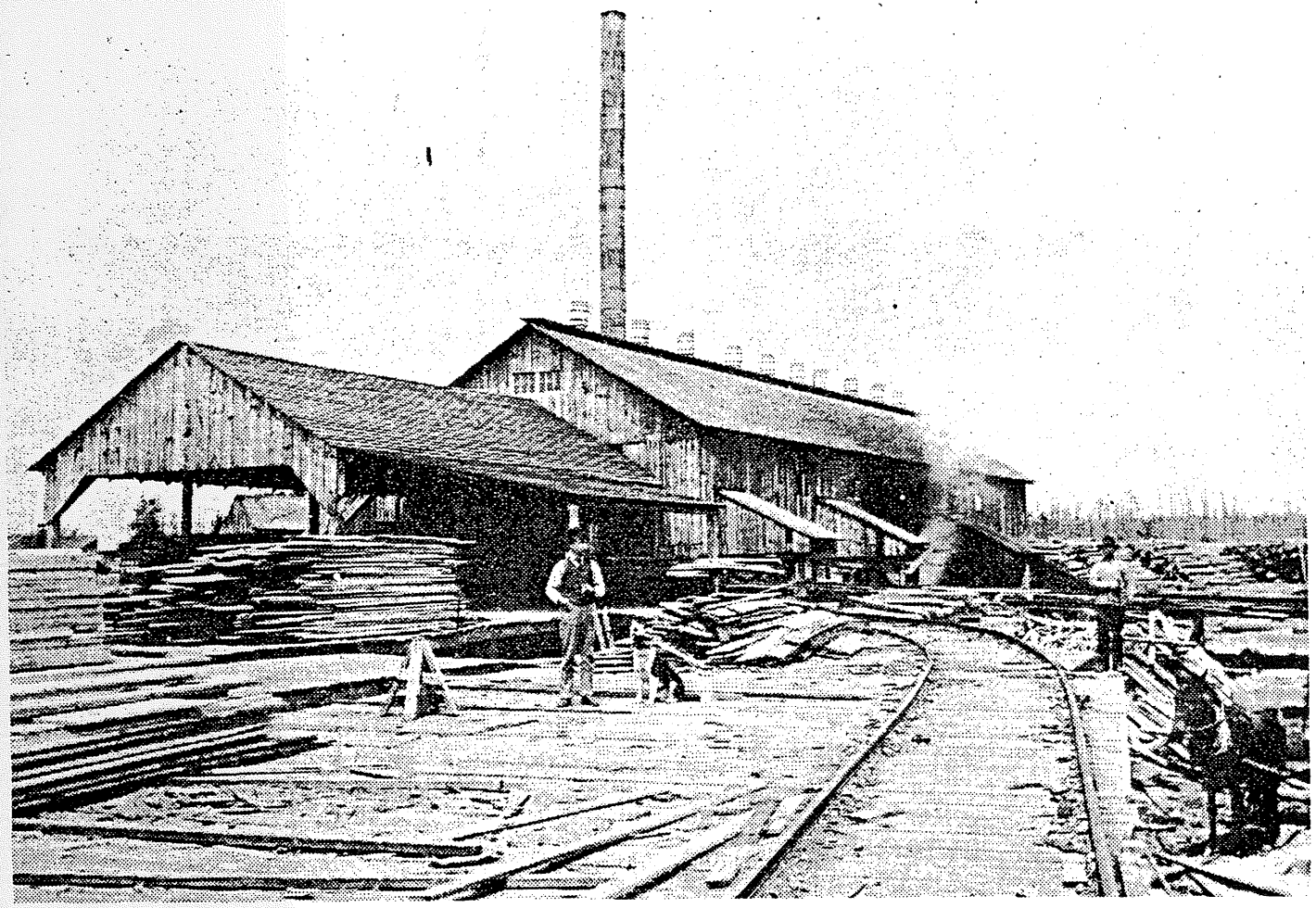
MINNESOTA DEPARTMENT OF NATURAL RESOURCES
WATER ACCESS PROGRAM
ARCHAEOLOGICAL RECONNAISSANCE SURVEY
ANNUAL REPORT - 1988



MARCH 1989

PREPARED BY: PATRICIA M. EMERSON
MINNESOTA HISTORICAL SOCIETY

TTED IN ACCORDANCE WITH CONTRACT #87C-1755 BETWEEN THE MINNESOTA
ORICAL SOCIETY AND THE MINNESOTA DEPARTMENT OF NATURAL RESOURCES

DEPARTMENT : Natural Resources - Trails & Waterways

STATE OF MINNESOTA

Office Memorandum

DATE : April 10, 1989

TO : Zona DeWitt
Minnesota Documents
Legislative Reference Library

FROM : Steve Kirch, Supervisor
River Recreation Section

PHONE : 6-0735

SUBJECT : ARCHAEOLOGICAL RECONNAISSANCE SURVEY
ANNUAL REPORT 1988

Please find attached the recent Archaeological Reconnaissance Survey Annual Report 1988 submitted in accordance with contract #87C-1755 between the Minnesota Historical Society and the Minnesota Department of Natural Resources. If you wish additional copies please feel free to contact me.

