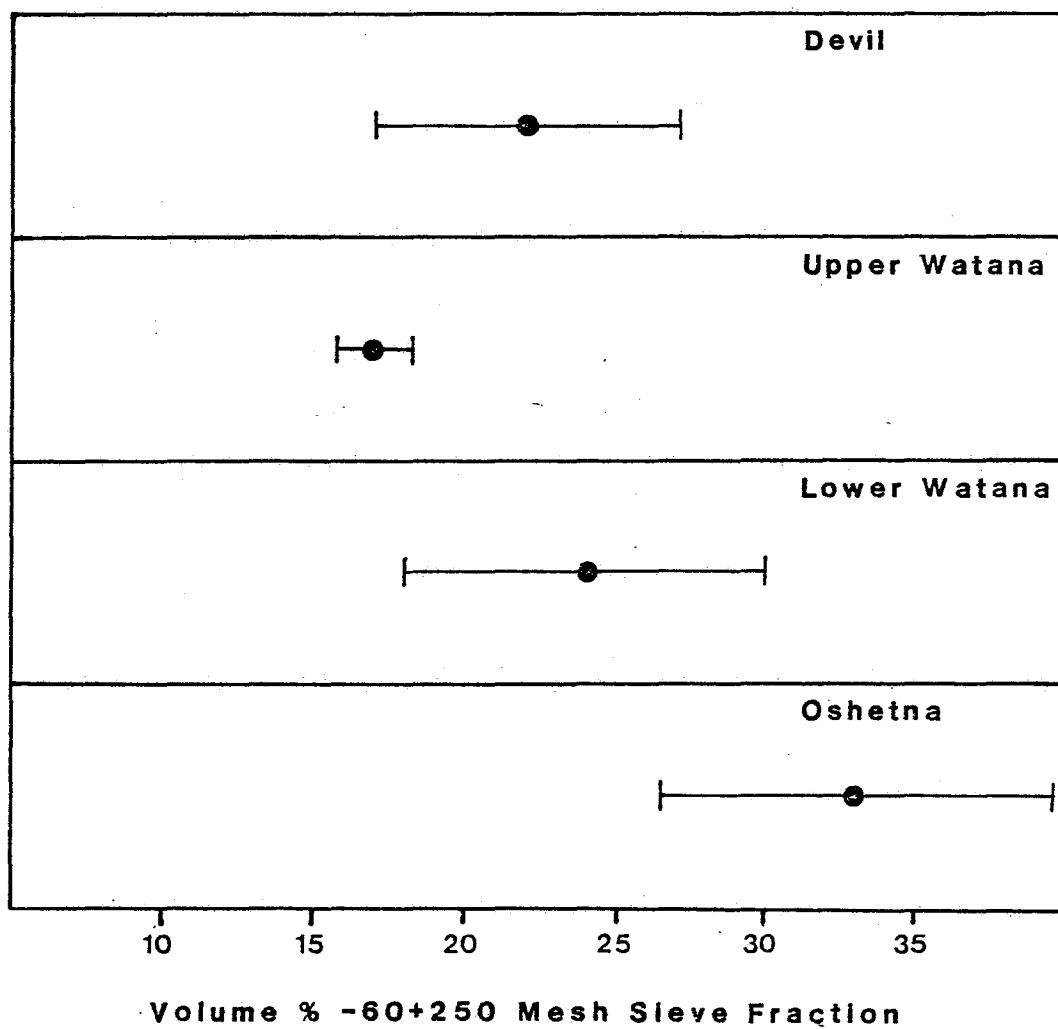


Figure 4.2. Granulometric Analysis of Susitna Tephra.

TABLE 4.3

GRAIN SIZE ANALYSIS FOR 15 SUSITNA TEPHRA

Sample #	Vol. % +60 mesh	Vol. % -60 +250 mesh	Vol. % -250 mesh	Stratigraphic Location
ATC-0001	3%	17.4	79.6	Devil
ATC-0002	3%	16.3	81.7	U. Watana
ATC-0003	0.0	22.1	77.9	L. Watana
ATC-0004	34.8%	39.1	26.1	Oshetna
ATC-0006	tr	17.9	82.1	U. Watana
ATC-0007	tr	24.1	75.9	L. Watana
ATC-0008	tr	23.8	76.2	L. Watana
ATC-0009	3%	23.6	73.4	Oshetna
ATC-0010	tr	20.0	80.0	Devil
ATC-0012	0.0	18.3	81.7	L. Watana
ATC-0013	tr	35.5	64.5	Oshetna
ATC-0017	tr	19.0	81.0	L. Watana

TABLE 4.3 (Continued)

Sample #	Vol. % +60 mesh	Vol. % -60 +250 mesh	Vol. % -250 mesh	Stratigraphic Location
ATC-0019	0.0	36.9	63.1	L. Watana
ATC-0025	4.3%	30.2	65.5	Devil
ATC-0028	3%	19.8	77.2	Devil

Devil: Mean = 21.9, Standard Deviation = 4.9

U. Watana: Mean = 17.0, Standard Deviation = 1.1

L. Watana: Mean = 24.0, Standard Deviation = 6.2

Oshetna: Mean = 32.7, Standard Deviation = 6.5

(c) Lower Watana Tephra

The lower Watana appears quite similar to the Upper Watana. Biotite is also a minor constituent of this tephra.

(d) Oshetna Tephra

Transparent and translucent fragments are the dominant grains, followed by green crystal fragments, and opaque minerals. White glass is a rare constituent of the tephra. The green crystals are generally short angular flakes without glass mantles. Biotite is more abundant in this tephra than in the others.

4.5 - Mineralogy

(a) Hornblende

Two varieties are present: 1) euhedral to subhedral laths having green to olive green, or dark green pleochroism, and 2) subhedral to anhedral fragments with green to blue-green pleochroism. The euhedral to subhedral green laths are the dominant type in the Devil, Upper, and Lower Watana tephtras, while the blue-green variety is common only in the Oshetna tephra. The green laths are commonly mantled by glass and usually contain inclusions of opaque minerals. The blue-green variety lacks attached glass, and is generally free of opaque inclusions. Both amphiboles are biaxial negative and exhibit some twinning.

(b) Orthopyroxene

Orthopyroxene occurs as biaxial negative hypersthene. The hypersthene is subhedral to euhedral and is commonly mantled by glass. This is true even in the glass-poor Oshetna tephra. The phenocrysts range between 0.02 and 0.3 mm in length, are length slow, and have either pale green to pink, or pale green to yellow, pleochroism. The hypersthene commonly occurs as interpenetration twins. Inclusions in the phenocrysts include opaque minerals and smaller crystals of orthopyroxene. The mineral is

uncommon in the three upper tephra, and only reaches relatively abundant levels in the Oshetna tephra.

(c) Plagioclase

Two populations of the mineral are present. The most abundant variety consists of anhedral, angular to sub-angular, grains lacking attached glass. The birefringence increases towards the center of these grains indicating a platy habit which is thickest at the middle. Zoning is common, while twinning is not. The lack of albite twins made it impossible to estimate anorthite composition.

The second variety is less common and is characterized by low birefringent euhedral to subhedral grains, mantled by glass, and having albite and carlsbad twins. Concentric and oscillatory zoning are common in this variety of plagioclase. Compositional estimates, using the Michel-Levy method (Kerr, 1977), ranged between An_{25} and An_{41} for the Devil tephra, An_{25} and An_{49} for the Upper Watana, An_{23} and An_{30} for the Lower Watana, and between An_{30} and An_{32} for the Oshetna tephra.

(d) Opaque Minerals

These minerals generally occur as subhedral to anhedral grains less than 0.2 mm in diameter. Opaque minerals are common inclusions in glass, plagioclase, orthopyroxene, and hornblende. The cubic shape of the grains suggests that they are magnetite.

(c) Quartz

Quartz is present in the tephra in unknown quantities and is recognized by its conchoidal fracture, low birefringence, low relief, and uniaxial positive interference figure. It appears as anhedral angular grains lacking glass mantles. The similarity in appearance between quartz and the plagioclase lacking glass mantles resulted in the two grains being lumped together in the grain counts.

(f) Minor Accessory Minerals

Biotite occurs as anhedral, sub-angular to sub-rounded, red-brown to yellow-brown pleochroic grains. It is a rare mineral in the Upper Watana, Lower Watana, and Oshetna tephras. None of the grains seen had any attached glass. Clinopyroxene, zircon, and apatite are also present in trace amounts in the four tephra. The clinopyroxene is characterized by its pale green non-pleochroic color in plane light, its biaxial positive interference figure and inclined extinction. It is subhedral to anhedral and is most common in the Oshetna tephra. Zircon is present as anhedral to euhedral grains. It is recognized by its very high relief and birefringence, parallel extinction, and its uniaxial positive interference figure. None of the zircon has any attached glass. Apatite occurs as small inclusions in plagioclase phenocrysts.

4.6 - Grain Count Analyses

Sixteen samples had between 350 and 700 grains counted to get an accurate estimate of the percentage of different minerals in each sample. The samples were grouped according to stratigraphic position and the mean and standard deviation for each mineral was calculated. The mean values are listed in Table 4.4. Figures 4.3, 4.4, and 4.5 compare the mean and deviation for each mineral in all four tephra. The only case where the mineralogy is significantly different is in the Oshetna tephra, where the percentage of glass shards is much lower, and the percentage of plagioclase and quartz much higher, than in the other tephra.

4.7 - Glass Shard Morphology

The glass shards in these tephra have morphological characteristics typical of rhyolitic glasses (Heiken, 1972). They are vesicular, with the shape of the vesicles controlling the shape of the shards. Figure 4.6 shows the typical morphology of glass shards in the four tephra.

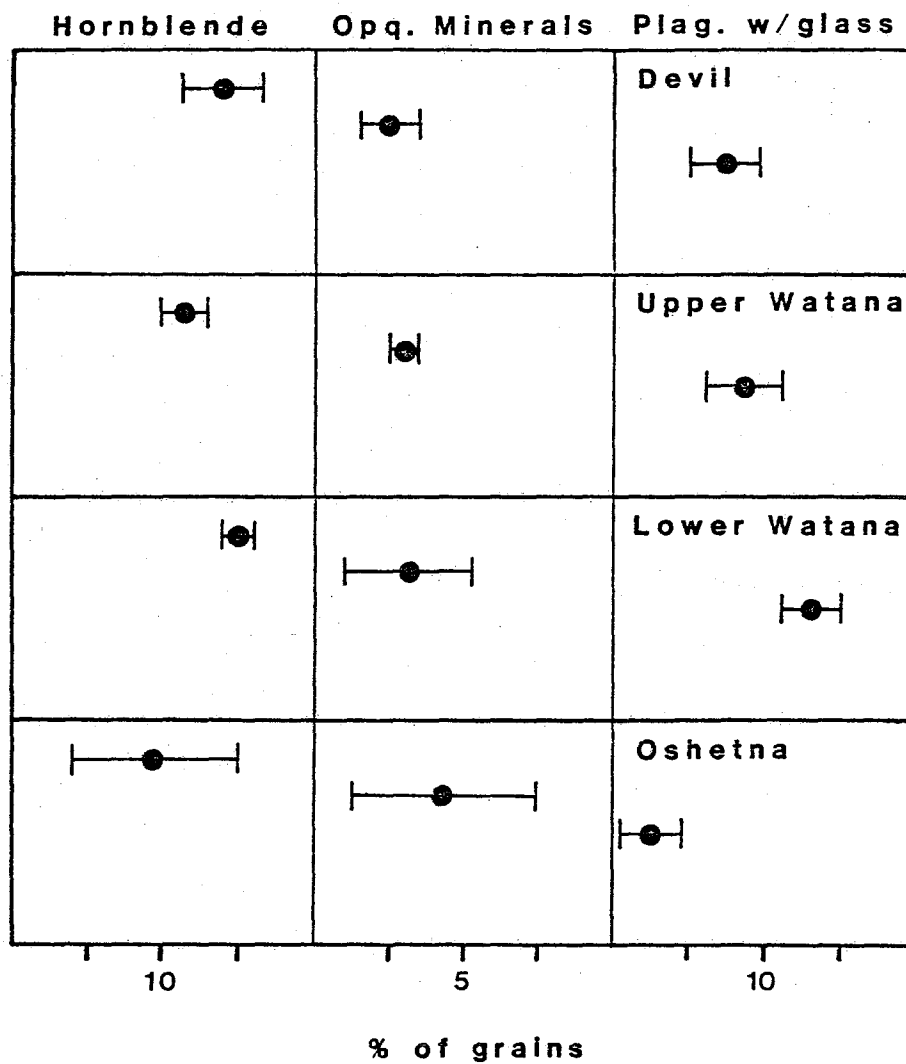


Figure 4.3. Numerical Percentages of Minerals in the Susitna Tephra.

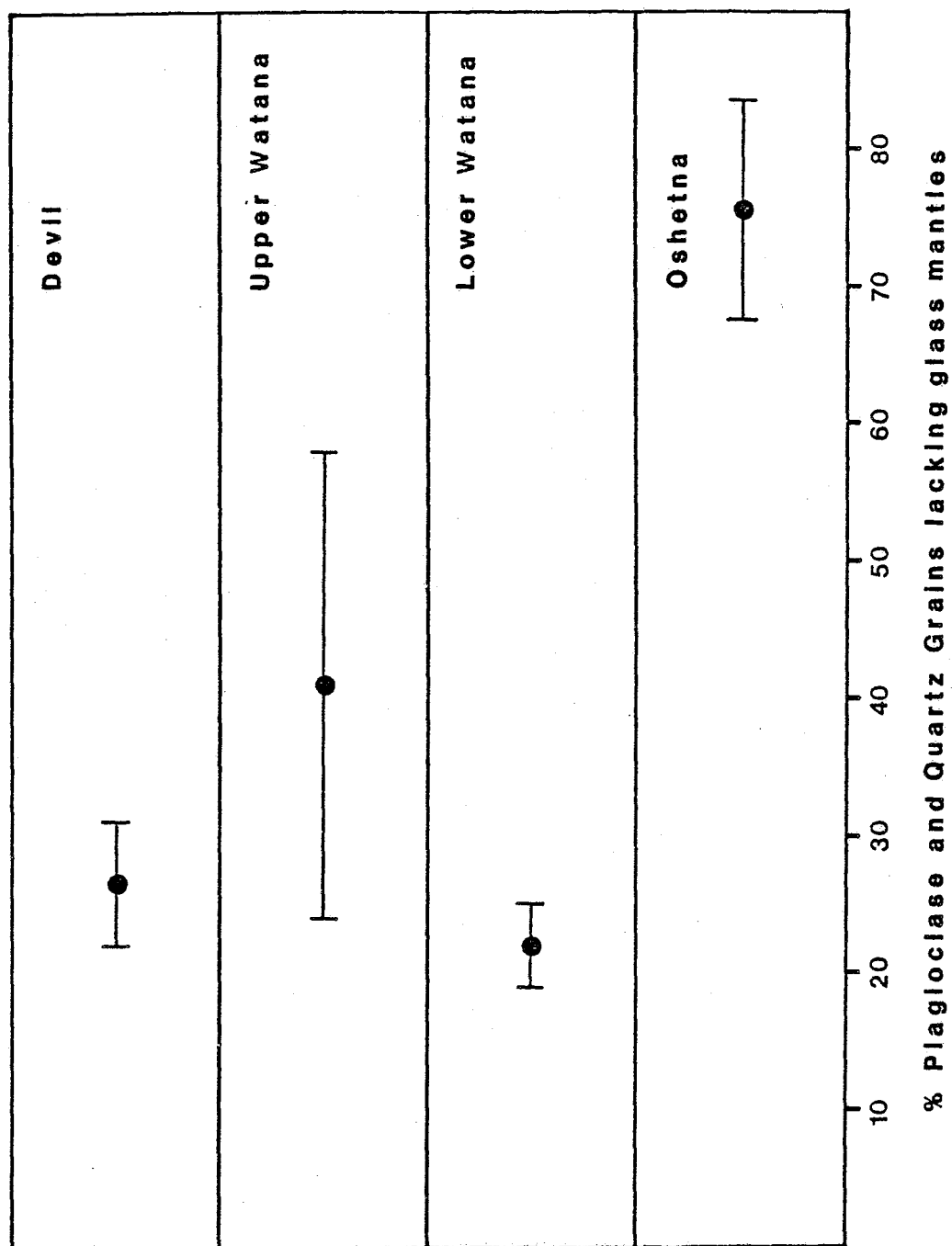


Figure 4.4. Numerical Percentage of Plagioclase and Quartz Grains Lacking Glass Mantles in the Susitna Tephra.

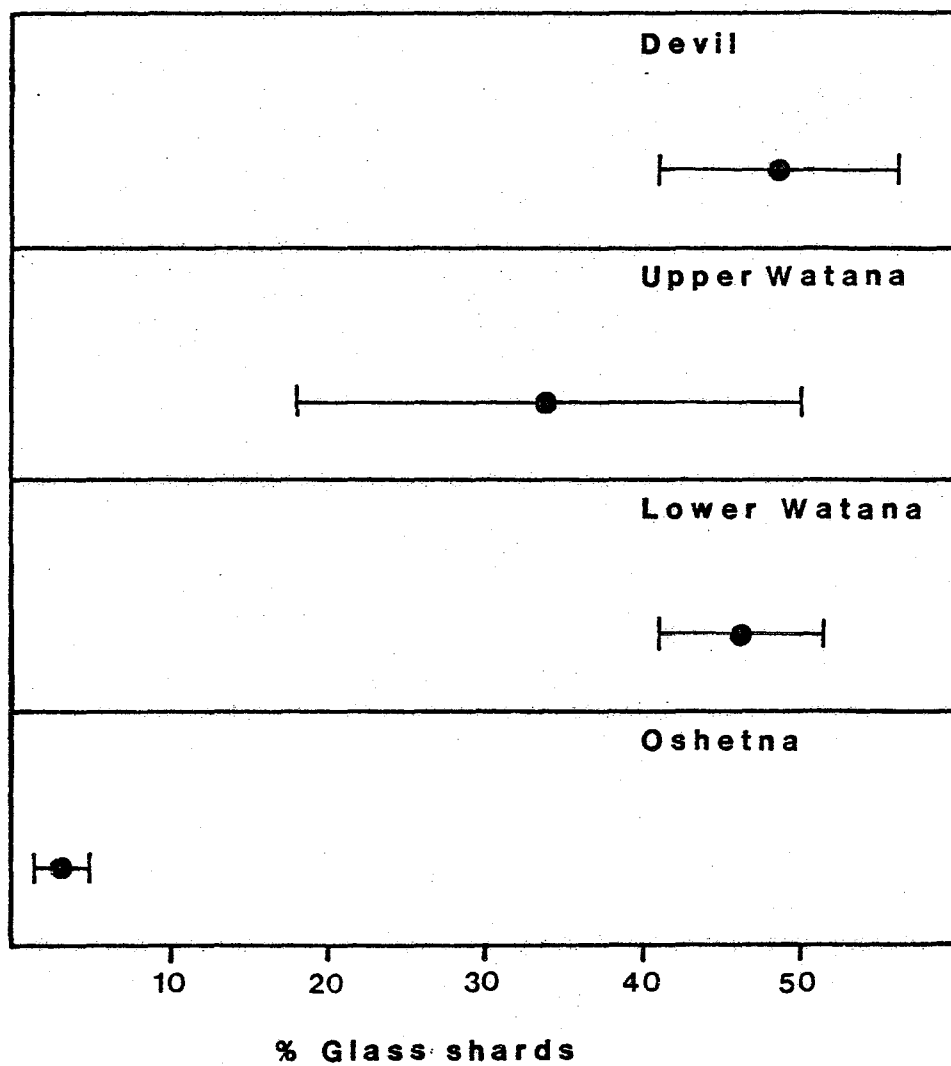


Figure 4.5. Numerical Percentage of Glass Shards in the Susitna Tephra.

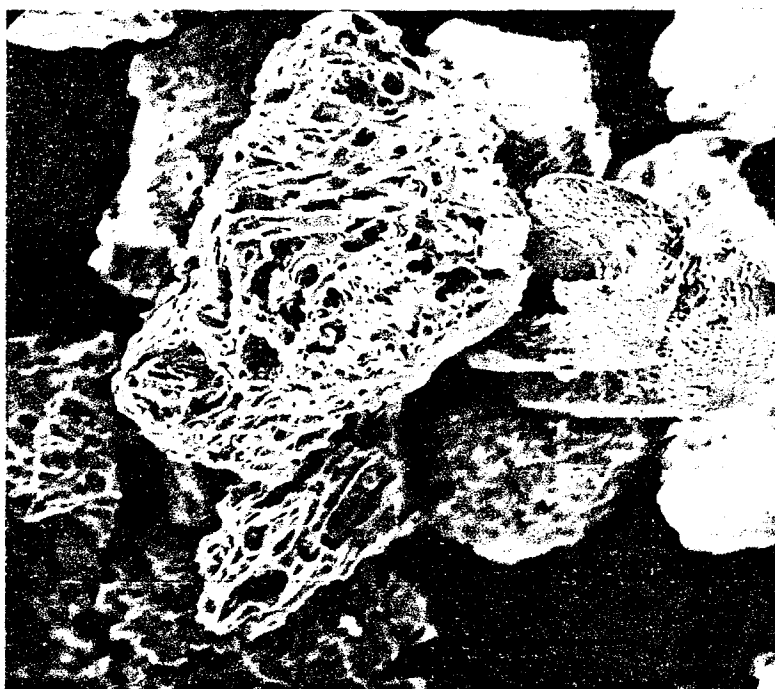
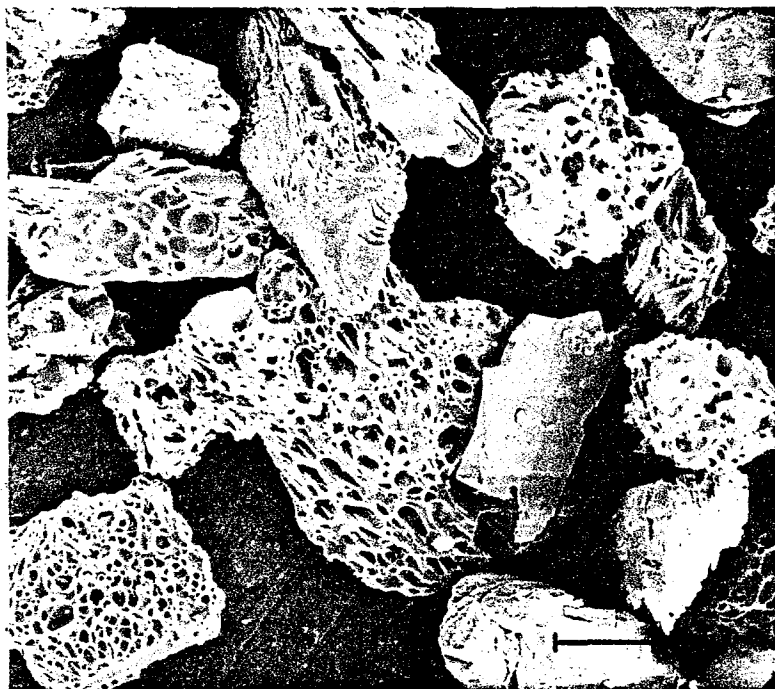


Figure 4.6. Scanning Electron Photomicrographs of Vesicular Glass Shards.

A) Vesicular Glass from the Devil Tephra.

B) Scoriaceous Glass from the Lower Watana Tephra.

Scale = 50 Microns.

TABLE 4.4

MEAN VALUES FOR GRAIN COUNTS OF SUSITNA TEPHRA

Tephra	Hb	Bio	Opx	Cpx	Opq	Pl/Q	Pl/G	Zirc	Gl	Lith
Devil	14.0	0.1	0.6	0.0	2.5	26.4	7.2	0.2	48.4	0.5
Upper Watana	11.4	0.4	0.6	0.1	2.9	41.1	8.5	0.3	34.2	0.5
Lower Watana	15.1	0.1	0.2	0.0	3.1	21.9	12.9	0.0	46.3	0.3
Oshetna	9.4	0.3	2.8	0.3	4.2	75.6	2.3	0.6	3.1	1.3

Hb = Hornblende

Bio = Biotite

Opx = Orthopyroxene

Cpx = Clinopyroxene

Opq = Opaque minerals

Pl/Q = Plagioclase and quartz lacking glass mantles

Pl/G = Plag with glass mantles

Zirc = Zircon

Gl = Glass

Lith = Lithic fragments

Two types of glass shards were observed: 1) grains with relatively few vesicles resulting in the glass appearing transparent and angular in plane light, and 2) scoriaceous grains with sub-angular to sub-rounded shapes. This second type of glass shard appears brownish in plane light because the numerous small vesicles tend to refract the light rather than allowing it to pass through relatively undisturbed (Figure 4.7). Vesicle shapes range from tube-like to spherical.

Point counts of the two glass shard types were conducted on 19 grain mounts and the results are shown in Table 4.5. The means and standard deviations for each of the three tephra were calculated, are listed in Table 4.6, and shown in Figure 4.8.

The Oshetna tephra was not counted because of the low abundance of glass shards.

Two cases are shown for both Upper and Lower Watana tephras. In each group one sample had very low counts of scoriaceous glass, which resulted in the large standard deviations seen in case 1. Removal of these samples resulted in the higher mean values and smaller standard deviations seen in case 2. It is unclear why these samples had such low counts. Examination of the grain mounts does not suggest that they are in any other way unusual.

4.8 - Discussion

The mineralogy and the presence of glass shards in all 29 samples indicates that the four layers seen in the field are tephra. The tephra are very fine-grained, with only a minute portion of the sample coarser than 60 mesh (0.25 mm). The large standard deviations for the sieve analyses do not allow for discrimination of any of the tephra. The mineralogy of the tephra is remarkably uniform and consists of plagioclase, hornblende, opaque minerals, orthopyroxene, quartz, biotite, clinopyroxene, zircon, and apatite in decreasing order of abundance. Two types of plagioclase and hornblende are present in the tephra. Those phenocrysts that have attached glass can be attributed to the tephra, however the

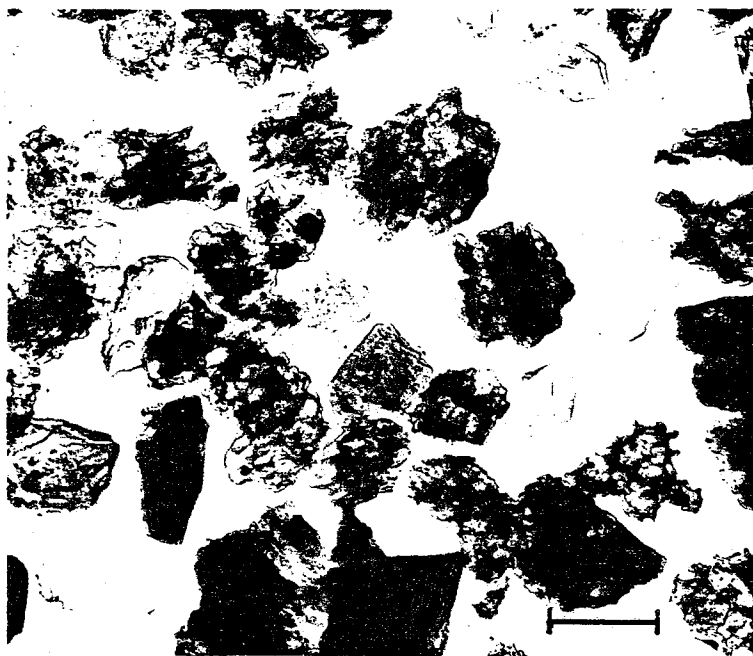
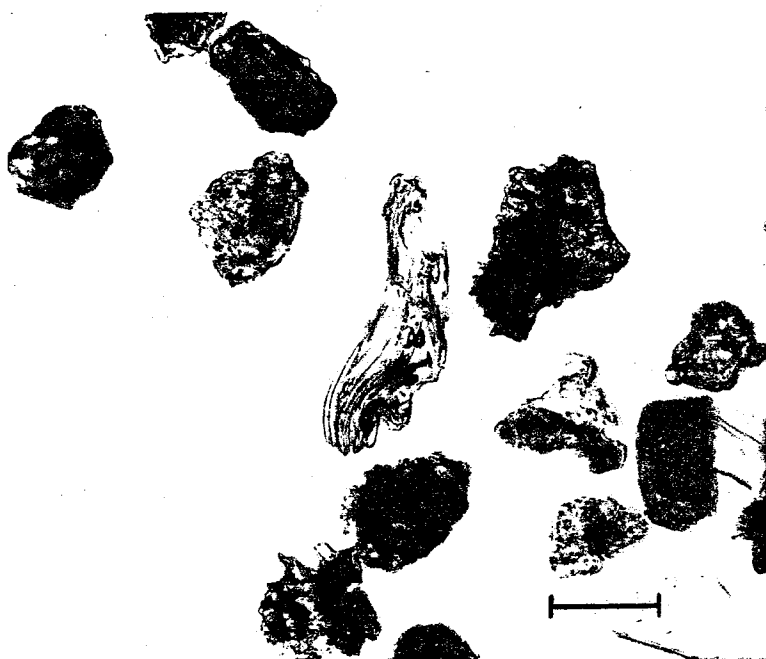


Figure 4.7. Photomicrographs of the Two Glass Shard Textural Types.

A) Transparent, Vesicular Glass Shards

B) Scoriaceous Glass Shards with Transparent Mineral Grains.

Scale = 0.1 Millimeter.

Figure 4.8. Numerical Percentage of Scorlaceous Glass
in the Three Upper Susitna Tephra.

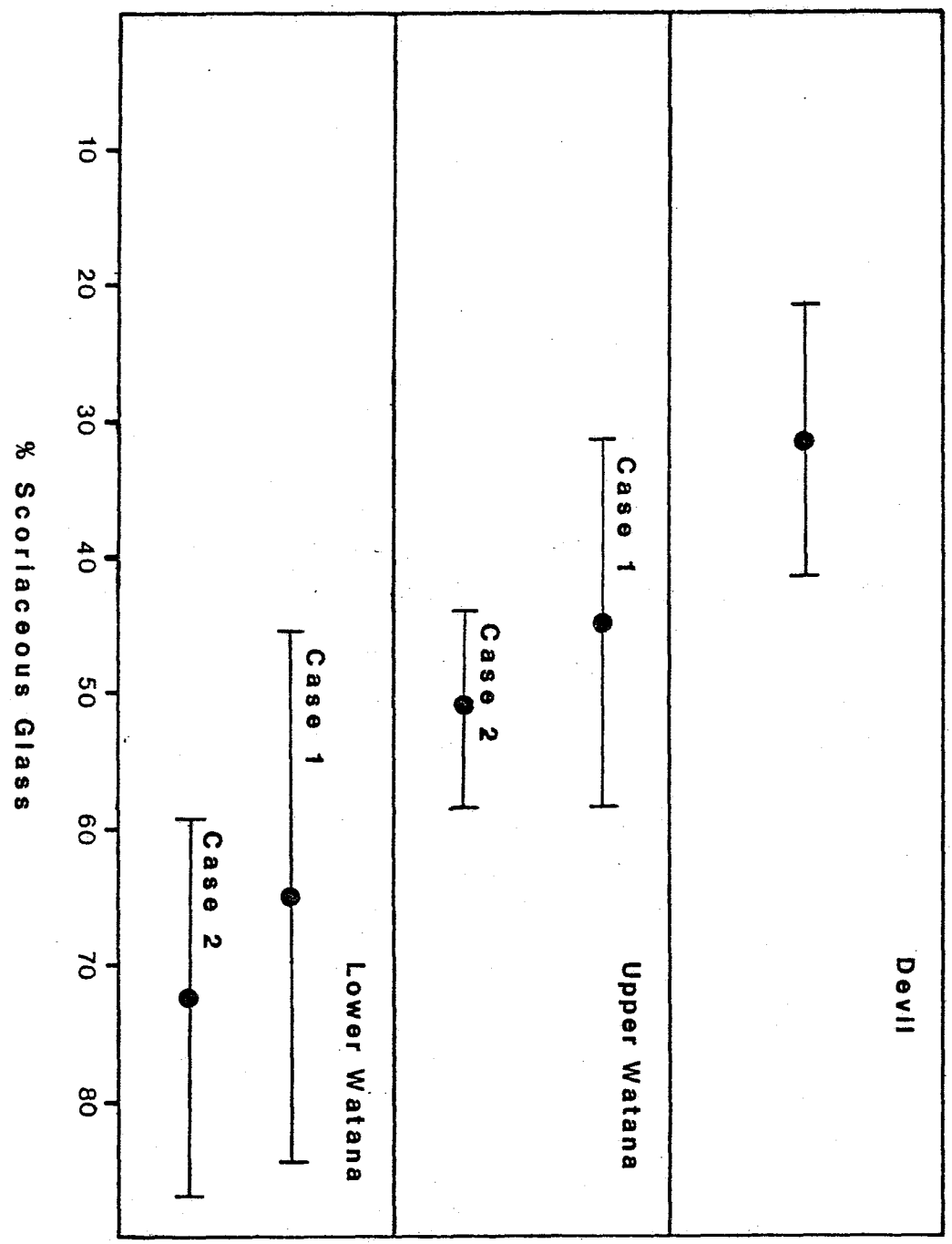


TABLE 4.5

SCORIACEOUS VS. VESICULAR GLASS SHARDS

Sample #	% Scoriaceous	% Vesicular	Stratigraphic Location
ATC-0001	41.9	59.1	Devil
ATC-0002	58.8	41.2	Upper Watana
ATC-0003	88.8	11.2	Lower Watana
ATC-0005	43.9	56.1	Devil
ATC-0006	40.0	60.0	Upper Watana
ATC-0007	88.2	11.8	Lower Watana
ATC-0008	54.3	45.7	Lower Watana
ATC-0010	15.4	84.6	Devil
ATC-0011	49.5	50.5	Upper Watana
ATC-0012	28.0	72.0	Lower Watana
ATC-0015	40.0	60.0	Devil
ATC-0017	63.11	36.9	Lower Watana
ATC-0018	22.2	77.8	Devil

TABLE 4.5 (Continued)

SCORIACEOUS VS. VESICULAR GLASS SHARDS

Sample #	% Scoriaceous	% Vesicular	Stratigraphic Location
ATC-0019	83.0	17.0	Lower Watana
ATC-0021	28.4	71.6	Devil
ATC-0022	21.3	78.7	Upper Watana
ATC-0023	58.4	41.6	Lower Watana
ATC-0025	28.9	71.1	Devil
ATC-0027	56.4	43.6	Upper Watana

TABLE 4.6

MEAN AND STANDARD DEVIATION FOR DEVIL, UPPER WATANA, AND LOWER WATANA
TEPHRA GLASS SHARD COUNTS

Tephra	No. of Samples Used	Mean	Standard Deviation
Devil	7	31.5	10.0
Upper Watana (1)	5	45.2	13.6
Upper Watana (2)	4	51.2	7.3
Lower Watana (1)	7	66.3	20.5
Lower Watana (2)	6	72.6	14.4

origin for the blue-green variety of hornblende and the plagioclase lacking glass mantles is uncertain. The angular shapes of these latter grains does not indicate much, if any, transport, yet the differences between them and the phenocrysts which do have glass mantles suggest a different origin. Similar problems arise in interpreting the origin of the quartz, zircon, and biotite. Without attached glass it is unclear whether these minerals represent detrital contaminants or primary volcanic material.

Of the four tephra, only the Oshetna can be distinguished on the basis of mineralogy. Figures 4.3 and 4.4 show that it has a much higher percentage of plagioclase and quartz, and a much lower percentage of glass shards, than any of the other tephra.

Based on glass morphology, the Devil and Lower Watana tephra can be distinguished with a fair degree of confidence. Table 4.4 shows that all of the Devil tephra have less than 50 percent scoriaceous glass shards, while 57 percent of the Lower Watana tephra have greater than 60 percent scoriaceous glass shards, and 86 percent have greater than 50 percent scoriaceous glass shards. The Upper Watana tephra has percentages of scoriaceous glass shards which overlap the fields of the two other tephra.

4.9 Conclusions and Suggestions for Further Work

Three out of the four tephra can be distinguished based on this petrographic study. While stratigraphic evidence suggests that the Upper Watana tephra is a separate unit from the Lower Watana and the Devil tephra, the petrographic evidence is unclear. The remarkable mineralogic similarities between the three upper tephra suggests that they are derived from the same volcanic vent. If this is the case, geochemical studies of the glass shards and phenocrysts will probably be needed to clarify the distinctions between the three upper tephra. The Oshetna tephra is clearly distinguishable from the other tephra due to the differences in mineralogy and the proportion of glass shards. These differences may be due to its greater age or a different source.

It is generally agreed that tephra correlation must be based upon several criteria, and not on single criteria (Westgate and Gorton, 1981). Stratigraphic and petrographic data are now available for the Susitna tephra, and geochemical studies of the tephra would aid in clarifying the distinctions between tephra units. It is strongly suggested that such a study be undertaken. Numerous authors have used geochemistry to distinguish between tephra, as well as identifying several tephra in a layer which was thought to be a single unit (Smith and Westgate, 1969; Izett and others, 1970; Westgate, 1977; Scheidegger and others, 1978; Westgate and Evans, 1978; and Larsen, 1981).

In addition to the geochemical analyses, detailed petrographic work would probably reduce the variance in the analyses that have been conducted and may clarify the distinctions between the three upper tephra.

4.10 - Archeological Significance

The petrographic analysis largely agrees with the field evidence that there are three, and probably four, tephra units in the Susitna River valley. This corroborating evidence should give a high degree of confidence to the correlation of components from different sites which are found between the same tephra units. These analyses may also aid correlation of components associated with tephra in other parts of south-central Alaska, where the tephra can be shown to be identical to the Susitna tephra.



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.

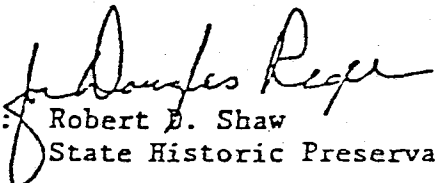
We feel that the steps taken thus far in the cultural resource management of the project have been excellent and one of the few instances of adequate lead time. We would like to make the observation that the work thus far is only preliminary to the work yet needed for the Susitna Hydroelectric project. 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.

John D. Lawrence
December 4, 1981
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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: Robert D. Shaw
State Historic Preservation Officer

cc: Dr. E. James Dixon
Curator of Archaeology
University of Alaska Museum
University of Alaska
Fairbanks, Alaska 99701

Eric Yould
Executive Director
Alaska Power Authority
333 W. 4th Avenue
Anchorage, Alaska 99501

DR:clk



United States Department of the Interior

NATIONAL PARK SERVICE

Alaska Regional Office
540 West Fifth Avenue
Anchorage, Alaska 99501

IN REPLY REFER TO:

L7621(ARO-PCR)

OCT 22 1982

Dr. E. James Dixon, Jr.
Curator of Archeology
University of Alaska Museum
University of Alaska
Fairbanks, Alaska 99701

Dear Dr. Dixon:

Our staff has examined the Susitna Hydroelectric Project cultural resources final report, in particular the identification and testing program elements of the research design, and find these and their field application to be very adequate methods and procedures for the discovery and evaluation of archeological and historical resources in the project area. Consultation between our staff archeologists and project personnel from the University of Alaska Museum and Acres American, as you well know, have occurred several times since the project's inception, and we have thus been kept abreast of most developments relating to cultural resources management matters. We hope that the level of identification, testing, and evaluation conducted to date continues as the project proceeds, to assure the highest levels of resource protection and compliance with Federal and State historic preservation law.

We look forward to evaluating your mitigation plan for cultural resources occurring in the project area.

Sincerely,

Regional Director
Alaska Region

cc:
Floyd Sharrock, Alaska Regional Office

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

October 15, 1982

Re: 1130-13

Mr. Eric P. Yould
Executive Director
Alaska Power Authority
334 W. 5th Avenue
Anchorage, Alaska 99501

Dear Mr. Yould:

Thank you for your letter of September 2 soliciting our recommendations on Susitna Hydro Project impacts and mitigation measures with respect to cultural resources.

First of all, we wish to commend archaeologists Dr. E. James Dixon of the University Museum and Mr. Glenn Bacon of the Alaska Heritage Research Group, Inc., for the excellent job they have been doing in locating cultural resources prior to ground disturbing activities.

Preconstruction survey is, of course, the first step in impact mitigation - the location and boundaries of cultural resource sites must be known. While this work is fairly far along, more needs to be done as plans become more concrete.

Secondly, these cultural resource sites must be evaluated in terms of eligibility for inclusion in the National Register of Historic Places. For evaluation, each site within the project area must be sufficiently investigated such that their boundaries, stratigraphy, relative age, cultural affiliation and potential to yield significant scientific information are known. Many of the currently known sites require further, more intensive, investigation for eligibility determinations to be made. Since so little is known about the prehistory of the area, each site discovered takes on added significance. In addition, groups of sites within a river drainage have been classic study areas throughout the history of anthropological archaeology. It would appear that a high percentage of the discovered sites may be eligible for the National Register.

Thirdly, each eligible site must be examined in terms of "Effect." Will the proposed action have "no effect," "no adverse effect," or an "adverse effect"? This would have to be done on a case by case basis. The criteria for determinations of effect may be found under Title 36, Code of Federal Regulations, Part 800.

Mr. Eric P. Yould
October 15, 1982
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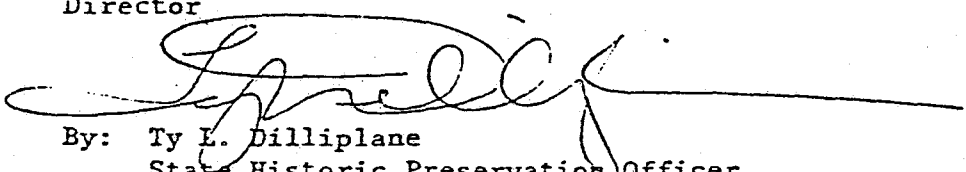
Please note that every effort must be made to mitigate future "adverse effect" activities to National Register or eligible properties. In the few expected cases where very large, complex sites will be adversely effected, it may be more economical to build a barrier around the sites. In many cases, substantive investigation may be necessary. If so, this will usually mean relatively complete excavation of the site in order to recover as much scientific information as possible.

These recommendations are essentially those suggested by Dixon, et al, in the Cultural Resources Investigation Phase I Report (April 1982).

We are confident that impacts to significant cultural resources will be fully mitigated throughout the course of the Susitna Hydroelectric Project.

Sincerely,

Judith E. Marquez
Director



By: Ty E. Dilliplane
State Historic Preservation Officer

cc: Ms. Leila Wise, DNR, A-95 Coordinator
Dr. Edward Slatter, FERC Archaeologist
Mr. Lou Wall, Advisory Council on Historic Preservation
✓ Dr. E. James Dixon, Lead Archaeologist, Susitna Hydro Project
Mr. Glenn Bacon, Lead Archaeologist, Alaska Heritage Research Group

TS:clk

6 - REFERENCES

Ager, T.A. 1975. Late quaternary environmental history of the Tanana Valley, Alaska. Ohio State University Institute of Polar Studies Report 54, Columbus, Ohio. 117pp.

Alaska Department of Fish and Game. 1973. Alaska's wildlife and habitat. LeResche, R., and R.A. Hinman, eds. State of Alaska, Department of Fish and Game. 144pp.

Alaska Department of Fish and Game. 1975. Plant community studies in the Blair Lakes Range, Map. Alaska Division of Parks.

Alaska Division of Parks. 1978. Alaska heritage resource survey index. Alaska Division of Parks, Anchorage, Alaska.

Alaska Native Language Center. 1974. Native peoples and languages of Alaska. Map. Center for Northern Educational Research, University of Alaska, Fairbanks, Alaska.

Allen, H.T. 1887. Report of an expedition to the Copper, Tanana, and Koyukuk Rivers in the Territory of Alaska, in the year 1885. U.S. Army, Department of the Columbia, U.S. Government Printing Office, Washington, D.C.

Anderson, D.D. 1968a. A Stone age campsite at the gateway to America. Scientific American 218(6):2433.

Anderson, D.D. 1968b. Early notched point and related assemblages in the western American Arctic. Manuscript on file in the University of Alaska Museum, Fairbanks, Alaska.

Anderson, D.D. 1968c. Archeology of the Northwestern Arctic. Manuscript, Brown University, Providence, Rhode Island.

- Anderson, D.D. 1970. Microblade traditions in Northwest Alaska. *Arctic Anthropology* 7(2):2-16.
- Andrews, E.F. 1975. Salcha: An Athapaskan band of the Tanana River and its culture. M.A. Thesis, Department of Anthropology, University of Alaska, Fairbanks, Alaska.
- Arctic Environmental Information and Data Center. 1975. Alaska regional profiles: southcentral region. L. Selkregg, ed. University of Alaska, Anchorage, Alaska. pp. 122-131
- Arndt, K. 1977. Structure of cache pits at GUL-077, a late pre-historic archeological site near Gulkana, Alaska. M.A. Thesis, Department of Anthropology, University of Alaska, Fairbanks, Alaska.
- Bacon, G., ed. 1975a. Heritage resources along the Upper Susitna River. Miscellaneous Publications History and Archeology Series, No. 14, Alaska Division of Parks, Anchorage, Alaska. 61pp.
- Bacon, G. 1975b. Preliminary testing at the Long Lake archeological site. Manuscript on file University of Alaska Museum, Fairbanks, Alaska.
- Bacon, G. 1978a. Archeology near the Watana Dam site in the upper Susitna River basin. Report prepared for the Alaska District, Corps of Engineers under contract DACW85-78-C-0034. Manuscript on file University of Alaska Museum, Fairbanks, Alaska. 23pp.
- Bacon, G. 1978b. Archeology in the upper Susitna River basin. Report to the Alaska District, Corps of Engineers under contract DACW85-78-0017. Manuscript on file University of Alaska Museum, Fairbanks, Alaska. 61pp.
- Bancroft, H.H. 1886. History of Alaska 1730-1885. Antiquarian Press, New York (1959 reprint).

- Borns, H.W., Jr., and R. P. Goldthwait. 1966. Late-Pleistocene fluctuations of the Kaskawulsh Glacier, southeastern Yukon Territory, Canada. *American Journal Science* 264:600-619.
- Bowers, P.M. 1978a. Research summary: 1977 investigations of the Carlo Creek archeological site, central Alaska. Report submitted to the University of Alaska Museum, Fairbanks, Alaska. 24pp.
- Bowers, P.M. 1978b. Geology and archeology of the Carlo Creek Site, an Early Holocene campsite in the central Alaska Range (Abstract). in Abstracts of the 5th Biennial Meeting, American Quaternary Association, Edmonton, p. 188.
- Bowers, P.M. 1979. Geology and archeology of the Carlo Creek site, an Early Holocene campsite in the Central Alaska Range. in Abstracts of the 5th Biannual Meetings, American Quaternary Association. Edmonton, Canada.
- Brooks, A.H. 1973. Blazing Alaska's trails. Second edition. University of Alaska Press, Fairbanks, Alaska. 567pp.
- Clark, G.H. 1974. Archeological survey and excavation along the southernmost portion of the Trans-Alaska Pipeline system. Final report to the Alyeska Pipeline Service Company, Anchorage, Alaska. 99pp.
- Clark, G.H. 1976. Archeological survey and excavations in the Copper River Basin, 1974 (MS). Paper presented at the 3rd Annual Meeting of the Alaska Anthropological Association, March 26-27, Anchorage.
- CLIAMP. 1976. The surface of the Ice-Age earth. *Science*, vol. 171, pp. 1131-1137.
- Cole, T. 1979. The history of the use of the upper Susitna River, Indian River to the headwaters. Report prepared for the State of Alaska, Department of Natural Resources, Division of Research and Development. 27pp.

- Cook, J.P. 1969. The early prehistory of Healy Lake, Alaska. Ph.D. Dissertation, University of Wisconsin, Madison, Wisconsin.
- Cook, J.P. and R.A. McKennan. 1970. The village site at Healy Lake, Alaska: an interim report. Paper presented at the 35th annual meeting of the Society of American Archeology, Mexico City, Mexico.
- Cook, J.S. 1795. A new authentic and complete collection of a voyage round the world undertaken and performed by royal authority... George William Anderson, ed. Alex Hogg at the Kings Arms. London.
- Cook, J. S. 1785. A voyage to the Pacific Ocean. Undertaken, by the command of His Majesty, for making discoveries in the Northern Hemisphere. Performed under the direction of Captains Cook, Clerke, and Gore, in His Majesty's Ship the Resolution & Discovery; In the years of 1776, 1777, 1778, 1779, and 1780. Order of the Lord's Commissioners of the Admiralty, London.
- Coutler, H.W., D.M. Hopkins, T.N.V. Karlstrom, T.L. Pewe, C. Wahrhaftig and J.R. Williams. 1965. Map showing extent of glaciations in Alaska. U.S. Geological Survey Misc. Geological Investigations. Map I-415, 1:2,500,000.
- Czejtey, B., W.H. Nelson, D.J. Jones, N.J. Silberling, R.M. Dean, M.S. Morris, M.A. Lamphere, J.G. Smith and M.L. Silverman. 1978. Reconnaissance geologic map and geochronology, Talkeetna Mountains Quadrangle, northern part of Anchorage Quadrangle, and southwest corner of Healy Quadrangle, Alaska: U.S. Geological Survey Open-File Report 78-588-A, 60 p.
- deLaguna, F. 1975. The archeology of Cook Inlet, Alaska. Second Edition, Alaska Historical Society, Anchorage, Alaska.

Denton, G.H. 1974. Quaternary glaciations of the White River Valley, Alaska, with a regional synthesis for the northern St. Elias Mountains, Alaska and Yukon Territory. Geol. Soc. America Bull. 85:871-892.

Denton, G.H., and W. Karlen. 1973. Holocene climatic variations - their pattern and possible cause. Quaternary Research 3:155-205.

Denton, G.H. and G. Stuiver. 1967. Late Pleistocene glacial stratigraphy and chronology, northeastern St. Elias mountains, Yukon Territory, Canada. Geological Society of America. Bulletin 76, pp. 485-510.

Dixon, E.J., Jr., G.S. Smith, and D.C. Plaskett. 1980a. Archeological survey and inventory of cultural resources, Ft. Wainwright, Alaska. Final report. Prepared for Department of the Army, Alaska District, Corps of Engineers under contract DACA85-78-0047. University of Alaska Museum, Fairbanks, Alaska.

Dixon, E.J., Jr., G.S. Smith, and D.C. Plaskett. 1980b. Procedures manual/research design, subtask 7.06 cultural resources investigation, for the Susitna Hydropower Project. Copy on file in the University of Alaska Museum, Fairbanks, Alaska. May 1980, 89pp.

Dixon, E.J., Jr., G.S. Smith, R.M. Thorson, and R.C. Betts. 1980c. Annual report, Subtask 7.06 cultural resources investigations for the Susitna Hydroelectric Project. Copy on file in the University of Alaska Museum, Fairbanks, Alaska. May 1980, 412pp.

Dixon, E.J., G.S. Smith, R.C. Betts and R.M. Thorson. 1982. Final report subtask 7.06 cultural resource investigations for the Susitna Hydroelectric Project: A preliminary cultural resource survey in the Upper Susitna River Valley. 1011pp.

Dumond, D.E. 1977. The Eskimos and Aleuts. Thames and Hudson, London, 180pp.

- Dumond, D. E. 1979. Eskimo-Indian relations: a view from Prehistory. Arctic Anthropology 16(2):3-22.
- Dumond, D.E. and R.L.A. Mace. 1968. An archeological survey along Knik Arm. Anthropological Papers of the University of Alaska 14(1):1-21.
- Elridge, G.H. 1900. A reconnaissance in the Susitna Basin and adjacent territory, Alaska in 1898. in 20th Annual Report of the United States Geological Survey, pt. 7:1-29. Government Printing Office, Washington.
- Fernald, A.T. 1965. Glaciation in the Nabesna River area, Upper Tanana River Valley, Alaska. U.S. Geological Survey Prof. Paper 525-C, p. C120-C123.
- Ferrians, O.J., and H.R. Schmoll. 1957. Extensive proglacial lake of Wisconsinan age in the Copper River Basin, Alaska (abstract). Geol. Soc. America Bull. 68:1726.
- Fladmark, K.R. 1978. A Guide to basic archaeological field procedures. Dept. of Archaeology, Simon Fraser Univ., Publ. No. 4.
- Funk, J.M. 1973. The late Quaternary history of Cold Bay, Alaska, and its implications to the configuration of the Bering Land Bridge (abstract). Geol. Soc. America Abstracts with Programs, 5:62.
- Galehouse, J. 1969. Counting grain mounts: number percentage vs. number frequency. Journal of Sedimentary Petrology, vol. 39, pp. 812-815.
- Goldthwait, R.P. 1966. Evidence from Alaskan glaciers of major climatic changes. in Proc. Internat. Symposium on World Climate, 8000 to 0 B.C., Sawyer, J.S. ed. Royal Meteorol. Soc., London.

- Guedon, M.F. 1975. People of Tetlin, why are you singing? Ethnology Division Paper No. 9, National Museum of Canada, Ottawa.
- Hamilton, T.D. 1976. Camp Century record vs. dated climatic records from Alaska and Siberia (abstract). in Abstracts, 4th National Conference, American Quaternary Assoc., Tempe, Ariz.
- Hamilton, T.D. 1977. Late Cenozoic stratigraphy of the south-central Brooks Range. U.S. Geol. Survey Circular 772-B:B36-B38.
- Hamilton, T.D., R. Stuckenrath, and M. Stuiver. 1980. Itkillik glaciation in the central Brooks Range: radiocarbon dates and stratigraphic record (abstract). Geol. Soc. America Abstracts with Programs, Vol. 12(3):109.
- Haselton, G.M. 1966. Glacial geology of Muir Inlet, southeast Alaska. Ohio State Univ. Inst. Polar Studies Report 18, p. 34.
- Heiken, G. 1972. Morphology and petrology of volcanic ashes. Geological Society of America Bulletin, vol. 83, pp. 1961-1988.
- Helm, J., T. Alliband, T. Birk, V. Lawson, S. Reisner, C. Sturtevant and S. Witowski. 1975. The contact history of the subarctic Athapaskans: an overview. in Proceedings: Northern Athapaskan Conference, 1971, pp. 302-349. A. Clark, ed. National Museum of Canada, Ottawa.
- Heusser, C.J. 1960. Late-Pleistocene environments of North Pacific North America. American Geographical Society Special Publication 35, pp. 264.
- Heusser, C.J. 1965. A Pleistocene phytogeographical sketch of the Pacific Northwest and Alaska. in The Quaternary of the United States pp. 469-483, Wright, H.E., Jr., and Frey, D.G., eds. pp. 469-483, Princeton Univ. Press.

- Hickey, C.G. 1976. The effects of treeline shifts on human societies: crazy quilt variability vs. macrozonal adaptation. in International Conference on the Prehistory and Paleoecology of North American Arctic and Subarctic (second edition), S. Raymond and P. Schledermann, eds., University of Calgary, Calgary, Alberta. pp. 87-89.
- Hoeffecker, J.F. 1978. A report to the National Geographic Society and the National Park Service on the potential of the north Alaska Range for archeological sites of Pleistocene Age. Manuscript on file in the University of Alaska Museum, Fairbanks, Alaska. 19pp.
- Hoeffecker, J.F. 1979. The search for early man in Alaska, results and recommendations of the North Alaska Range Project. A Report to the National Geographic Society and the National Park Service. 25pp.
- Holmes, C.E. 1976. 3000 Years of Prehistory at Minchumina: the question of cultural boundaries. Paper presented at the 9th Annual Conference of the University of Calgary Archeological Association, Calgary, Alberta.
- Holmes, C.E. 1977. Progress report: archeological research at Lake Minchumina, central Alaska. Manuscript on file in the University of Alaska Museum, Fairbanks, Alaska.
- Holmes, C.E. 1978. Report on archeological research at Lake Minchumina, Alaska during 1977. Manuscript on file in the University of Alaska Museum, Fairbanks, Alaska.
- Hopkins, D.B. 1967. The Bering Land Bridge. Stanford University Press, Stanford, California.
- Hosley, E.H. 1966. The Kolchan: Athapaskans of the upper Kuskokwim. Manuscript on file in the University of Alaska Museum, Fairbanks, Alaska.

- Hosley, E.H. 1967. The McGrath Ingalik Indians, central Alaska. in Yearbook of the American Philosophical Society, pp. 544-547.
- Hughes, O.L., R.B. Campbell, J.E. Muller, and J.O. Wheeler. 1969. Glacial limits and flow patterns, Yukon Territory, south of 65 degrees North Latitude. Geol. Survey of Canada Paper 68-34:1-9.
- Irving, W.N. 1957. An archeological survey of the Susitna Valley. Anthropological Papers of the University of Alaska, Fairbanks 6(1):37-52.
- Irving, W.N. 1978. Pleistocene archeology in eastern Beringia. A.L. Bryan, ed. in Early Man in America, Occasional Paper No. 1, Department of Anthropology, University of Alberta, Edmonton, Alberta.
- Izett, G., R. Wilcox, H. Powers, and G. Desborough. 1970. The Bishop ash bed, a Pleistocene marker bed in the western United States. Quaternary Research, vol. 1, pp. 121-132.
- Joint Federal State Land Use Planning Commission For Alaska. 1973. Major Ecosystems of Alaska: Ecosystems Information. Compiled by the Joint Federal-State Land Use Planning Commission for Alaska.
- Kachadoorian, R., A.T. Ovenshine, and S. Bartsch-Winkler. 1977. Late Wisconsinan history of the south shore of Turnagain Arm, Alaska. U.S. Geol. Survey Circular 751-B:B49-B50.
- Karlstrom, T.N.V. 1964. Quaternary geology of the Kenai Lowland and glacial history of the Cook Inlet region, Alaska. U.S. Geol. Survey Prof. Paper 443, p. 69.
- Ker, P. 1977. Optical Mineralogy. McGraw-Hill Book Company, New York. pp. 492.

- Langway, C.C., Jr., W. Dansgaard, S.J. Johnsen, and H. Clausen. 1973. Climatic fluctuations during the late Pleistocene. in The Wisconsinan Stage, Black, R.F. and others, eds., pp. 317-321, Geol. Soc. America Memoir 136.
- Larsen, G. 1981. Tephrochronology by microprobe glass analysis, in Tephra Studies, S. Self and R. Sparks, eds. D. Reidel Publishing Company, Boston, pp. 95-102.
- Lyle, W.M. 1974. Newly discovered Tertiary sedimentary basin near Denali. Alaska Div. Geol. and Geophys. Surveys Ann. Rept., 1973, p. 19.
- Manville, R.H. and S.P. Young. 1965. Distributions of Alaskan mammals. U.S. Department of the Interior, Bureau of Sports Fisheries and Wildlife, Circular 221.
- Matthews, J.V., Jr. 1974. Wisconsinan environment of interior Alaska: pollen and macrofossil analysis of a 27 meter core from the Isabella Basin (Fairbanks, Alaska). Can. Jour. Earth Sci. 11:828-841.
- Mauger, J.E. 1970. A study of Donnelly Burins in the Campus Archaeological collection. M.A. Thesis. Washington State University, Pullman, Washington.
- McKenna, R.A. 1959. The Upper Tanana Indians. Yale University Publications in Anthropology, No. 55. Yale University Press, New Haven, Conn.
- McKenzie, G.D., and R.P. Goldthwait. 1971. Glacial history of the last eleven thousand years in Adams Inlet, Southeastern Alaska. Geol. Soc. America Bull. 82:1767-1782.

- Miller, M.M., and J.H. Anderson. 1974. Out-of-Phase Holocene climatic trends in the maritime and continental sectors of the Alaska-Canada boundary range, pp. 33-58. in Quaternary Environments, Proceedings of a Symposium, W.C. Mahaney, ed., York Univ., Toronto.
- Miller, R.D., and E. Dobrovolsky. 1959. Surficial geology of Anchorage and vicinity, Alaska. U.S. Geol. Bull. 1093, p. 128.
- Moffit, F.H. 1912. Headwater regions of the Gulkana and Susitna Rivers, Alaska. U.S. Geological Survey Bulletin 498. Government Printing Office, Washington, D.C.
- Morlan, R.E. 1978. Early man in northern Yukon Territory: perspective as of 1977. pp 78-95. in A.L. Bryan, ed. Early Man in America, Occasional Paper No. 1, Department of Anthropology, University of Alberta, Edmonton, Alberta.
- Nelson, N.C. 1935. Early migrations of man to North America. Natural History 35:356.
- Nelson, N.C. 1937. Notes on cultural relations between Asia and America. American Antiquity 2(4):267-272.
- Nelson, R.K. 1973. Hunters of the northern forest. University of Chicago Press, Chicago, Illinois.
- Olson, E.A., and W.S. Broecker. 1959. Lamont natural radiocarbon measurements V. American Jour. Science 257:1-28.
- Osgood, C. 1937. The ethnography of the Tanaina. Yale University Publications in Anthropology, No. 16. Yale University Press, New Haven, Conn.
- Pewe, T.L. 1975. Quaternary geology of Alaska. U.S. Geol. Survey Prof. Paper 835, pp. 145.

- Pewe, T.L., and R.D. Reger. 1972. Modern and Wisconsinan snowlines in Alaska. in Proceedings of the 24th Internat. Geol. Congress, pp. 187-197, Montreal.
- Pitts, R.S. 1972. The changing settlement patterns and house types of the Upper Tanana Indians. M.A. Thesis, Dept. of Anthropology, University of Alaska, Fairbanks, Alaska.
- Plaskett, D.C. 1977. The Nenana River Gorge Site, a Late Prehistoric Athapaskan Campsite in Central Alaska. M.A. Thesis, Department of Anthropology, University of Alaska, Fairbanks, Alaska. 280pp.
- Plaskett, D.C. and E.J. Dixon, Jr. 1978. Men out of southeast Asia. An alternative hypothesis for the early peopling of the Americas. Paper presented at the 5th Annual Meeting, Alaska Anthropological Association, Anchorage, Alaska.
- Powers, W.R. and T.D. Hamilton. 1978. Dry Creek: A late Pleistocene human occupation in central Alaska. in A.L. Bryan, ed. Early man in America, Occasional Paper No. 1, Department of Anthropology, University of Alberta, Edmonton, Alberta. pp. 72-77.
- Rainey, F. 1939. Archeology in central Alaska. Anthropological Papers of the American Museum of Natural History 36(4):351-405.
- Rainey, F. 1940. Archeological investigations in Central Alaska. American Antiquity 5(4):399-408.
- Rainey, F. 1953. The significance of recent archeological discoveries in inland Alaska. Society for American Archeology Memoir No. 9, pp. 43-46.
- Rampton, V. 1971. Later Quaternary vegetational and climatic history of the Snag-Klutlan area, southeastern Yukon Territory, Canada. Geol. Soc. America Bul. 82:959-978.

- Rampton, V. 1971. The tilted forest; glaciological geologic implications of vegetated neoglacial ice at Lituya Bay, Alaska. (letter to the editor), *Quaternary Research* 6, pp. 111-117.
- Reger, D. Personal communication.
- Reger, D.R. 1977. Prehistory in the upper Cook Inlet, Alaska. in J.W. Helmer, S. VanDyke, and F.J. Kense, eds. Problems in the Prehistory of the North American subarctic: the Athapaskan question. Proceedings of the 9th Annual Conference of the Archaeological Association of the University of Calgary, Archeological Association, Department of Archeology, University of Calgary, Alberta. pp. 16-22.
- Reger, R.D., and T.L. Pewe. 1969. Lichenometric dating in the central Alaska Range. in T.L. Pewe, ed. The Periglacial Environment: Past and Present, McGill-Queens Univ. Press, Montreal. pp. 223-247.
- Reid, J.R. 1970. Late Wisconsinan and Neoglacial history of the Martin River Glacier, Alaska. *Geol. Soc. America Bull.* 81:3593-3603.
- Scheidegger, K., P. Jezek, and D. Ninkovich. 1978. Chemical and optical studies of glass shards in pleistocene and pliocene ash layers from DSDP site 192, Northwest Pacific Ocean. *Journal of Volcanology and Geothermal Research*, no. 4, pp. 99-116.
- Schmoll, H.R., B.J. Szabo, M. Rubin, and E. Dobrovolsky. 1972. Radiometric dating of marine shells from the Bootlegger Cove Clay, Anchorage area, Alaska. *Geol. Soc. America Bull.* 83:1107-1113.
- Schweiger, C.E. n.d. Notes on the paleoecology of the Northern Archaic Tradition. Manuscript on file in the University of Alaska Museum, Fairbanks, Alaska.

- Schweger, C.E. 1973. Late Quaternary history of the Tangle Lakes Region Alaska - A progress report. Unpublished Manuscript, Anthropology Department, University of Alberta, 4 pp.
- Sellman, P. 1967. Geology of the USA CRREL permafrost tunnel, Fairbanks, Alaska. U.S. Army CRREL Technical Report 199, Hanover, N.H. p. 22.
- Shackleton, N.J., and N.D. Opdyke. 1973. Oxygen isotope and palaeomagnetic stratigraphy of equatorial Pacific core V28-238: Oxygen isotope temperatures and ice volumes on a 10^5 year and 10^6 year scale. Quaternary Research 3:39-55.
- Shinkwin, A.D. 1974. Archeological report: Dekah De'nin's Village: an early nineteenth century Ahtna village, Chitina, Alaska. Department of Anthropology, University of Alaska, Fairbanks, Alaska.
- Shinkwin, A.D. 1975. The Dixthada site: results of 1971 excavations. The Western Canadian Journal of Anthropology 5(3-4):148-158.
- Sirkin, L.A., and S. Tuthill. 1971. Late Pleistocene palynology and stratigraphy of Controller Bay region, Gulf of Alaska. in Etudes sur le Quaternaire dans le monde: Proc. VIIIth INQUA Congress, (Ters, M., Ed.), Paris, 1969. pp. 197-208.
- Sirkin, L.A., S.J. Tuthill, and L.S. Clayton. 1971. Late Pleistocene history of the lower Copper River Valley, Alaska (abstract). Geol. Soc. American Abstracts with Programs 3(7):708.
- Skarland, I. and C. Keim. 1958. Archeological discoveries on the Denali Highway, Alaska. Anthropological Papers of the University of Alaska 6(2):79-88.
- Smith, D., and J. Westgate. 1969. An electron probe technique for characterizing pyroclastic deposits. Earth and Planetary Science Letters, vol. 5, pp. 313-319.

- Smith, G.S. and H.M. Shields. 1977. Archeological survey of selected portions of the proposed Lake Clark National Park: Lake Clark, Lake Telaquana, Turquoise Lake, Twin Lakes, Fishtrap Lake, Lachbuna Lake, and Snipe Lake. Occasional Paper No. 7, Anthropology and Historic Preservation, Cooperative Park Studies Unit, University of Alaska, Fairbanks, Alaska.
- Steen-McIntyre, V. 1977. A Manual for Tephrochronology, published by the author in Idaho Springs, Colorado. pp. 167.
- Swanston, D.W. 1969. A Late-Pleistocene glacial sequence from Prince of Wales Island, Alaska. Arctic 22:25-33.
- Terasmae, J. 1974. An evaluation of methods used for reconstruction of Quaternary environments. in W.C. Mahaney, Ed. Quaternary Environments, Proceedings of a Symposium, York Univ., Toronto. pp. 3-32.
- Terasmae, J., and O.L. Hughes. 1966. Late-Wisconsinan chronology and history of vegetation in the Ogilvie Mountains, Yukon Territory, Canada. Paleobotanist 15:235-242.
- Thorson, R.M. n.d. Quaternary Glacier Expansions from North America's highest mountain: A preliminary chronology for the McKinley River area, Alaska. (Unpublished Manuscript)
- Townsend, J.B. 1970. Tanaina ethnohistory: an example of a method for the study of culture change. in M. Lantis, ed. Ethnohistory in Southwestern Alaska and the Southern Yukon. University Press of Kentucky, Lexington, Kentucky. pp. 71-102.
- Townsend, J.B. 1973. Eighteenth and nineteenth century Eskimo and Indian movements in southwestern Alaska. Paper presented to the Society for American Archeology Annual Meeting, San Francisco.

- Traganza, A.E. 1964. An archeological survey of Mount McKinley National Park. Manuscript on file, Mt. McKinley National Park Library, Mt. McKinley National Park, Alaska.
- Valdez News. 7/20/1901.
- VanStone, J.W. 1955. Exploring the Copper River country. Pacific Northwest Quarterly 46(4):115-123.
- VanStone, J.W. 1974. Athapaskan adaptations. Aldine Publishing Co. Chicago, Illinois.
- Vitt, R. 1973. Hunting practices of the Upper Tanana Indians. M.A. Thesis, Department of Anthropology, University of Alaska, Fairbanks, Alaska.
- Wahrhaftig, C. 1958. Quaternary geology of the Nenana River Valley and adjacent parts of the Alaska Range. U.S. Geol. Survey Prof. Paper 293-A, p. 68.
- Wahrhaftig, C., and A. Cox. 1959. Rock Glaciers in the Alaska Range. Geol. Soc. America Bull. 70:383-436.
- Wahrhaftig, C., J.A. Wolfe, E.B. Leopold, and M.A. Lanphere. 1969. The coal-bearing group in the Nenana coal field, Alaska. U.S. Geol. Survey Bull. 1274-D, 30 p.
- West, C.E. 1978. Archeology of the Birches site, Lake Minchumina, Alaska. M.A. Thesis, Department of Anthropology, University of Alaska, Fairbanks, Alaska.
- West, F.H. 1965. Excavation at two sites on the Teklanika River, Mt. McKinley National Park, Alaska. Report to the National Park Service.

- West, F.H. 1967. The Donnelly Ridge site and the definition of an early core and blade complex in central Alaska. *American Antiquity* 32(3):360-382.
- West, F.H. 1971. Archeological reconnaissance of Denali State Park, Alaska. Report to State of Alaska, Division of Parks, Anchorage, Alaska.
- West, F.H. 1973. Old World affinities of archeological complexes from Tangle Lakes, central Alaska. Paper read at the International Conference on the Bering Land Bridge and its Role for the History of Holarctic Floras and Faunas in the Late Cenozoic, Khabarovsk.
- West, F.H. 1975. Dating the Denali Complex. *Arctic Anthropology* 12(1):75-81.
- West, F.H. 1981. *The Archeology of Beringia*. Columbia University Press, New York.
- Westgate, J. 1977. Identification and significance of late Holocene tephra from Otter Creek, southern British Columbia, and localities in west-central Alberta. *Canadian Journal of Earth Sciences*, v. 14, no. 11, pp. 2593-2600.
- Westgate, J. and M. Evans. 1978. Compositional variability of Glacier Peak tephra and its stratigraphic significance. *Canadian Journal of Earth Science*, vol. 15, no. 10, pp. 1554-1567.
- Westgate, J., and M. Gorton. 1981. Correlation techniques in tephra studies, in *Tephra Studies*, edited by S. Self and R. Sparks, eds. D. Reidel Publishing Company, Boston, pp. 73-94.
- Willey, G.R., and P. Phillips. 1970. *Method and Theory in American Archaeology*. Univ. of Chicago Press, Chicago.

- Williams, J.R., and O.J. Ferrians, Jr. 1961. Late Wisconsinan and recent history of the Matanuska Glacier, Alaska. *Arctic* 14:82-90.
- Wolf, J.A. Personal communication.
- Wolfe, J.A. 1978. A paleobotanical interpretation of Tertiary Climates in the Northern Hemisphere. *Am. Scientist*, 66:694-703.
- Wolfe, J.A. 1977. Paleogene floras from the Gulf of Alaska region. U.S. Geol. Survey. Prof. Paper 997, 108pp.
- Wolfe, J.A. 1966. Tertiary plants from the Cook Inlet region, Alaska. U.S. Geol. Survey Prof. Paper 398-B, 32pp.
- Wolfe, J.A., D.M. Hopkins, and E.B. Leopold. 1966. Tertiary stratigraphy and paleobotany of the Cook Inlet region, Alaska. U.S. Geol. Survey Prof. Paper 398-A, 29pp.
- Wolfe, J.A. and T. Tanai. 1980. The Miocene Seldovia Point flora from the Kenai Group, Alaska. U.S. Geol. Survey Prof. Paper 1105, 52pp.
- Workman, W.B. 1976. A late prehistoric Ahtna site near Gulkana, Alaska. Paper presented at the 3rd Annual Conference of the Alaska Anthropological Association, Anchorage, Alaska.
- Workman, W.B. 1977. New data on the radiocarbon chronology of the Kachemak Bay sequence. *Anthropology Papers of the University of Alaska* 18(2):31-36.
- Workman, W.B. 1978. Prehistory of the Aishihik-Kluane areas, southwest Yukon Territory. Mercury Series No. 74, National Museum of Canada, Ottawa.

APPENDIX A

MAPS OF SITE LOCATIONS AND SURVEY LOCALES

A number of federal laws, as well as ethical considerations, mandate that site locational data not be released to the general public if there is a possibility that the release of this proprietary data could create a risk of harm to such resources. The specific laws and ethical standards concerning the confidentiality of such data are summarized below:

- (a) The National Historic Preservation Act, 1966 (Public Law 89-665), Title I, sec. 101, (a)4. Information relating to the location of sites or objects listed on, or eligible for, inclusion in the National Register, should be withheld from the general public if it would create a risk of destruction or harm to such sites or objects.
- (b) Procedures of the Advisory Council on Historic Preservation, 36 CFR 800, Part 800.15(a). Information concerning the undertaking and effects of sites on or eligible for the National Register, should be made available to the general public within the limits of the Freedom of Information Act (5 U.S.C. 552), but need not include information on budget, financial, personnel and other proprietary matters, or the specific location of archeological sites.
- (c) Archeological Resources Protection Act of 1979 (Public Law 96-95), Section 9(a). Information concerning the nature and location of any archeological resource for which the excavation or removal requires a permit or other permission under this Act or under any other provision of Federal Law, may not be made available to the public unless the federal land manager concerned determines that such disclosure would not create a risk of harm to such resources or to the sites at which such resources are located.

- (d) Code of Ethics and Standards of Performance for the Society of Professional Archeologists, Sec. III, 3.2. An archeologist shall not reveal confidential information unless required by law.

Because of the possibility that cultural resources in the Upper Susitna Basin could be damaged if their locations were made available to the general public, this appendix is not being distributed.

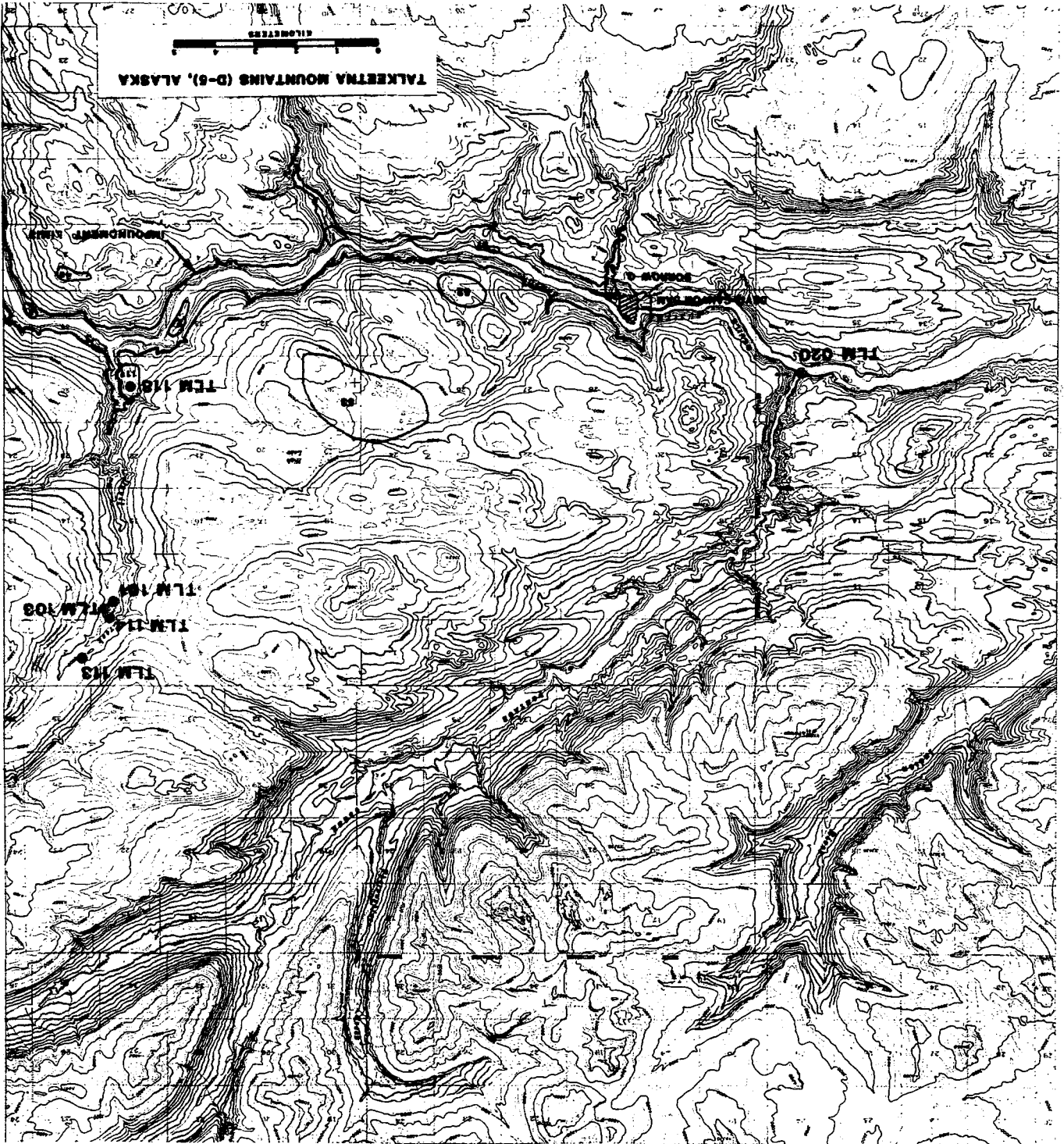
Although township, range, and section locational data for cultural resources is presented in the text of this annual report, it is felt that due to the nature of this type of description disclosure will not create any risk or harm to cultural resources.

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Figure A.1. Location of Sites and Survey Localities, Talkeetna Mts. D-5.



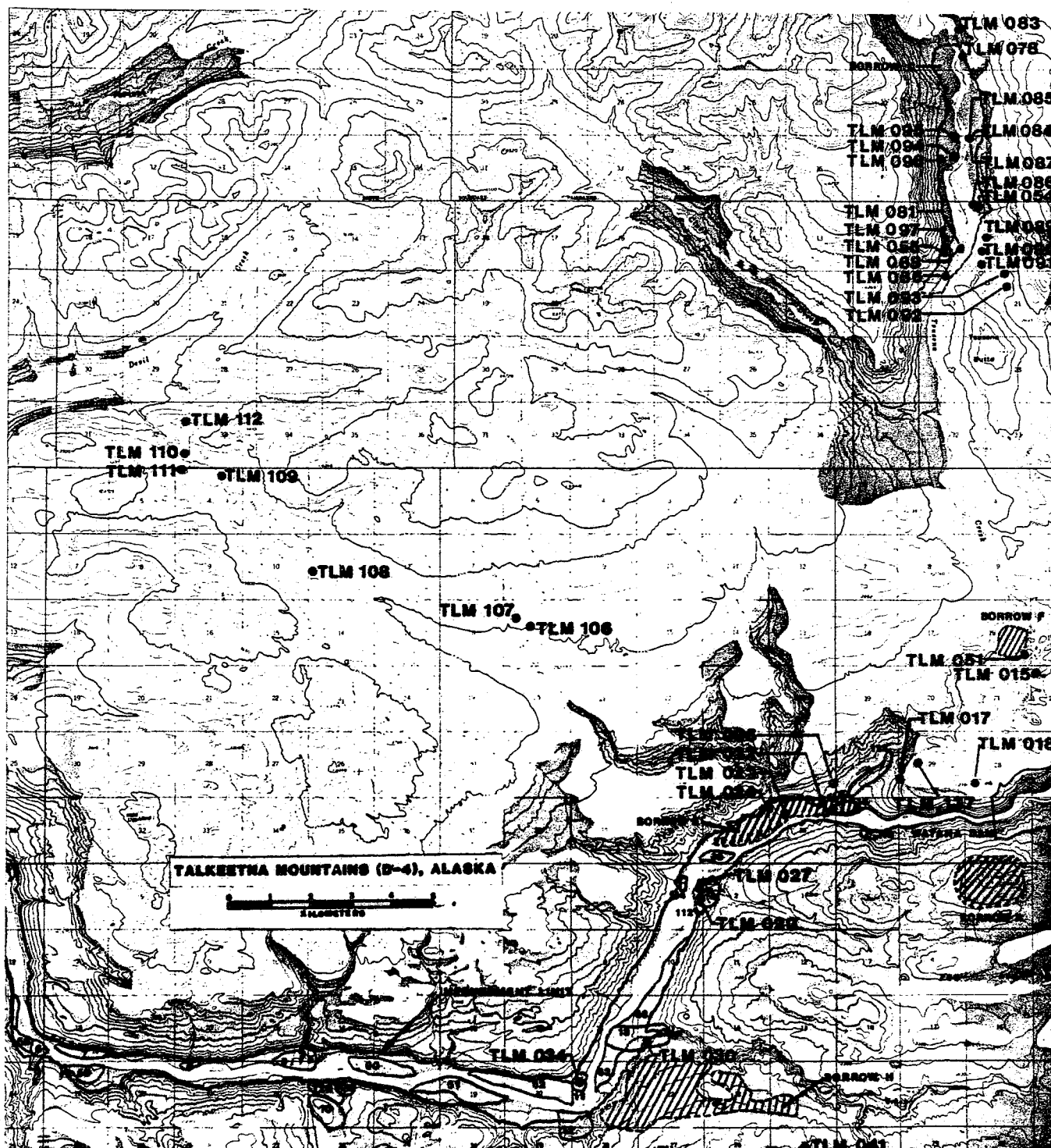


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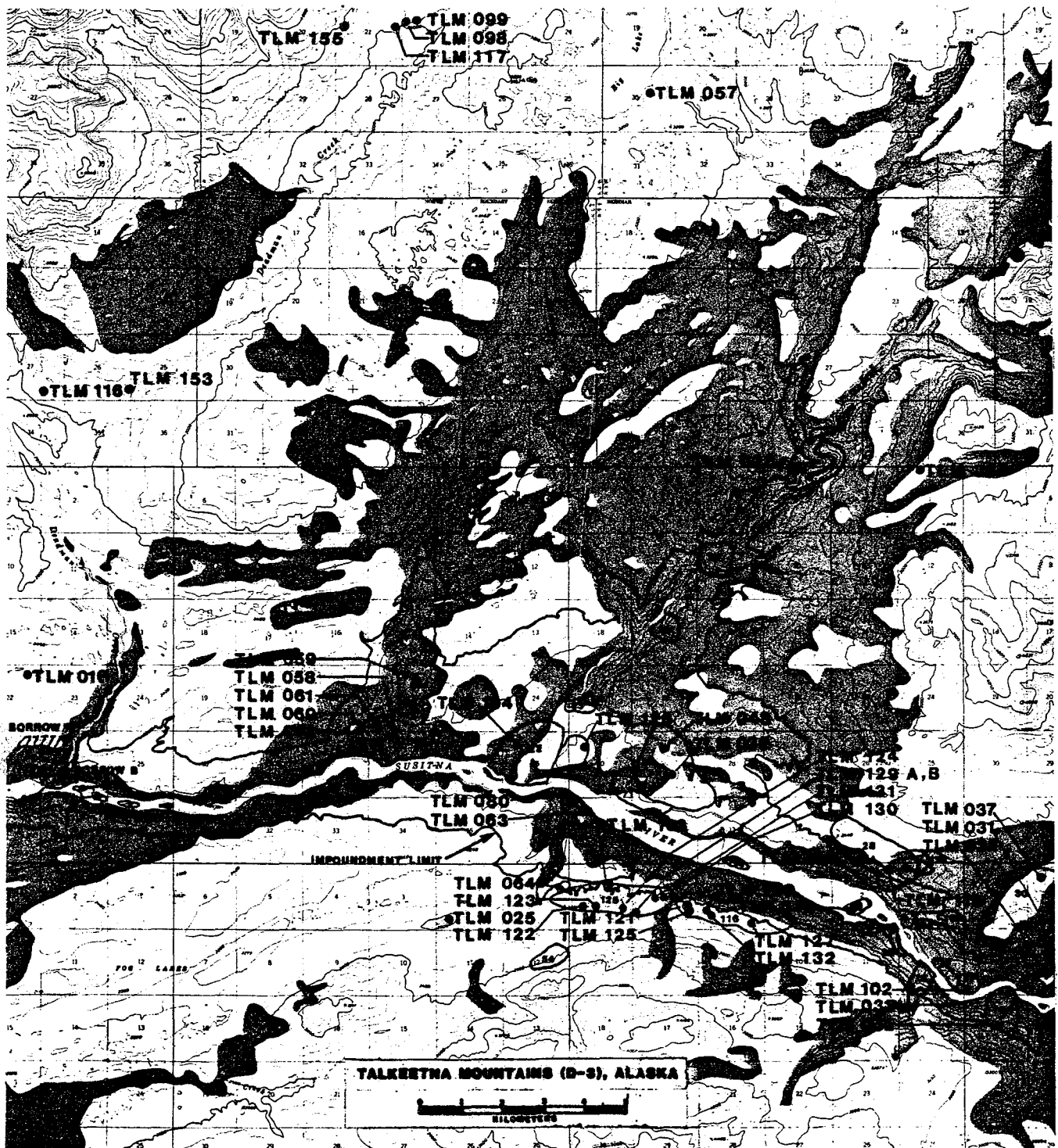


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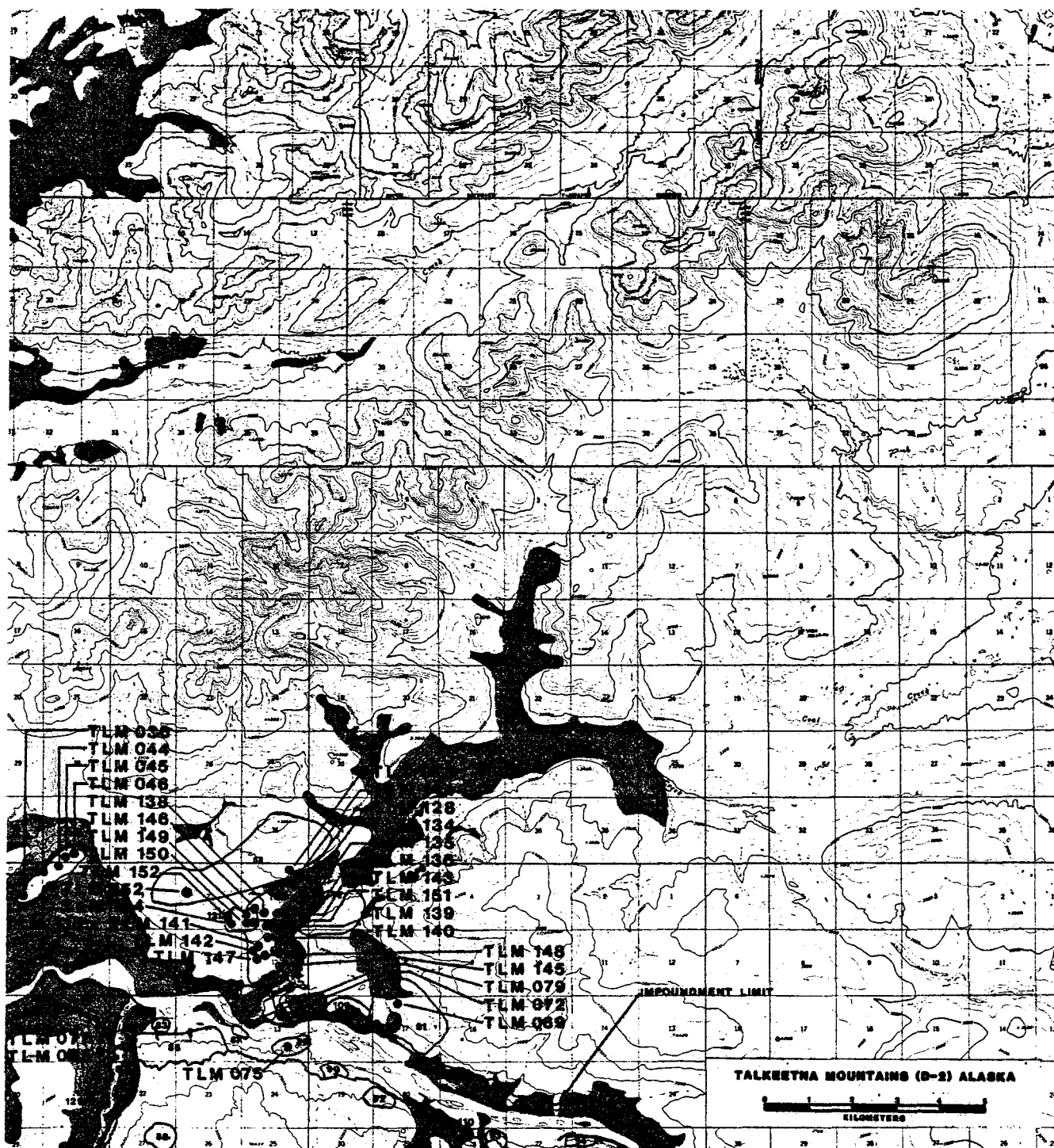


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Figure A.5. Location of Sites, Talkeetna Mts. C-4.

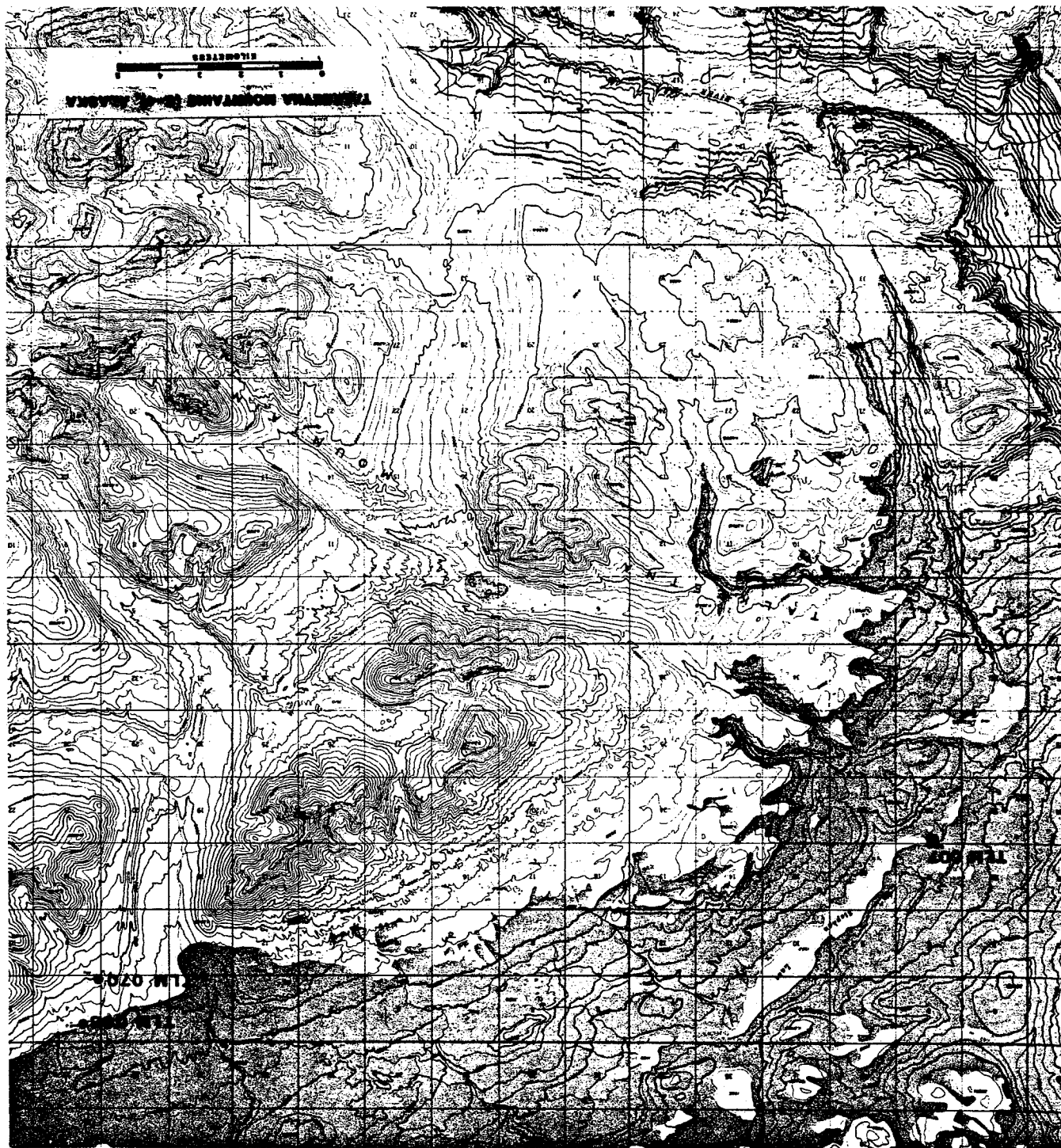


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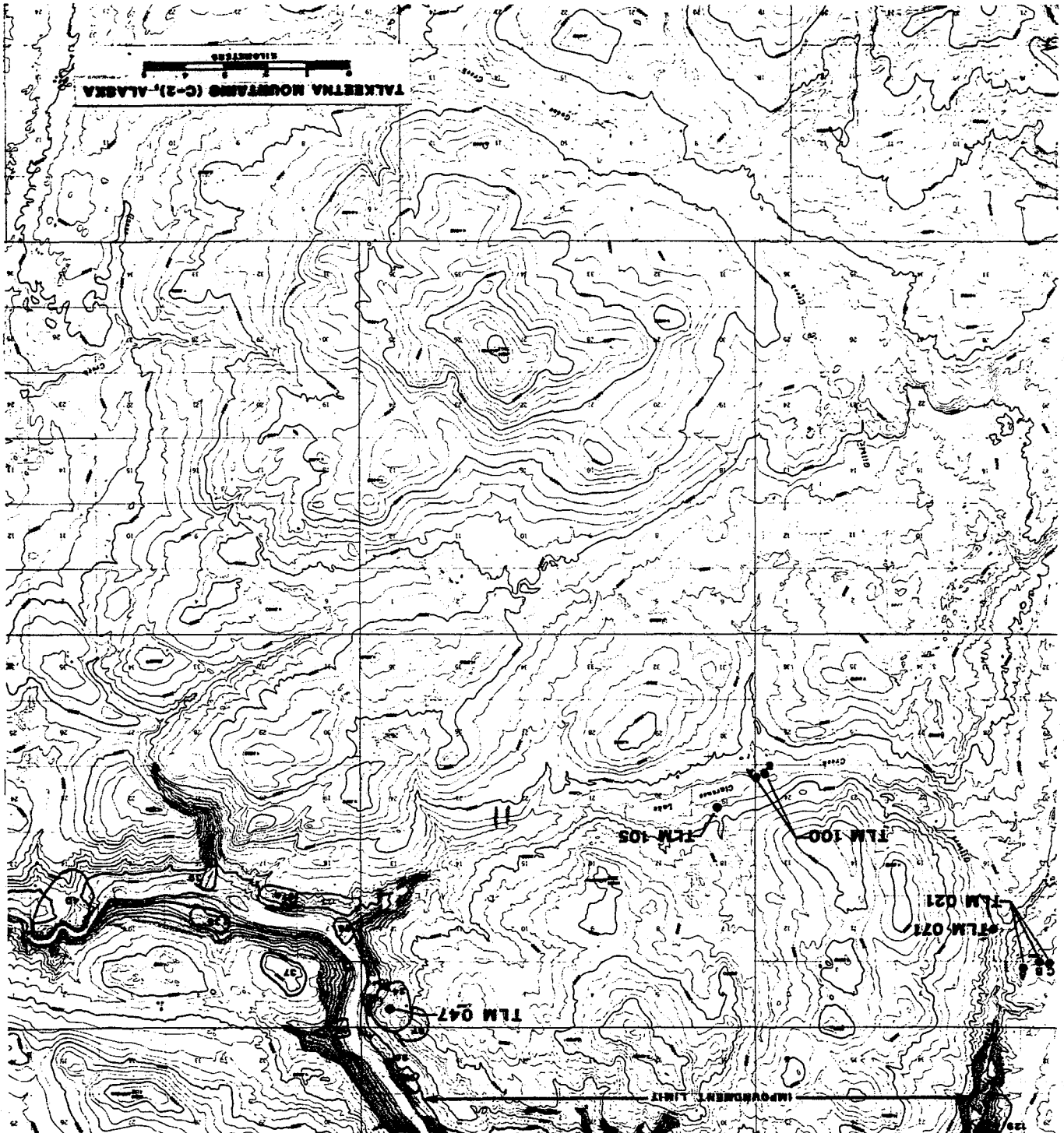


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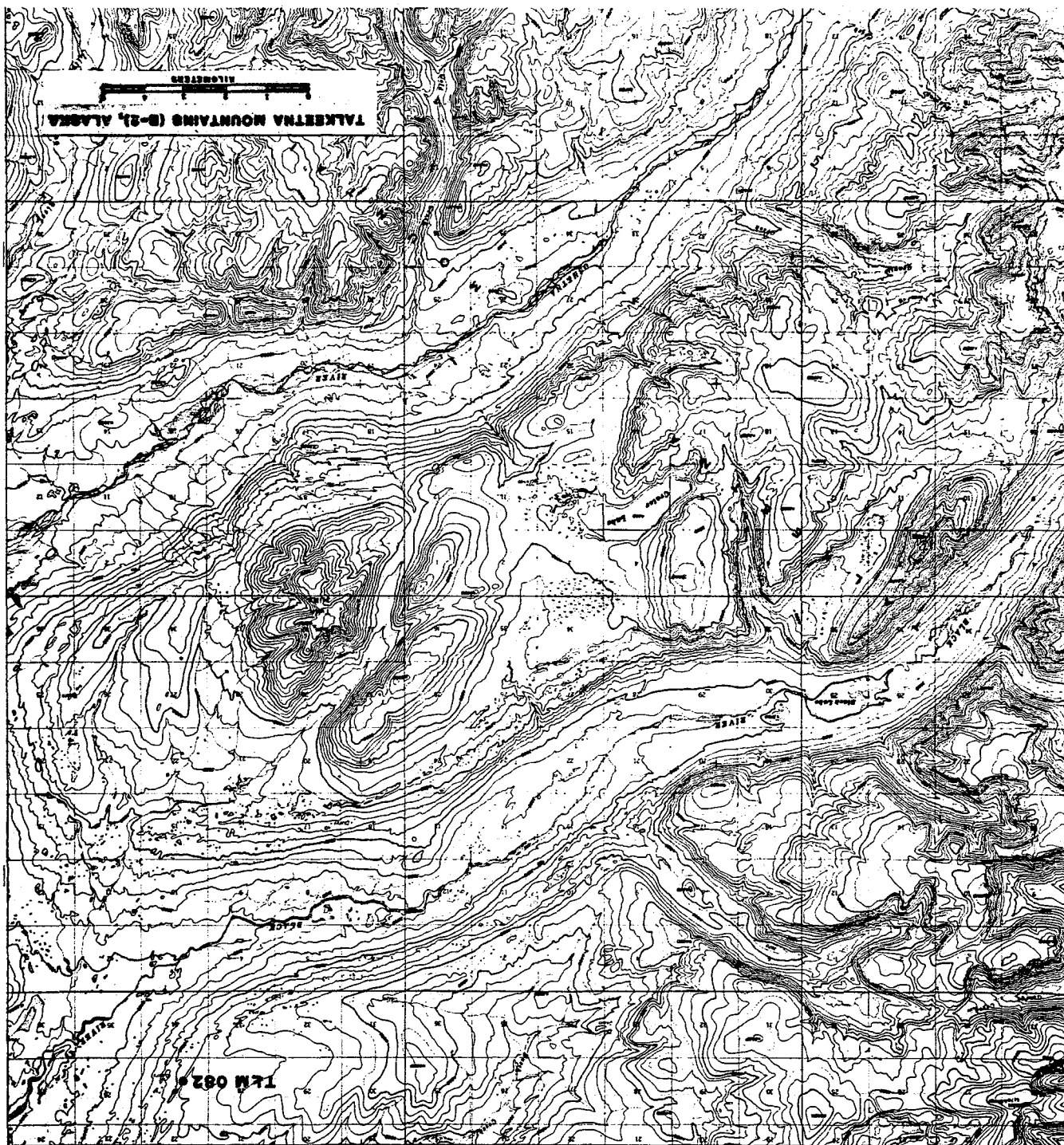


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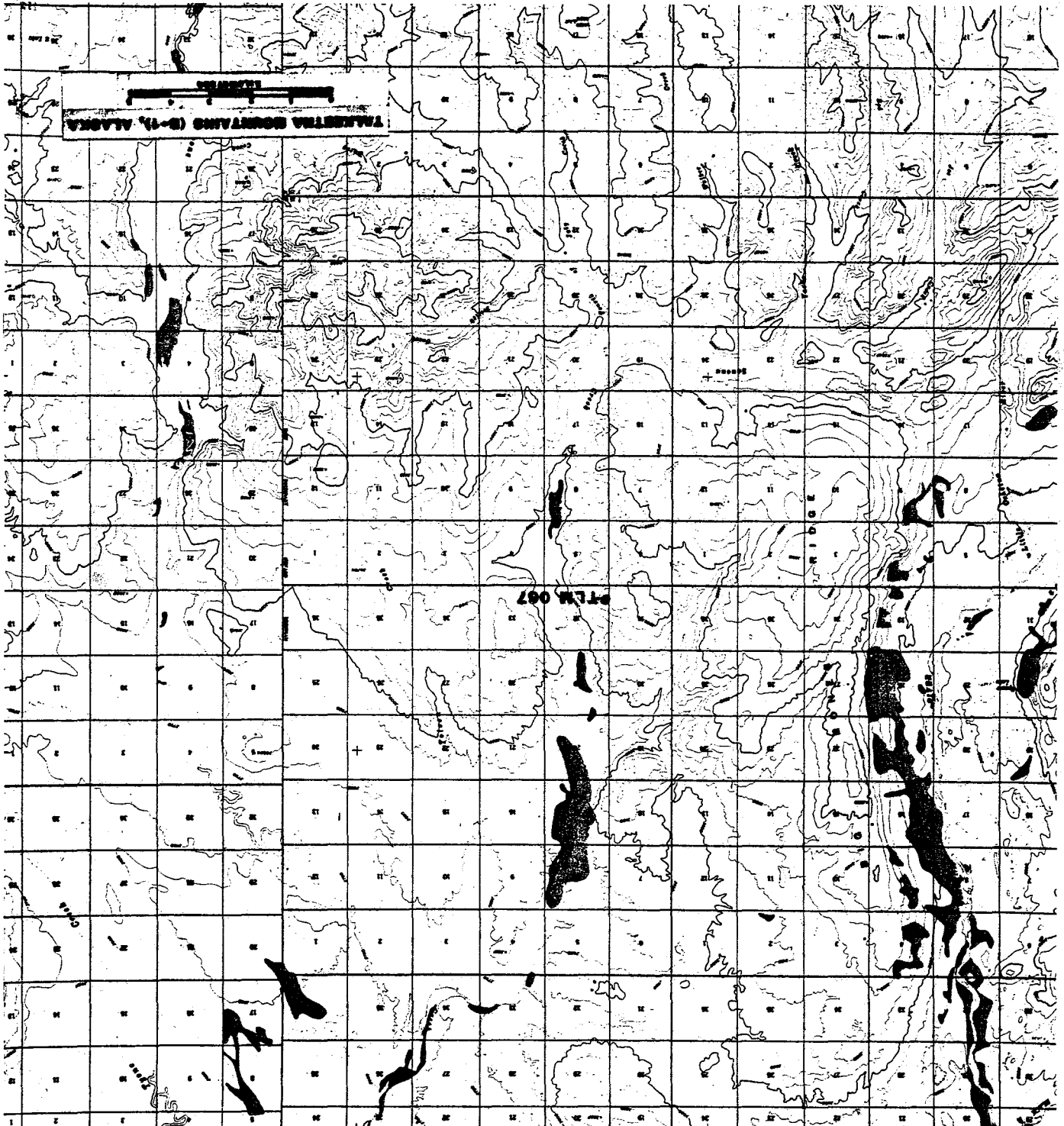


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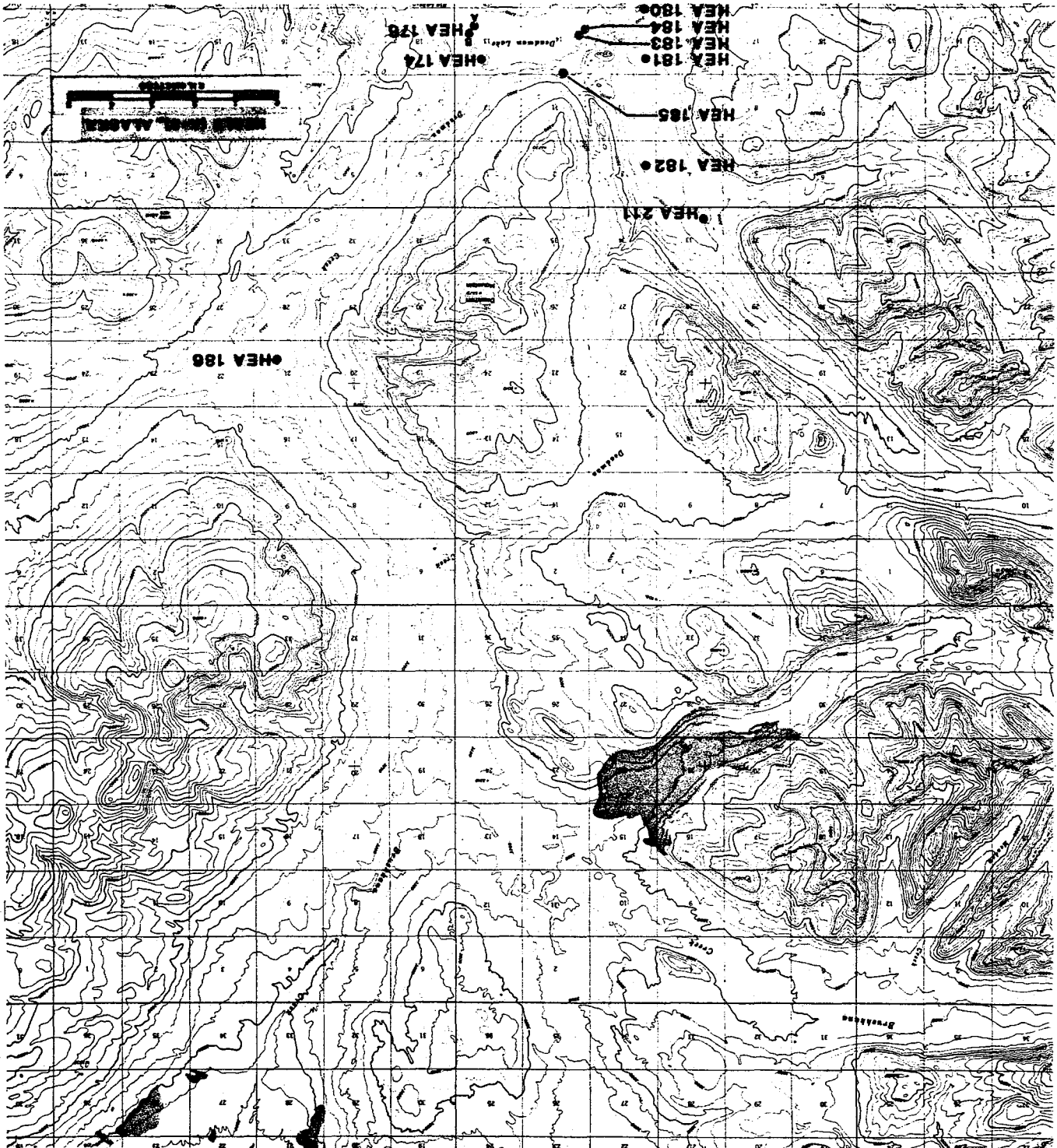


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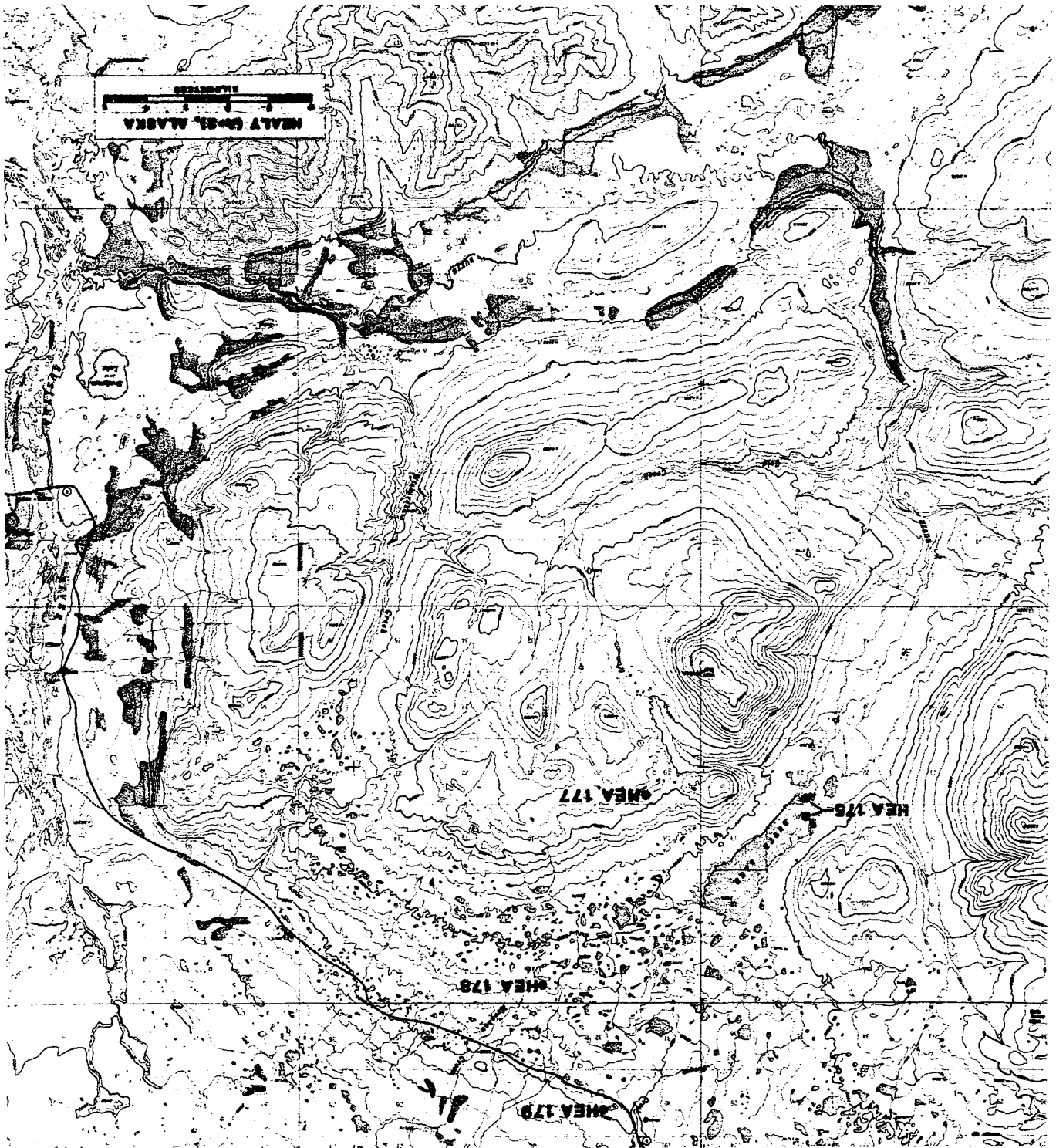


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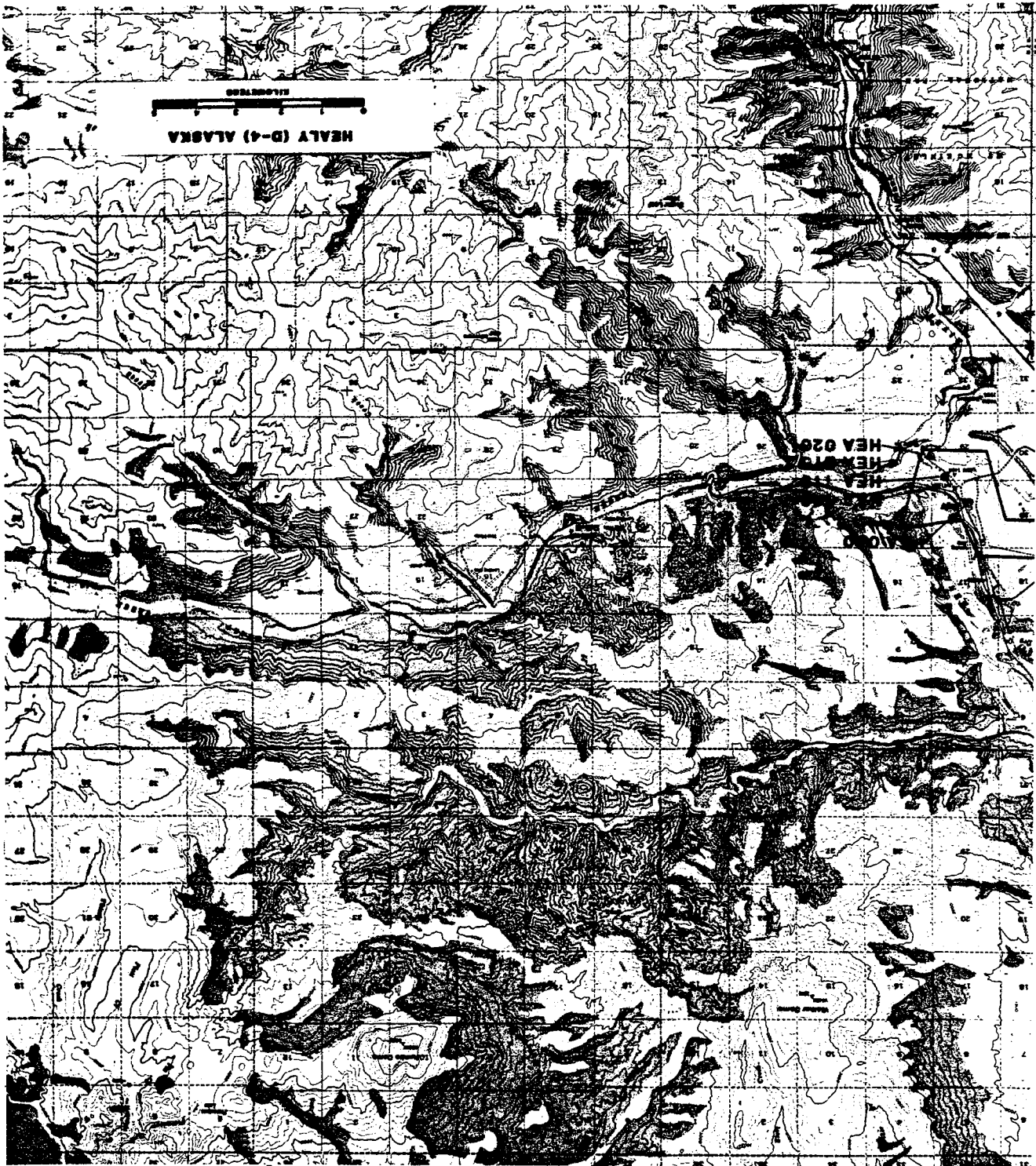


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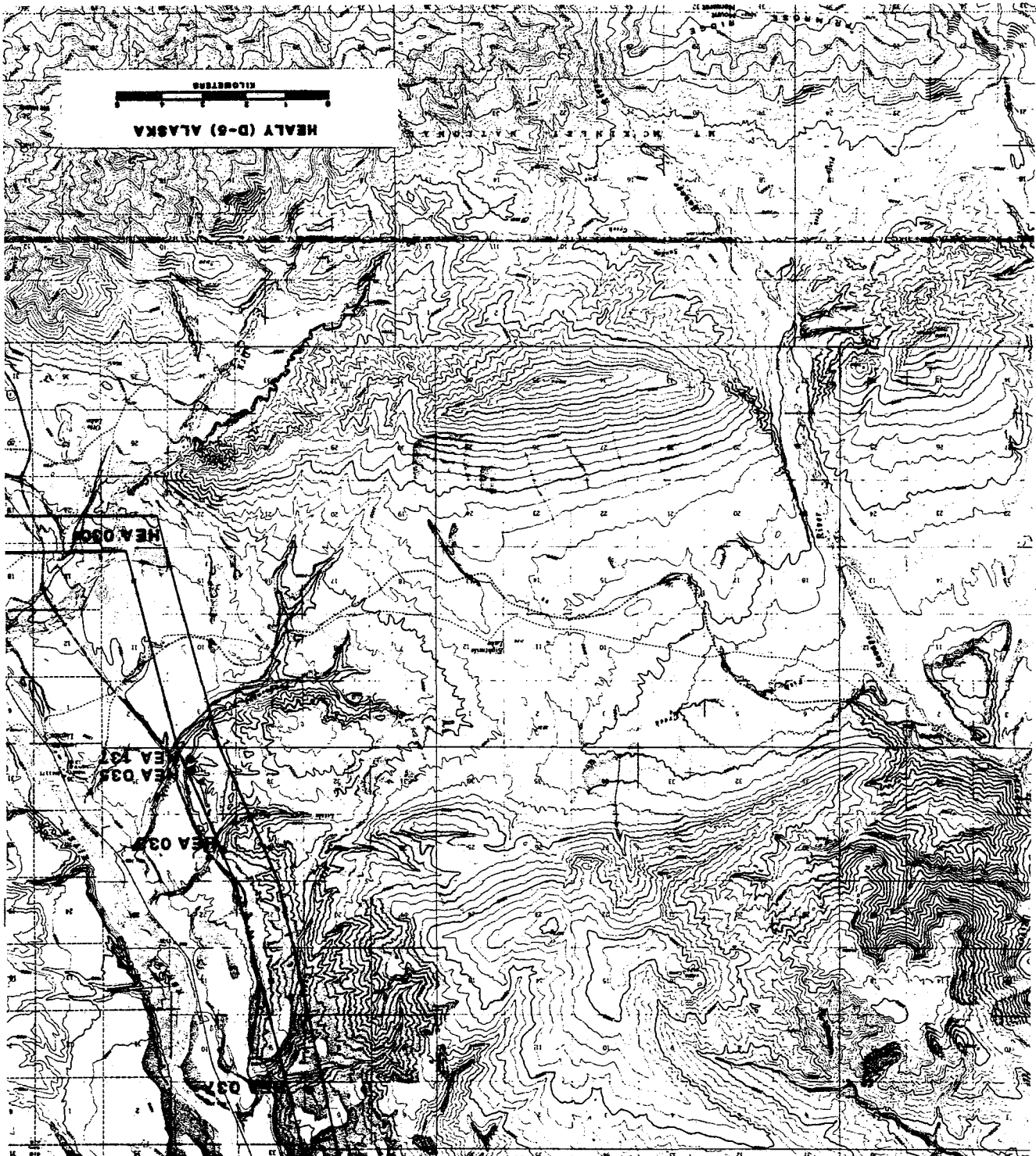
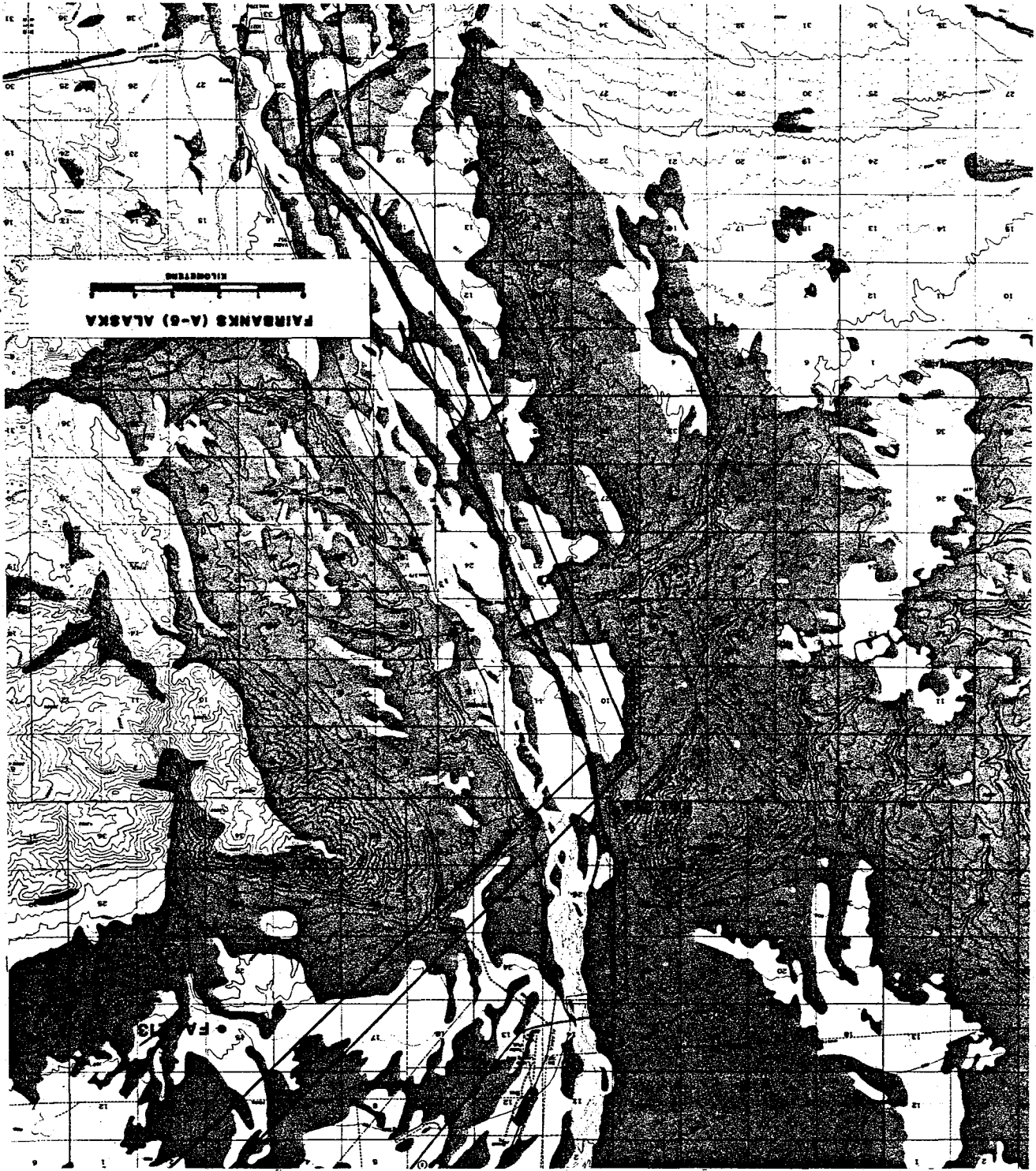


Figure A.14. Location of Sites, Fairbanks A-5.



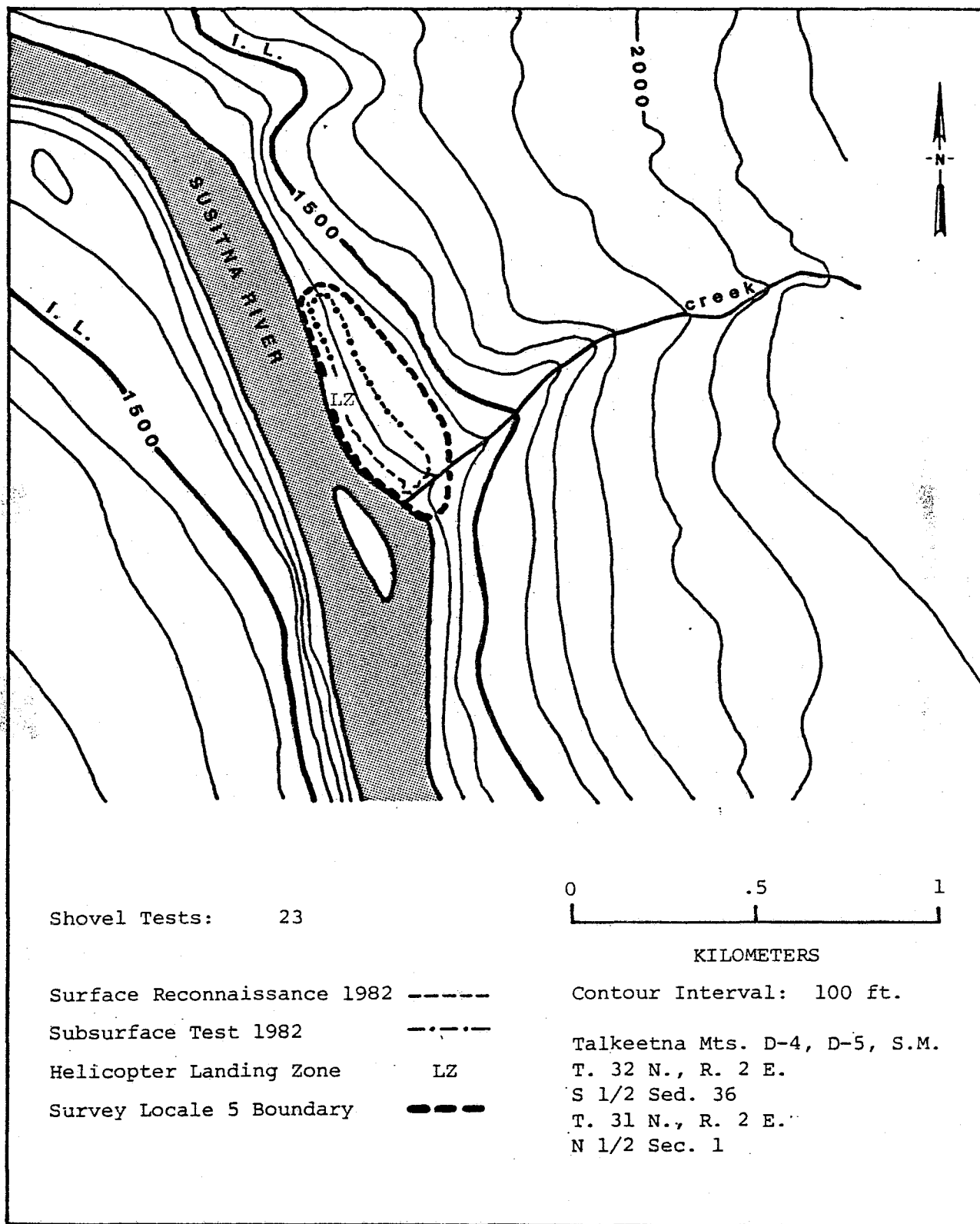


Figure A.15. Surface Reconnaissance and Subsurface Testing
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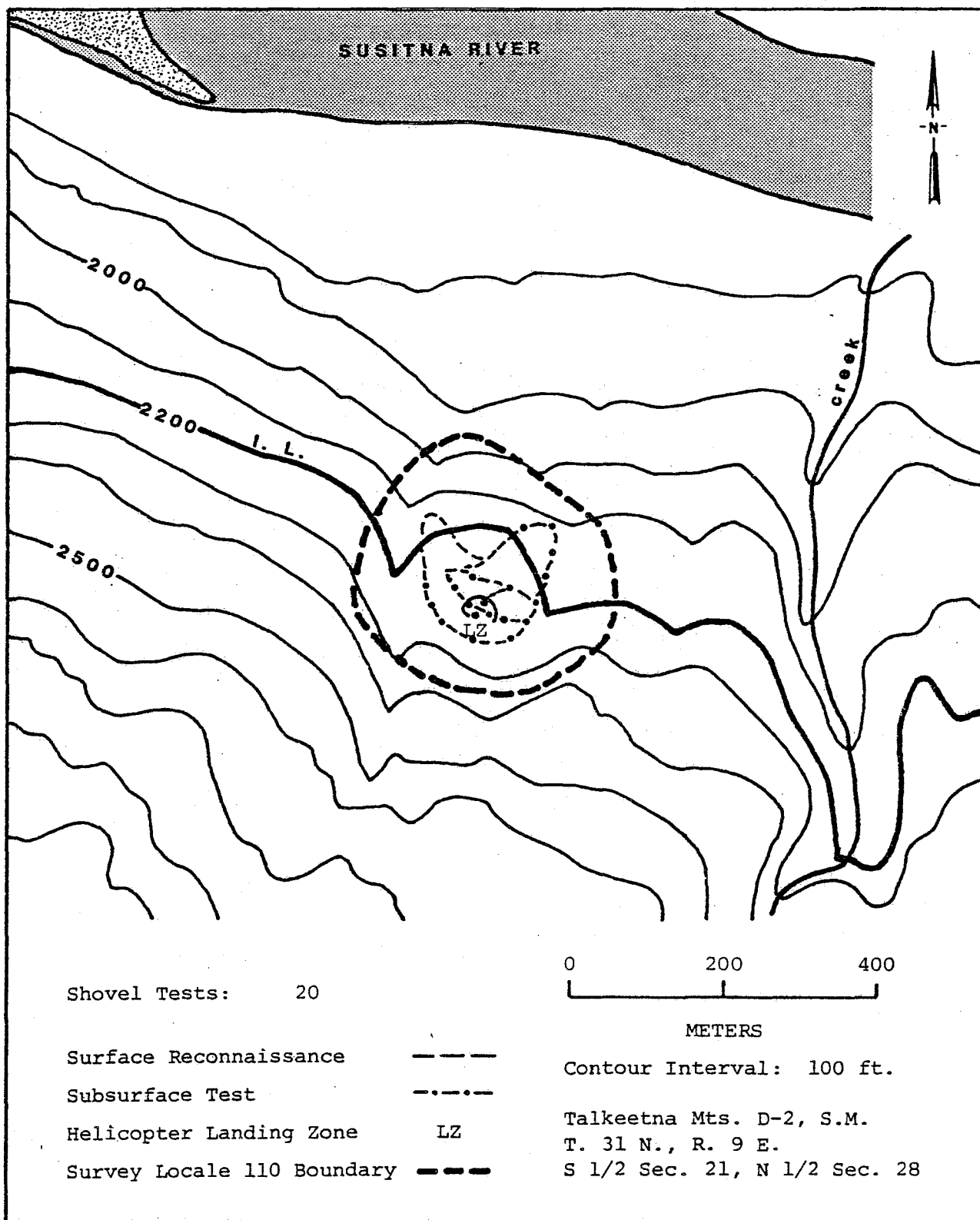


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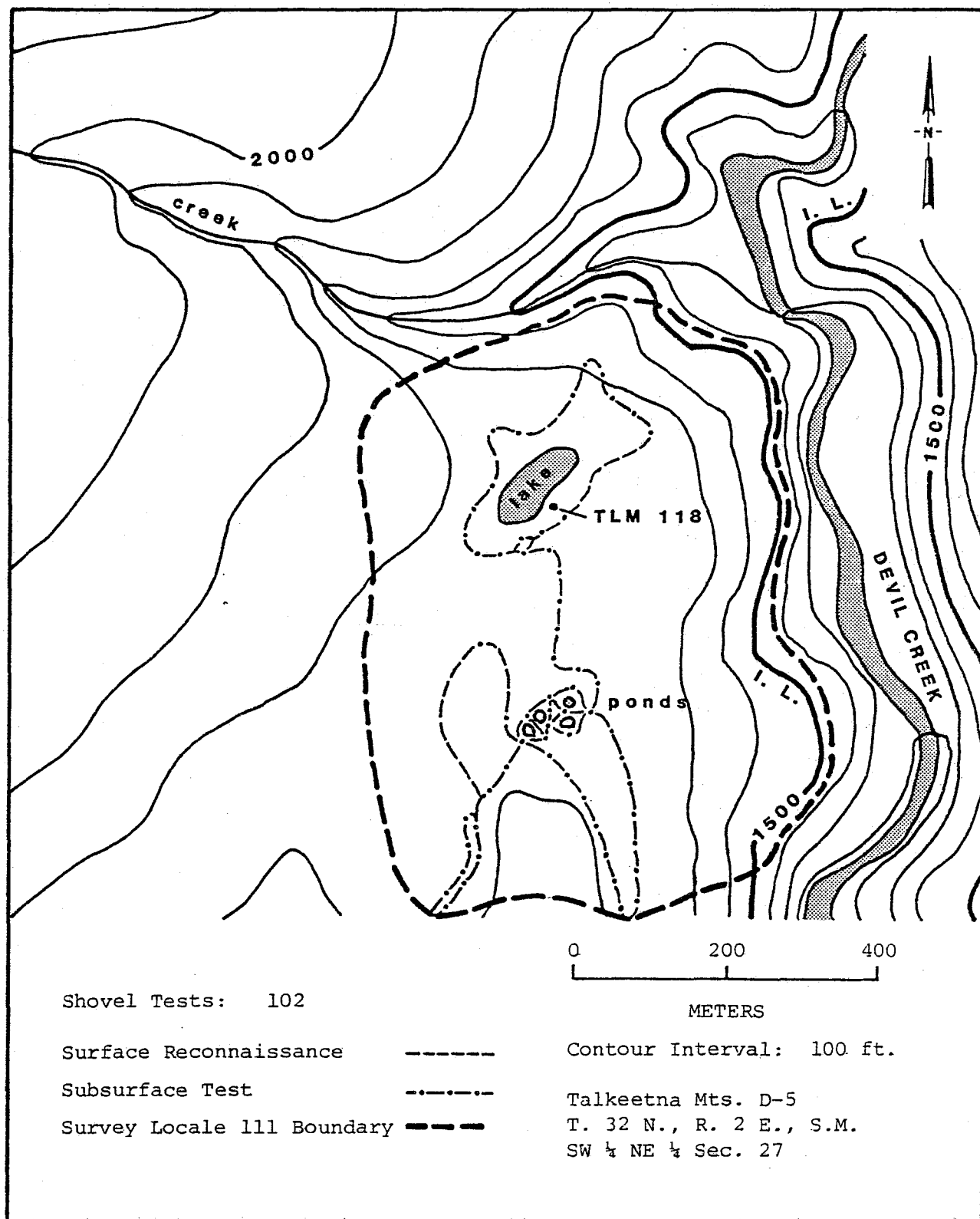


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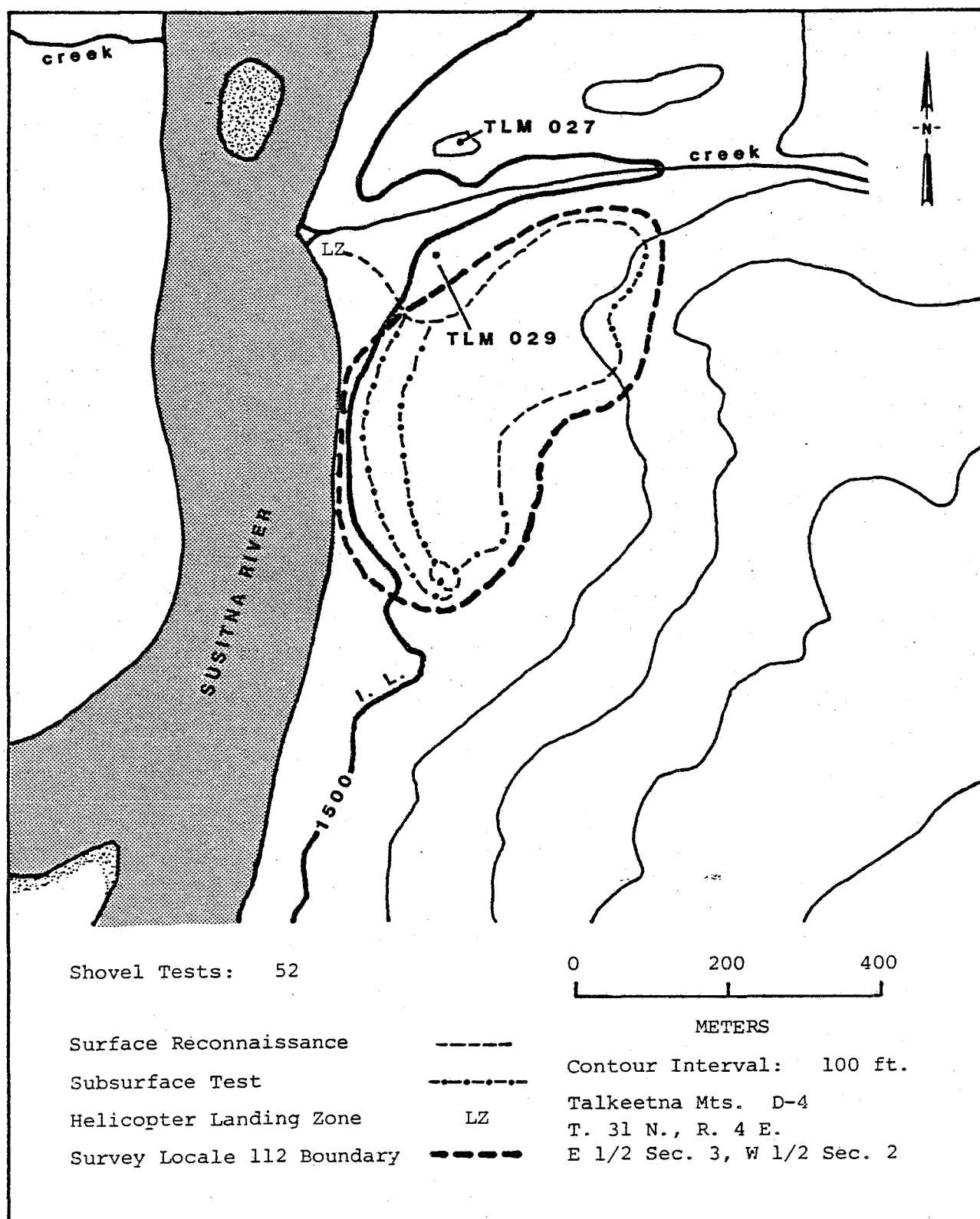


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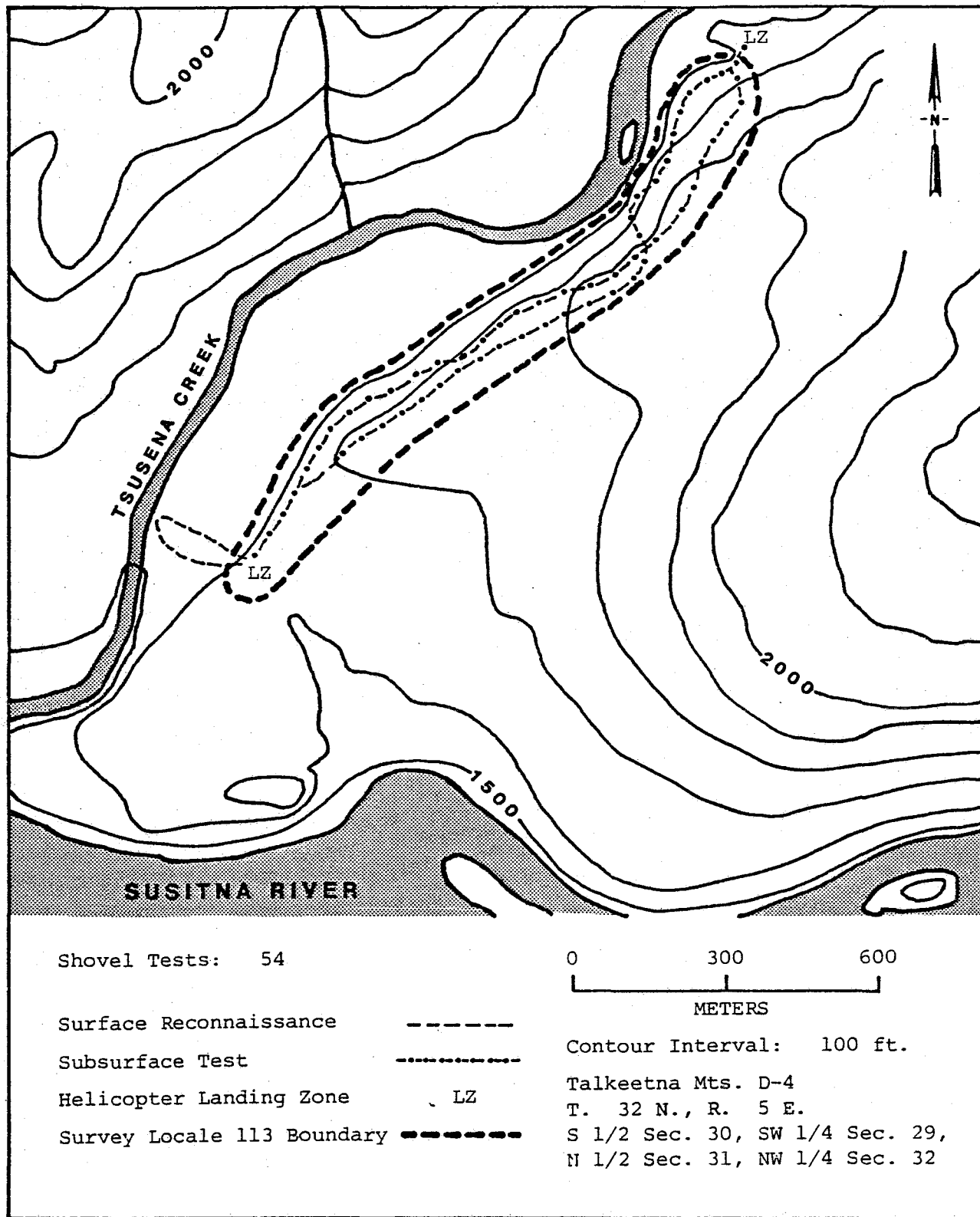


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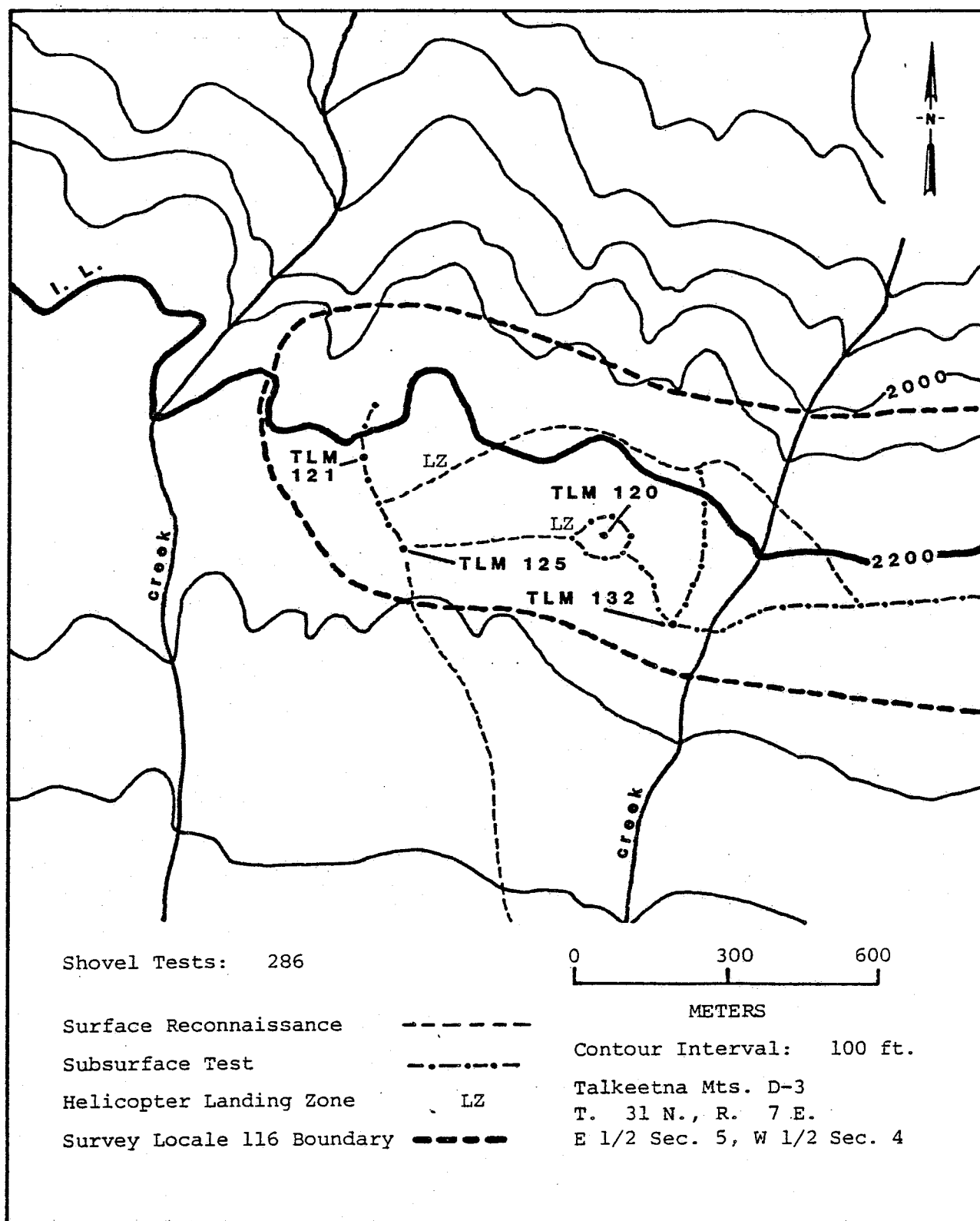


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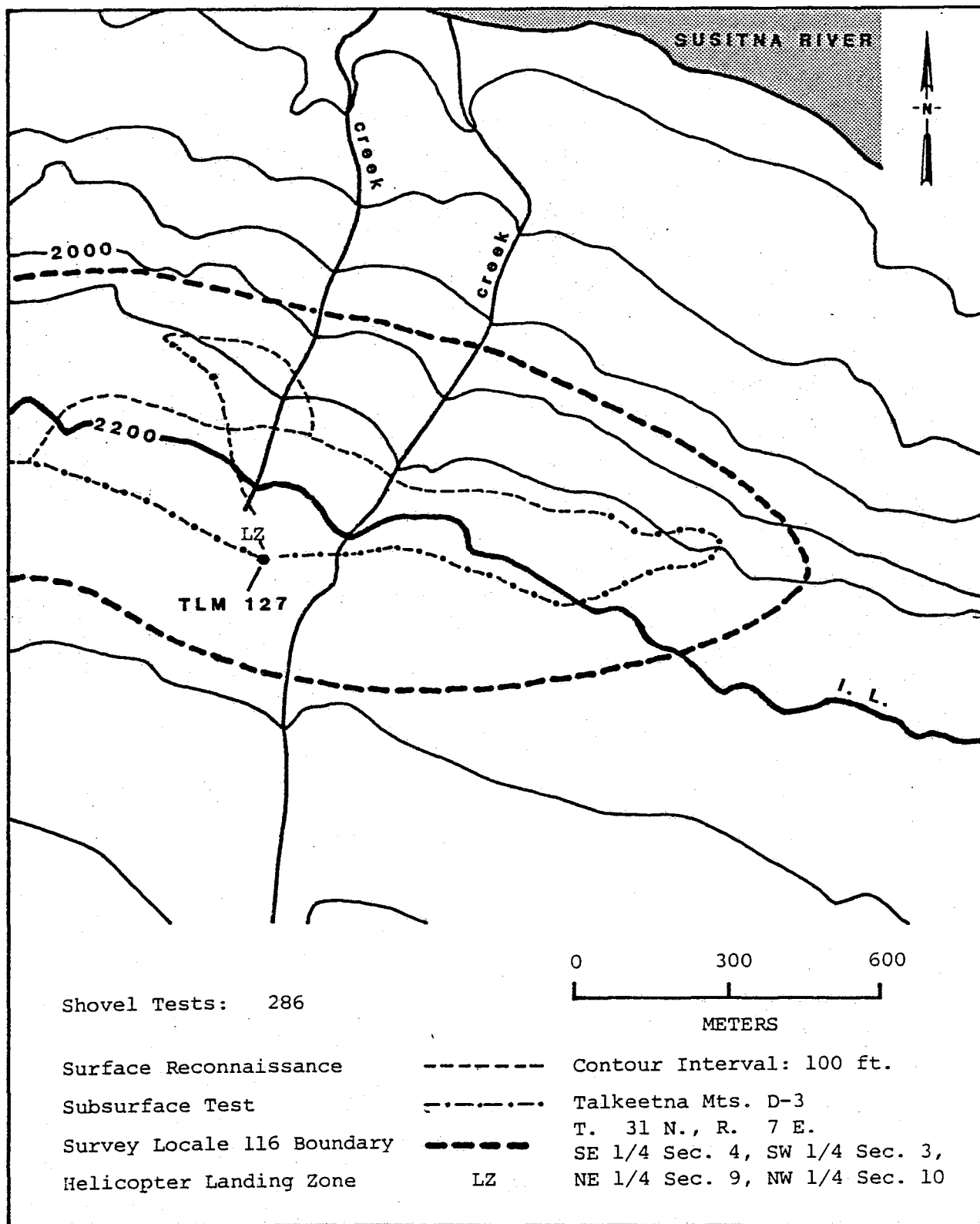


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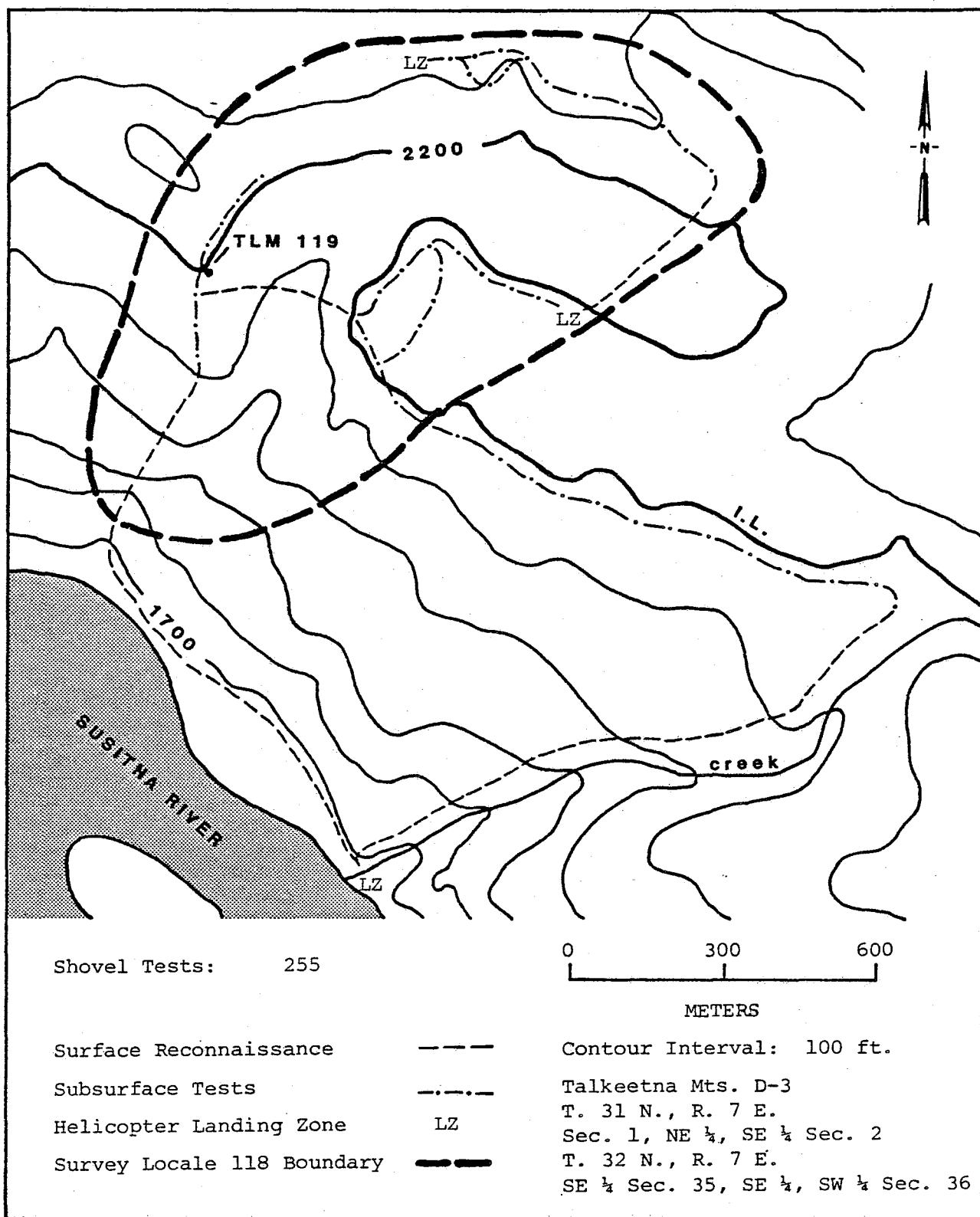


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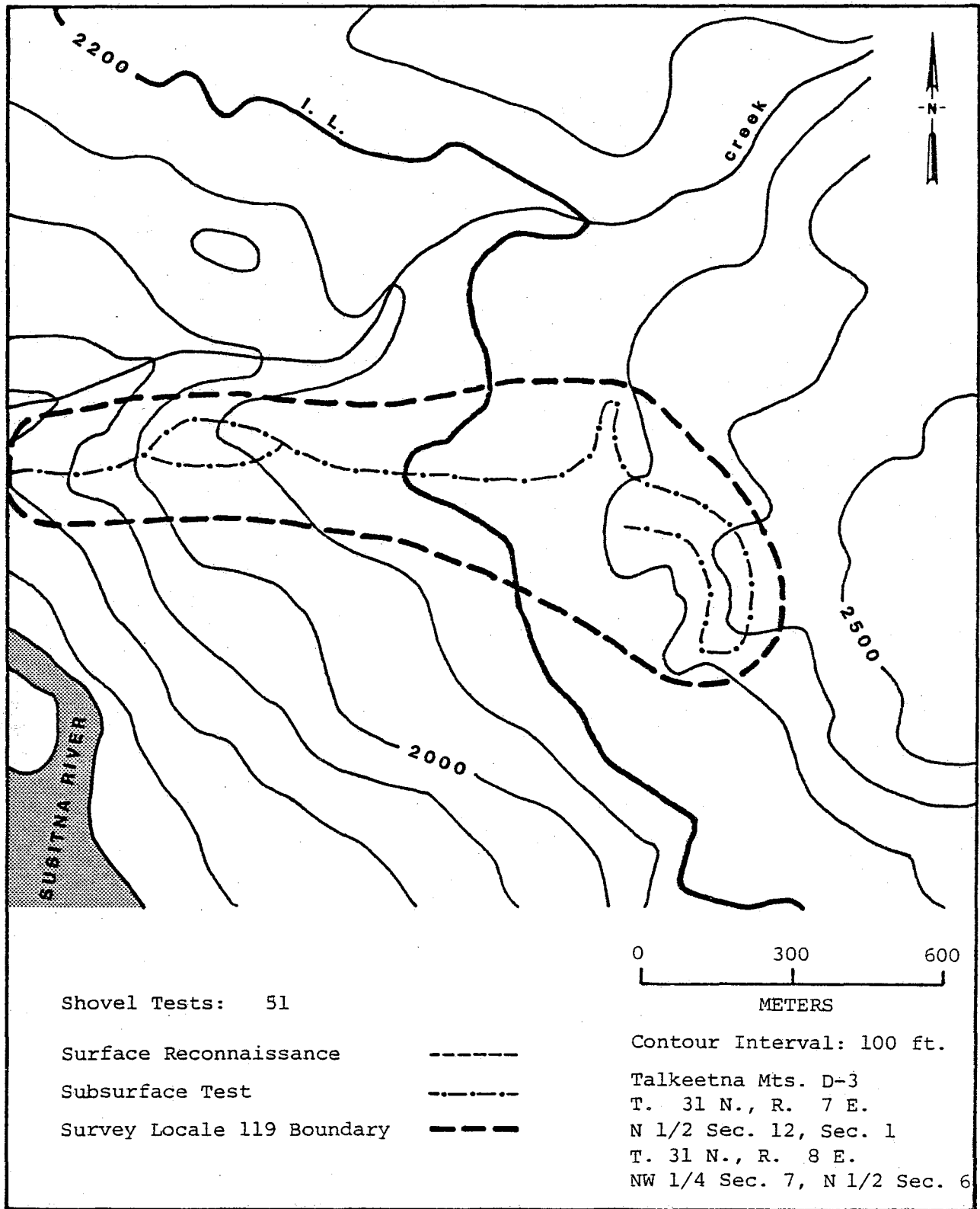


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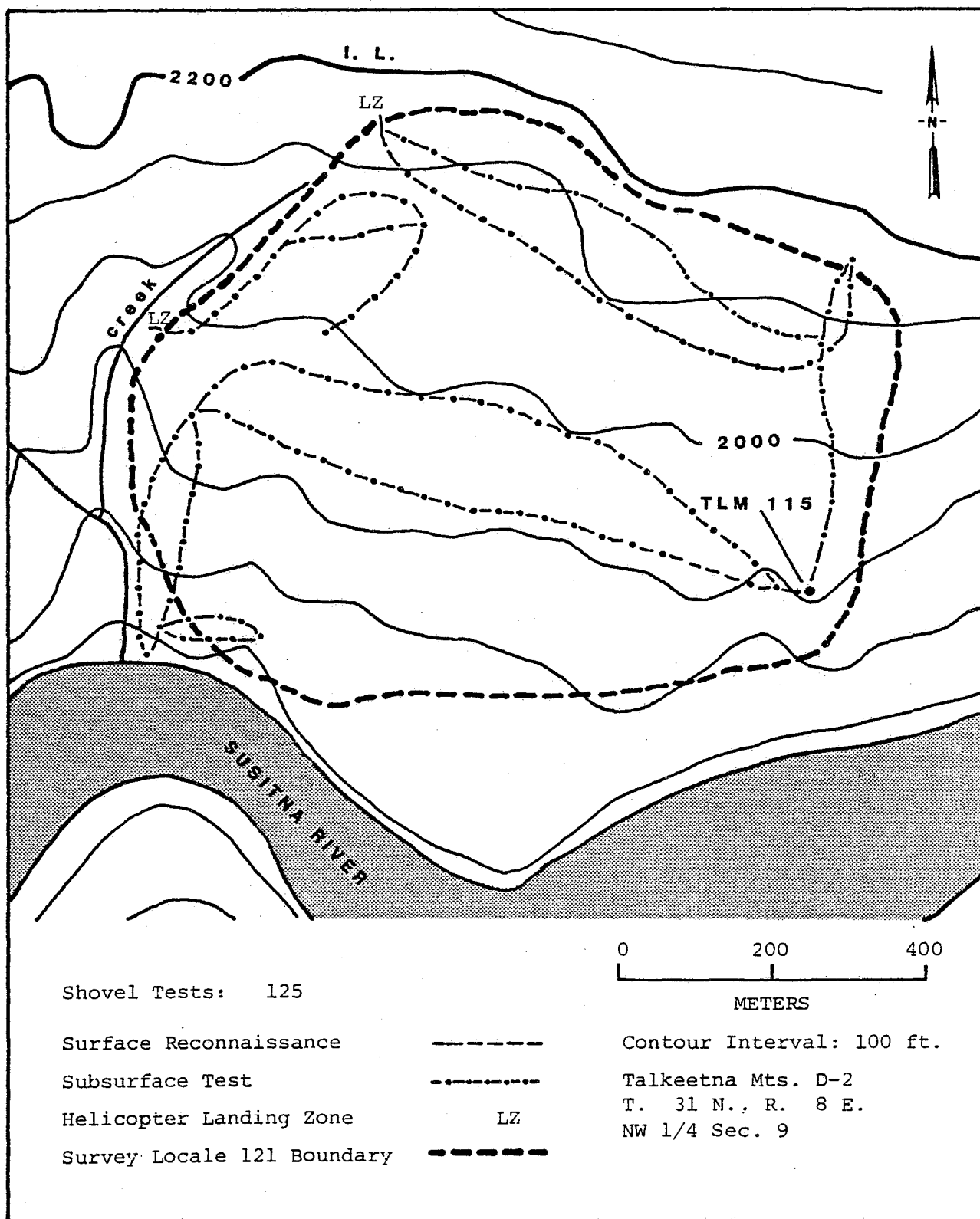


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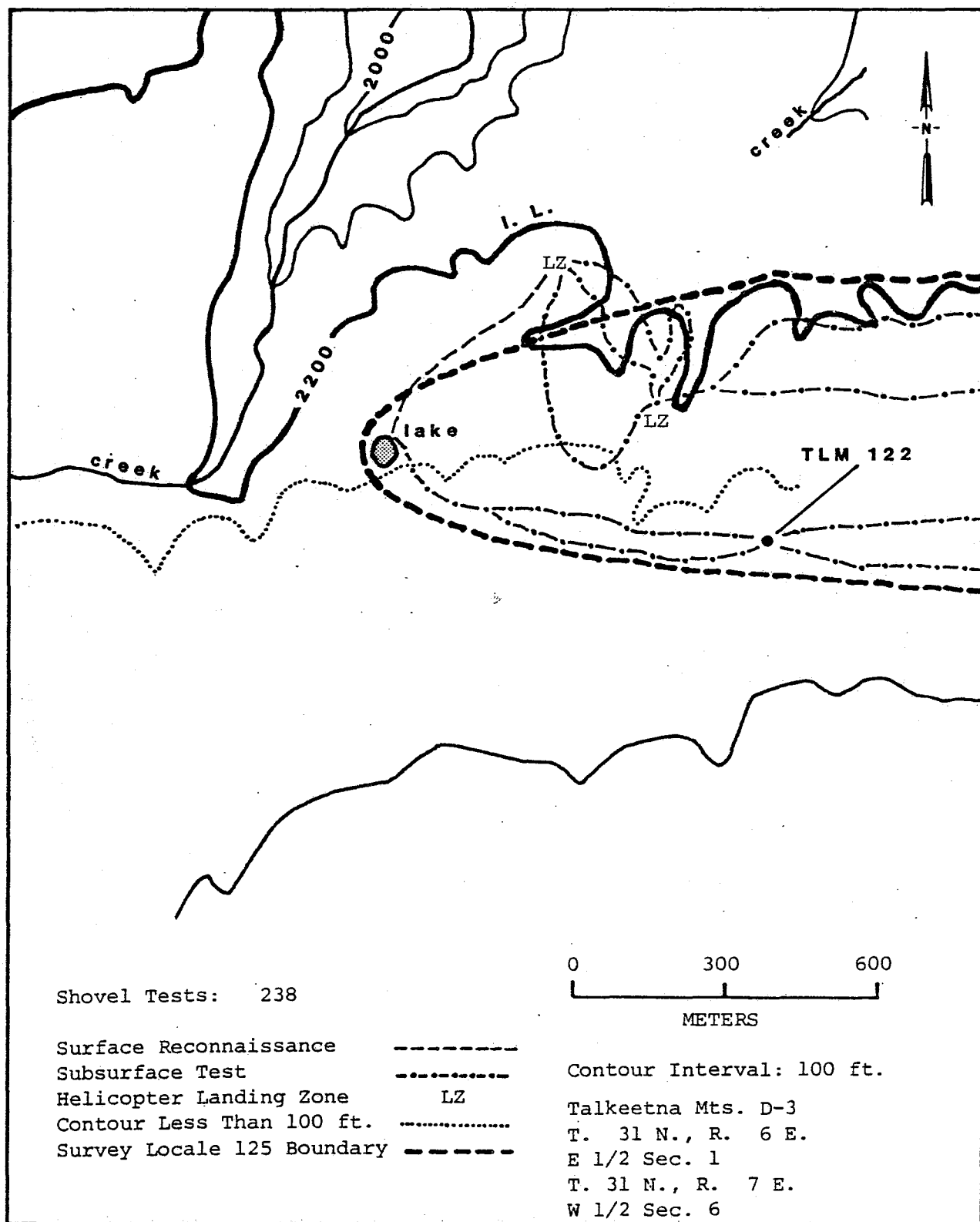


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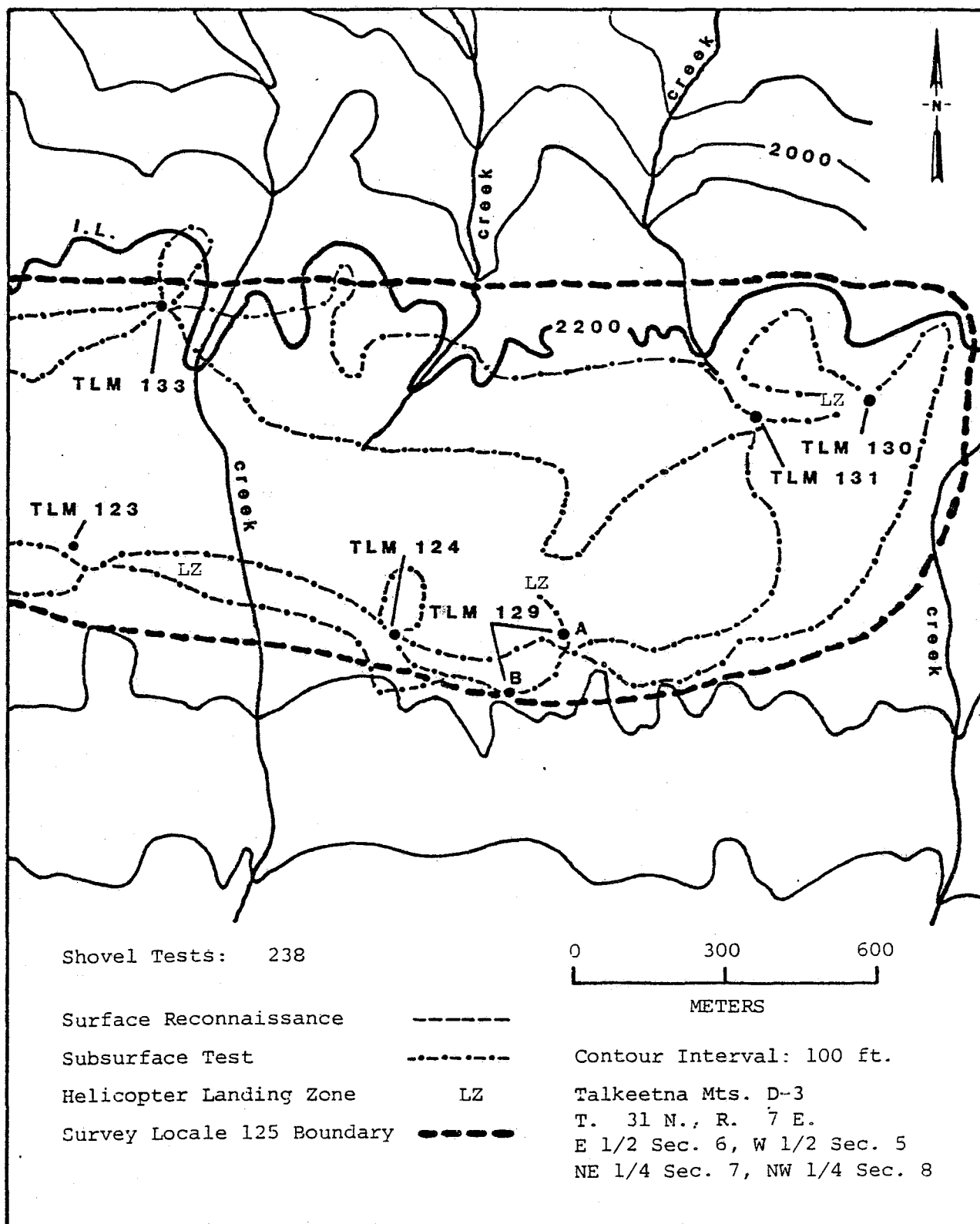


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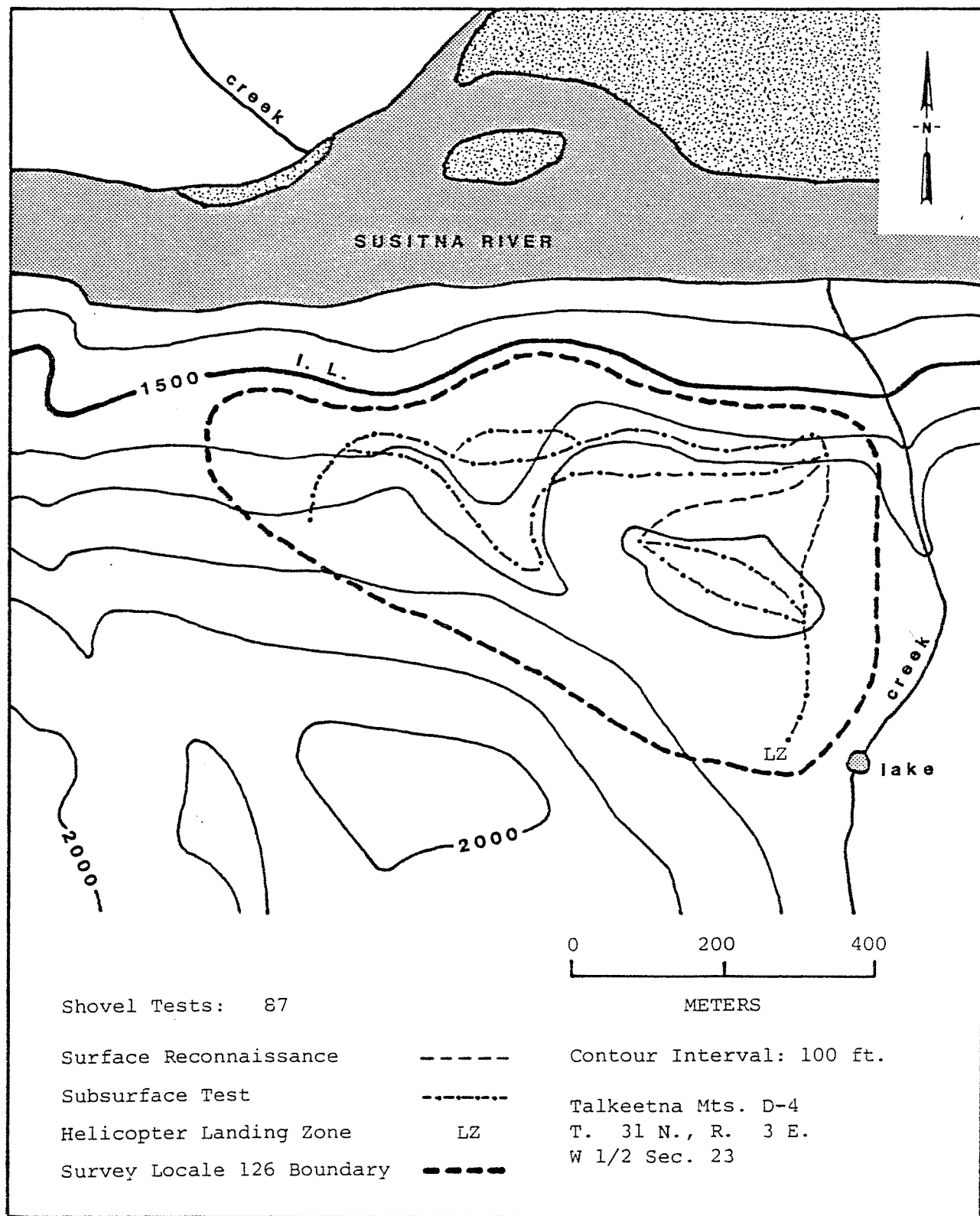


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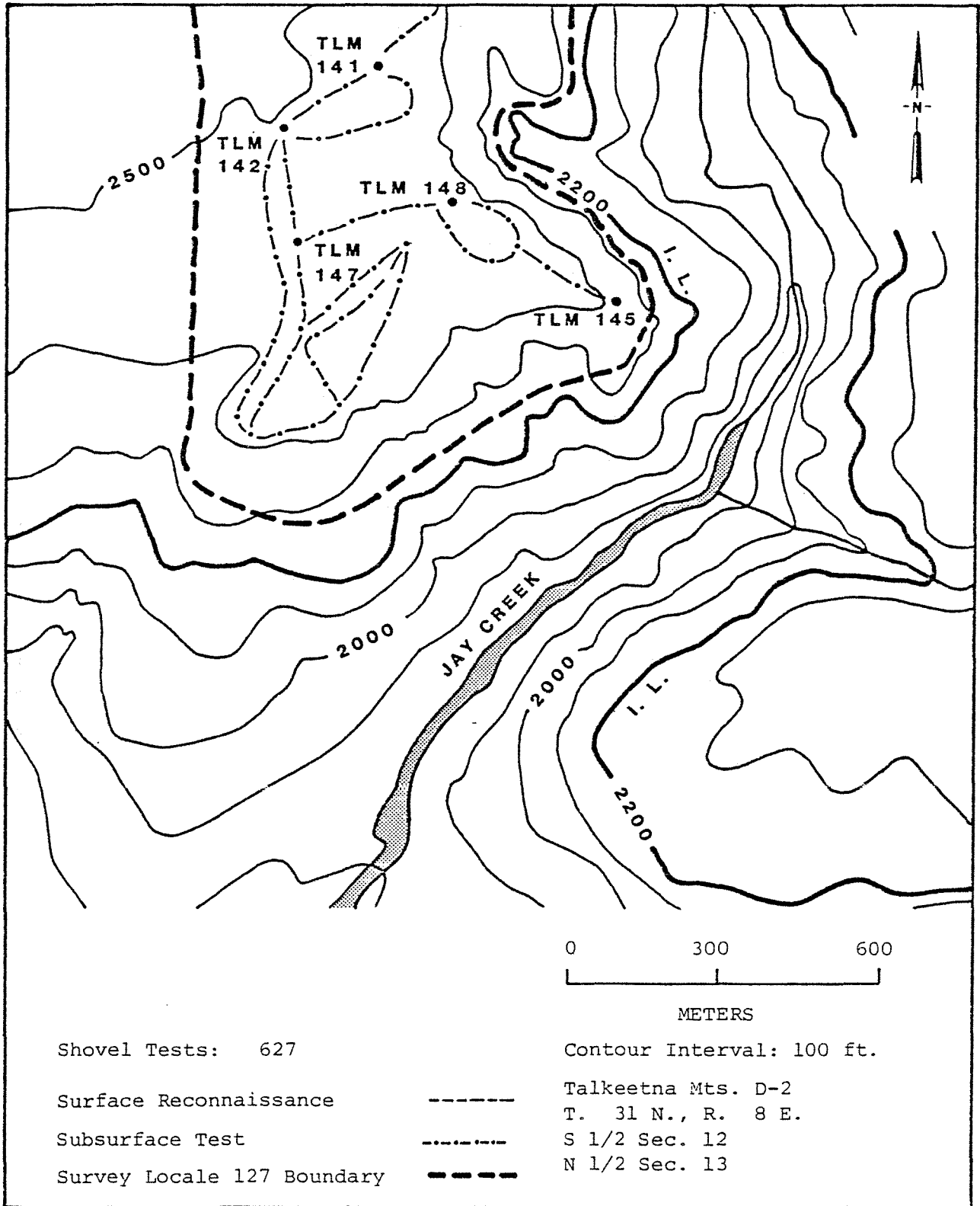


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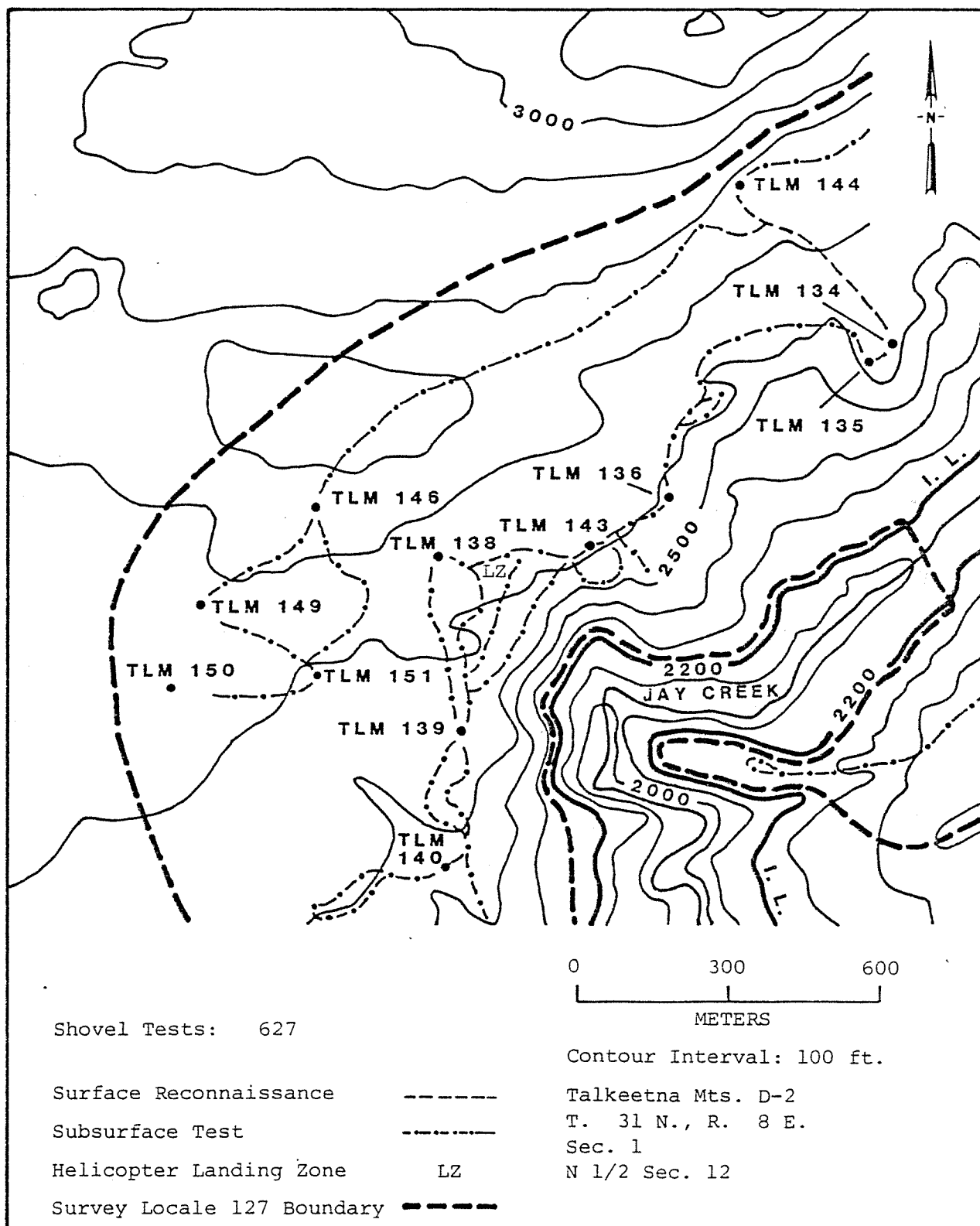


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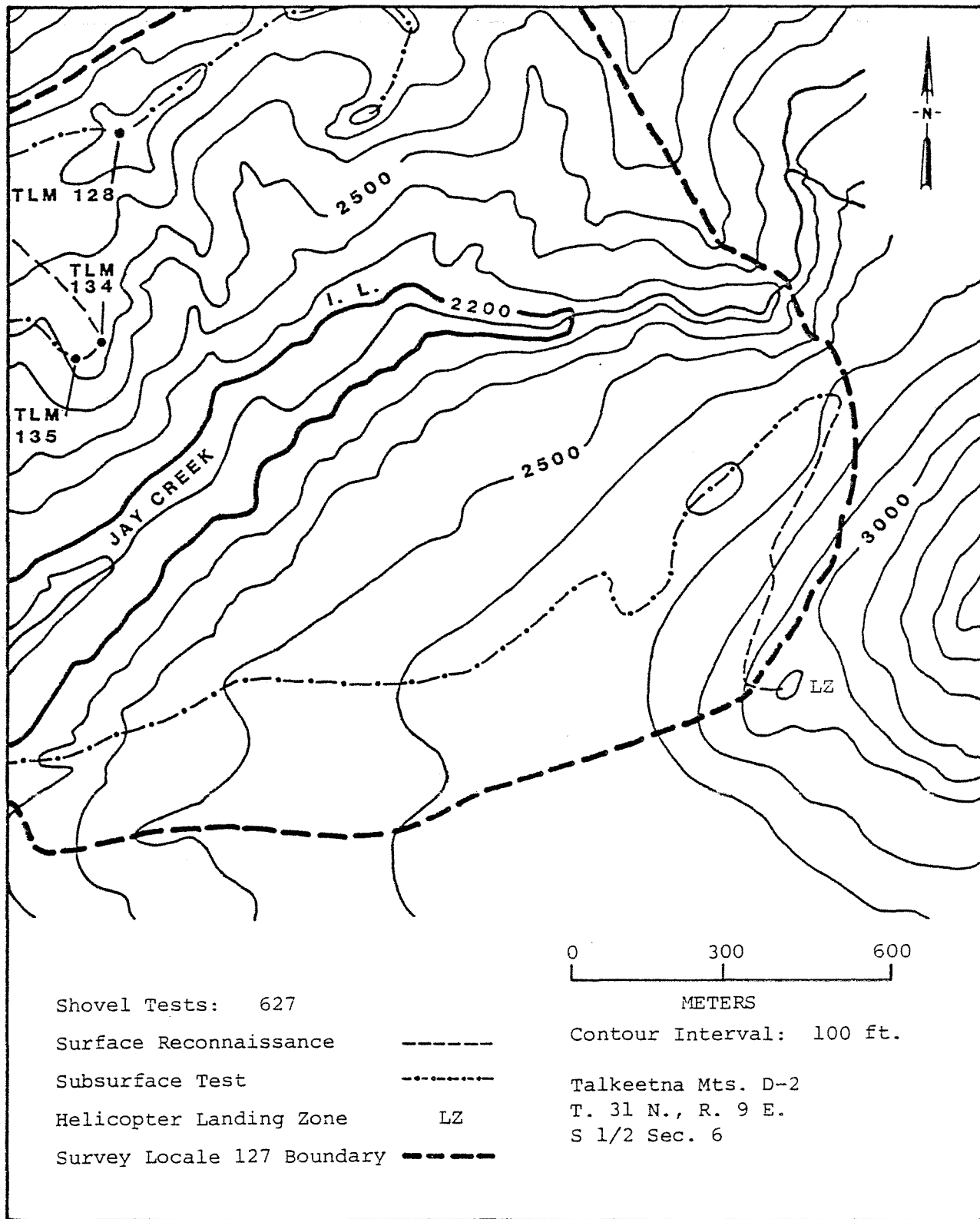


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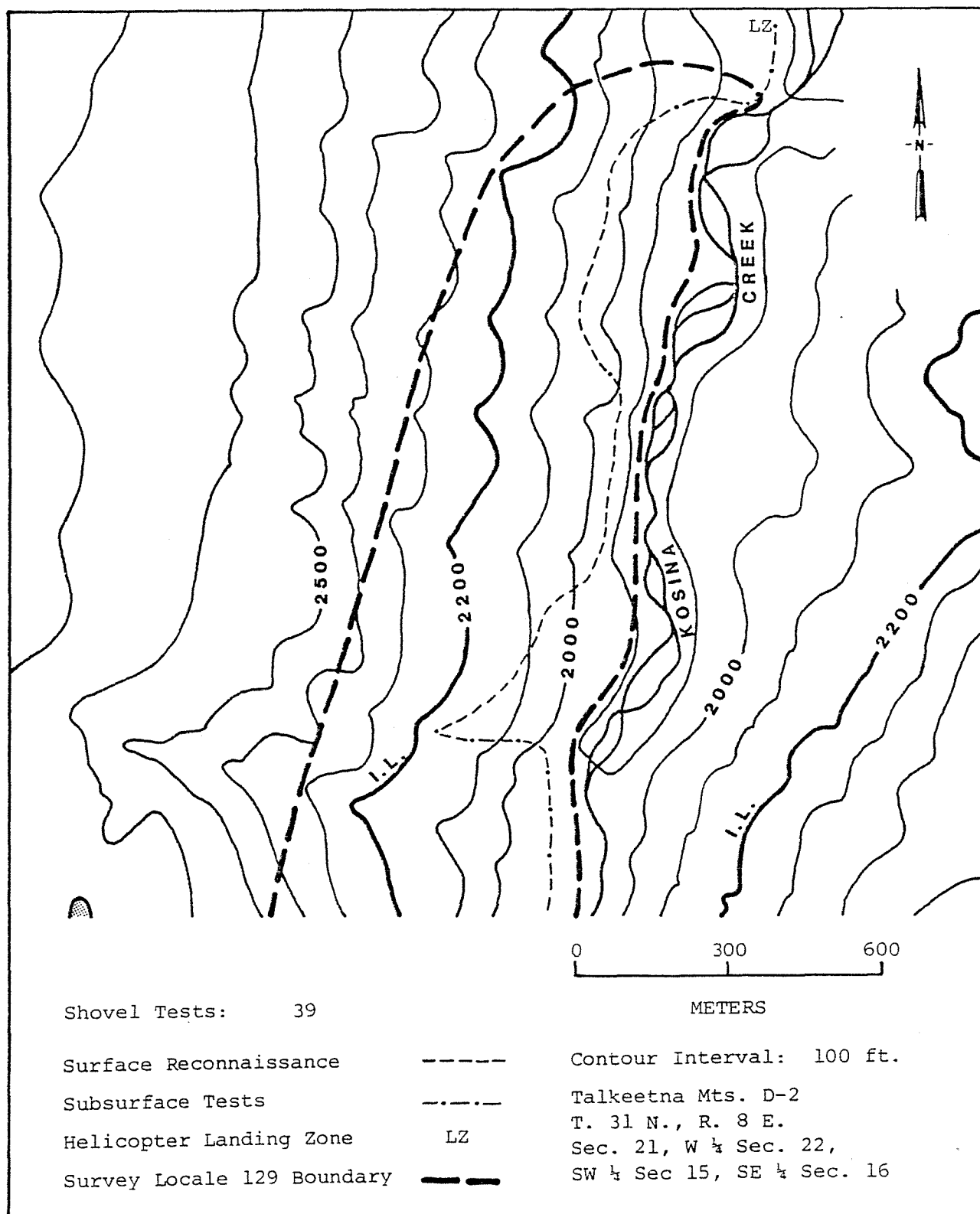


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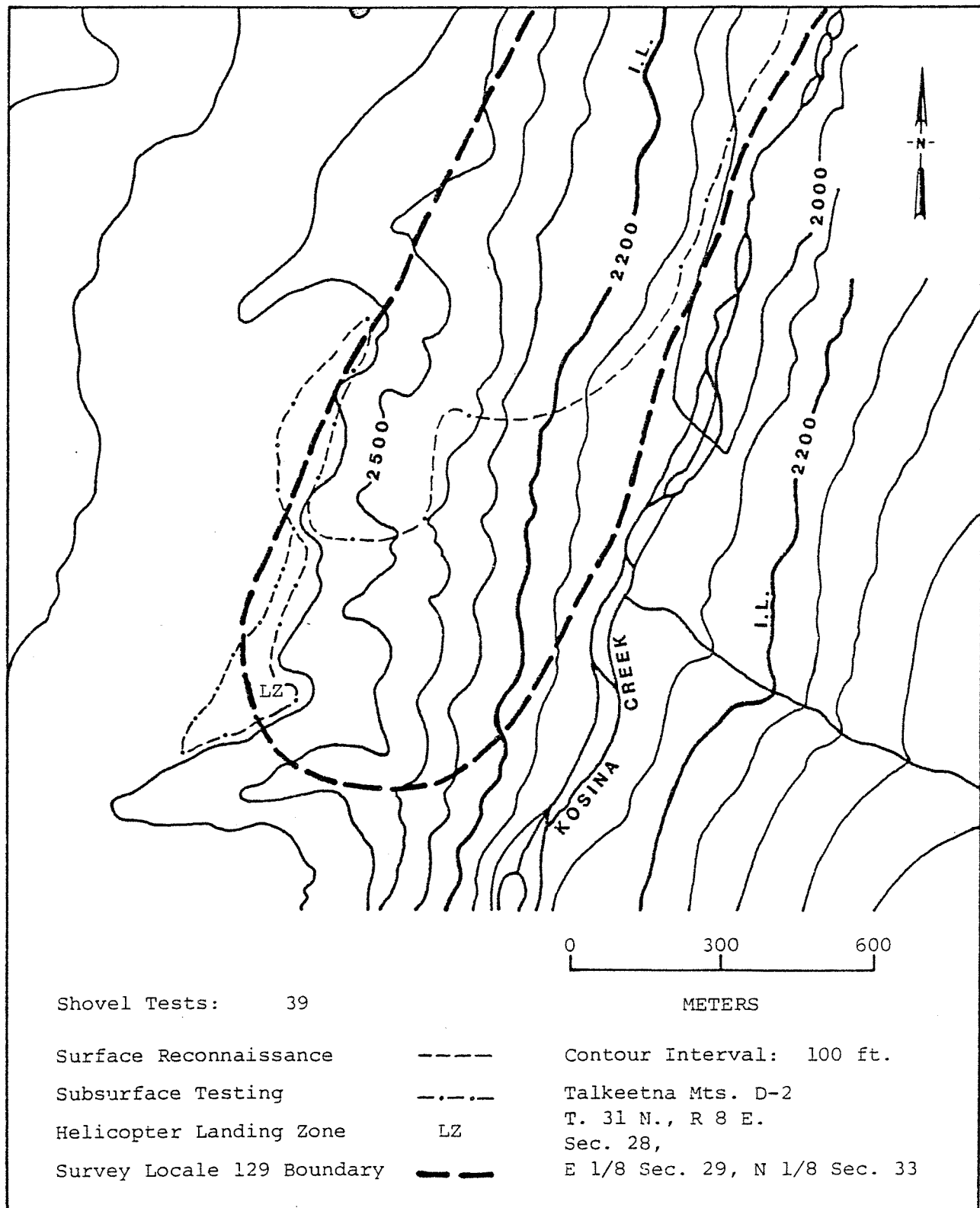


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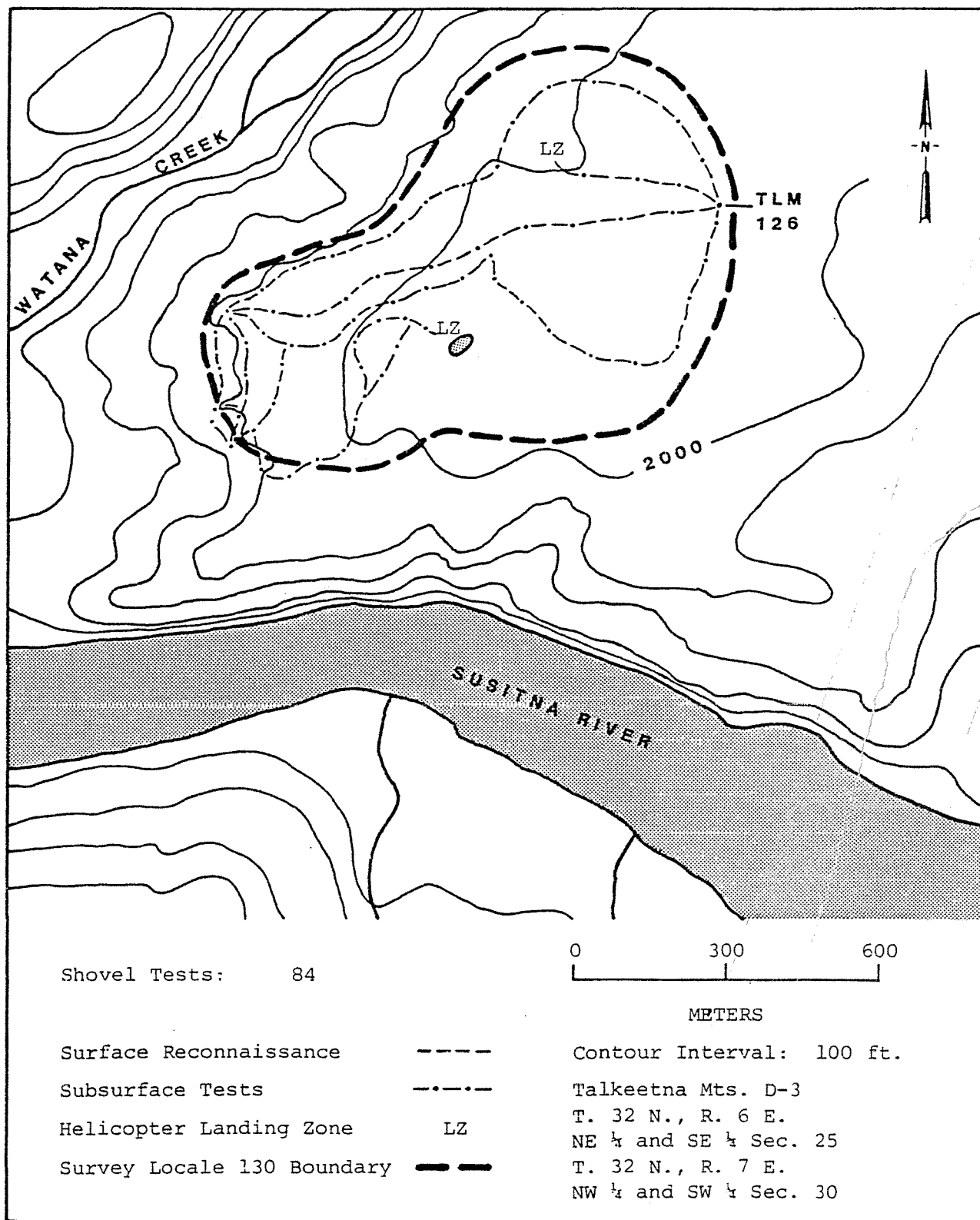


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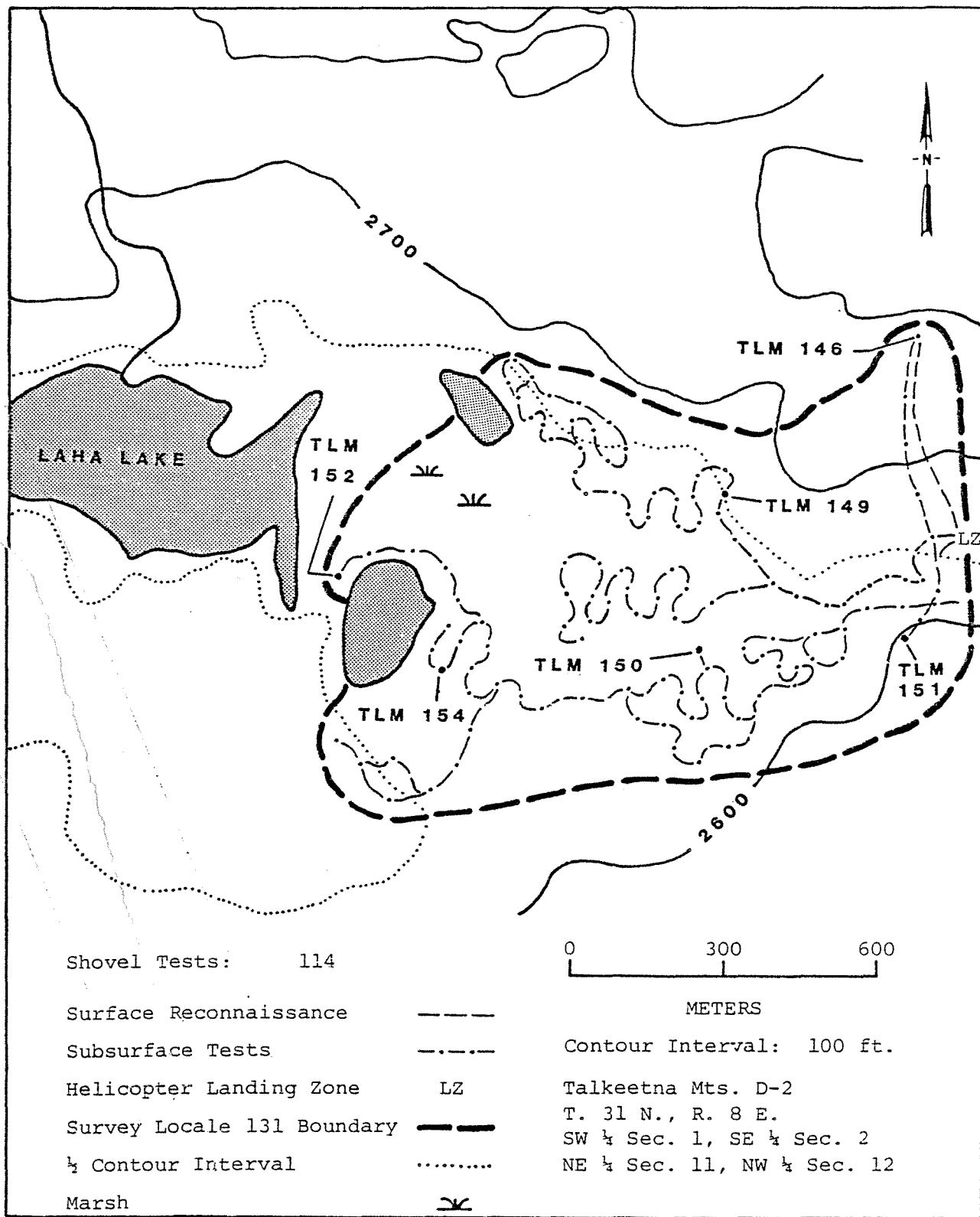


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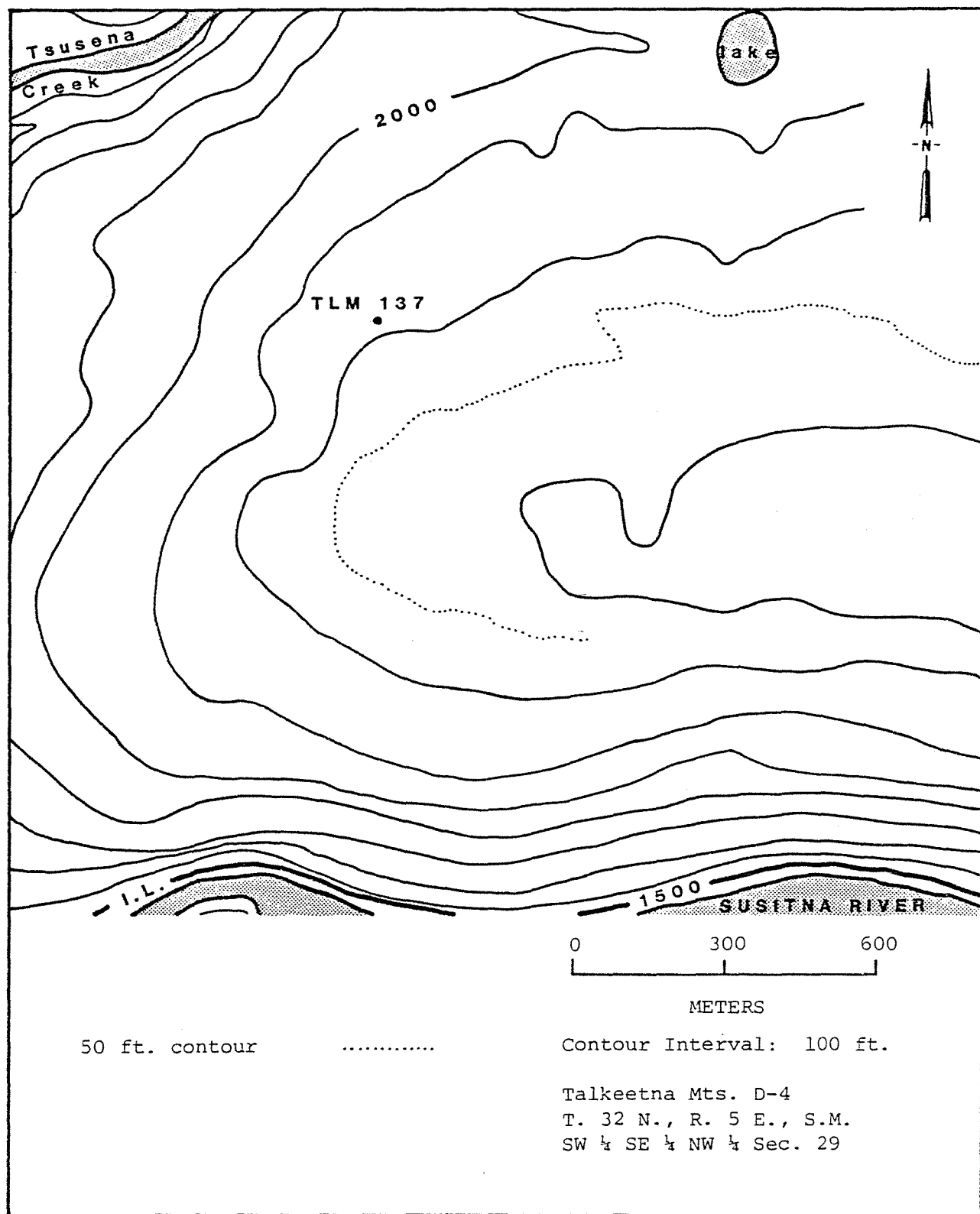


Figure A.35. Site Location Map TLM 137.

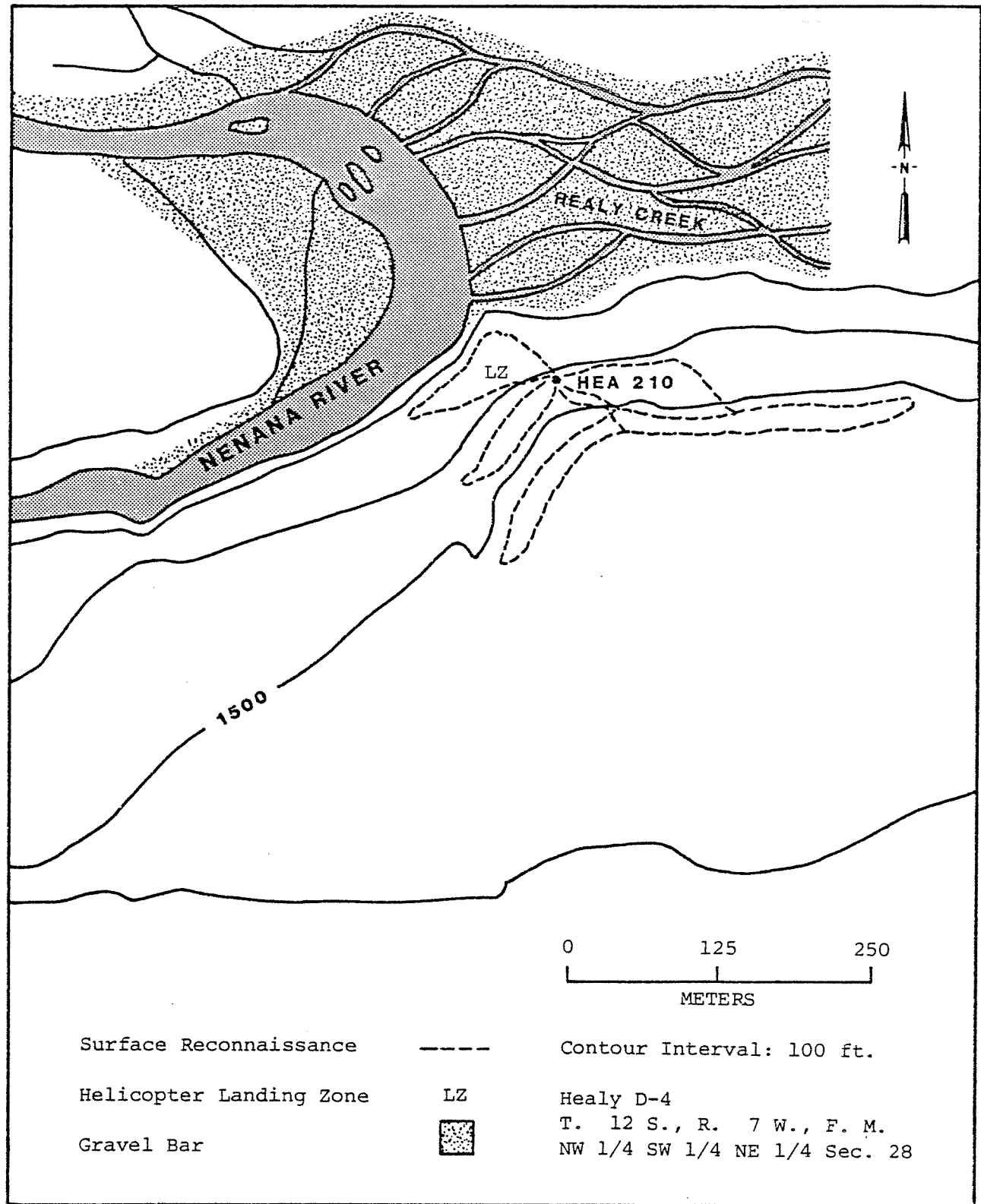


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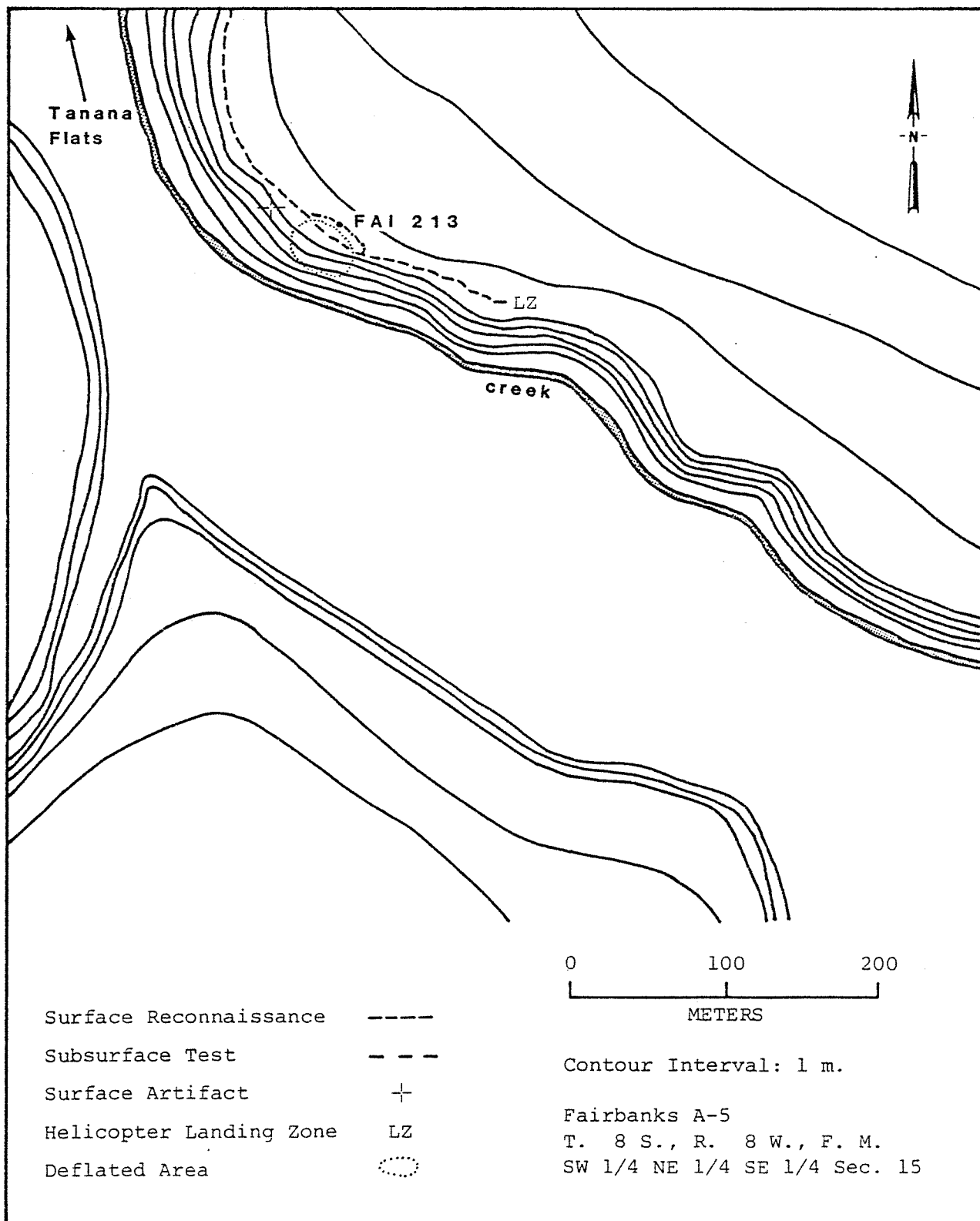


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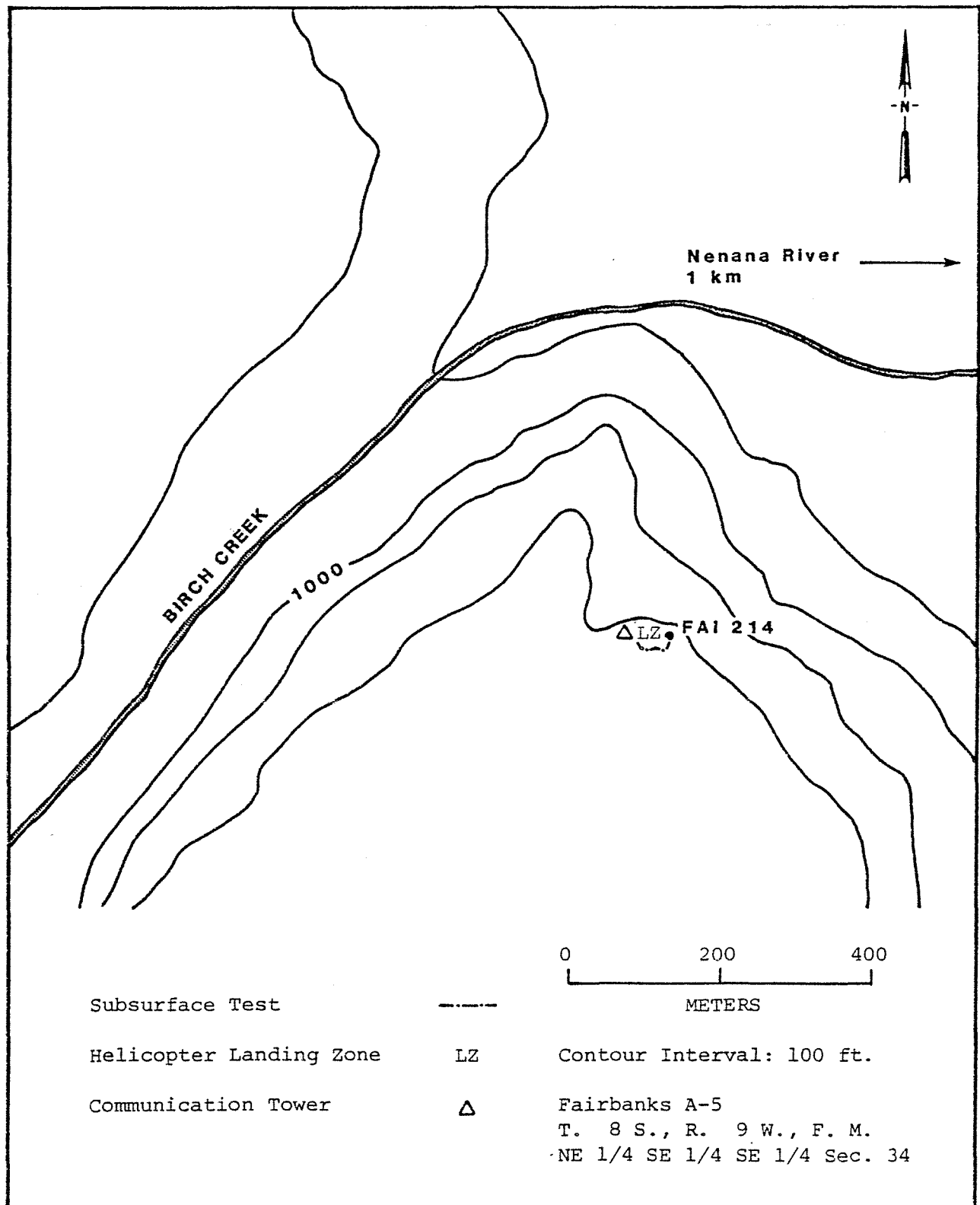


Figure A.38. Site Location Map FAI 214.