cc: Paul Swenson
Pat Emerson

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MINNESOTA DEPARTMENT OF NATURAL RESOURCES
WATER ACCESS PROGRAM
ARCHAEOLOGICAL RECONNAISSANCE SURVEY

ANNUAL REPORT - 1988

March 1989

Prepared by
Patricia M. Emerson
Minnesota Historical Society

SUBMITTED IN ACCORDANCE WITH CONTRACT NO. 87C-1755
BETWEEN THE DEPARTMENT OF NATURAL RESOURCES-TRAILS & WATERWAYS UNIT
AND THE MINNESOTA HISTORICAL SOCIETY

Cover: Brenner Sawmill, Hinckley, between 1891 and 1894.

ABSTRACT

This report presents the results of the third year of operation of the Minnesota Department of Natural Resources Water Access Program Archaeological Reconnaissance Survey. The program operates through the Archaeology Department of the Minnesota Historical Society, with funding provided by the Minnesota Department of Natural Resources-Trails & Waterways Unit. The intent of the program is to conduct cultural resource reviews of projects initiated by the Water Access and River Recreation Programs, which operate under the mandate of Minnesota Statutes Chapter 86A, The Outdoor Recreation Act of 1975. The current objectives, research strategies and operational structure of the Water Access Program Archaeological Survey are explained in the Introduction. The remainder of the report presents the results of specific project reviews completed during the year.

During 1988, preliminary information was received from DNR regarding 55 proposed Water Access or River Recreation Program acquisition or facility development projects. Record reviews resulted in identification of five known sites that might be affected by those projects; further research at most of these sites will be conducted as DNR progresses with detailed project planning.

Preliminary reviews were completed during the year for 35 projects located in 23 different counties. Three of these areas were already known to include or be adjacent to recorded sites (21DL46, 21BW20, 21CH55); six additional, previously unknown sites were recorded as a result of reconnaissance survey (21BN8, 21BN9, 21OT99, 21PN56, 21PN57, 21TO8). Management recommendations for four of these nine projects included "no effect" determinations, and DNR proceeded with project planning (21BN9, 21BW20, 21CH55, 21TO8). One site (21BN8) has been recommended for intensive testing during the coming field season. In three cases (21PN56, 21PN57, 21D146), management recommendations have not yet been formulated, pending further work on acquisition or development planning by DNR.

Site evaluation research was conducted at two sites during 1988, one of which (21OT97) had been identified during the 1987 field season. Intensive testing of 21OT99, the Riverside Site, was undertaken immediately after reconnaissance survey, and modifications of the proposed construction plan were implemented in order to protect the site from damage during access development, which took place during the summer of 1988. Site evaluation was completed in the fall of 1988 at 21OT97, the Marion Site, in order to evaluate the site's eligibility for nomination to the NRHP. Recommendations for a third phase of research at that site are currently being formulated.

Summary lists of all projects reviewed by this program can be found in the Appendices. These tables are organized both by DNR Region and by county, and include brief indications of review results and management recommendations. Specific project locations are also presented in a separate Appendix. If a project are was identified as containing a cultural deposit, the site number is provided.

ACKNOWLEDGEMENTS

Many people were involved to one degree or another in the work completed by the Water Access Program Survey during 1988. As in previous years, Steve Kirch at Trails & Waterways Central Office worked very hard to coordinate a complex set of activities. His commitment to the success of the program is greatly appreciated. Other members of the Central Office staff, including John Steward and Mike Markell, also provided a great deal of useful information and assistance.

All of Trails & Waterways Area Managers were helpful during the year by providing information and assistance when requested. In particular, I am grateful to Bruce Winterfeldt for his interest and support on the Otter Tail Lake/Riverside project. Several members of DNR's Engineering staff also showed themselves willing to integrate cultural resource concerns into their duties.

The amount of work completed during the year would surely have been less were it not for the help provided by Thor Olmanson, both in the field and in the laboratory. Other individuals who contributed to specific projects include Kent Worley of Architectural Resources, Inc., Bill Majewski of the Duluth City Planning Department, and Pat Maas of the St. Louis County Historical Society for the Brighton Beach project; Mr. Walter Klein, former owner of the Marion Site; Jean Coffey of the Hinckley Fire Museum regarding the Brenner Sawmill Site; and Leslie Peterson of the Trunk Highway Survey, who provided information about a number of projects. Appreciation is also due to Susan Roth and Charles Nelson of SHPO, who provided expertise and advice on several projects which involved standing structures or other historic-era resources.

My thanks to Dr. Christy Hohman-Caine, State Archaeologist, Earl Sargent of the Minnesota Indian Affairs Council, and Ted Lofstrom of SHPO for their continuing concern for the proper treatment of Minnesota's cultural resources; to Bob Clouse, Head of the MHS Archaeology Department for his attention to many administrative matters; and, as always, to my colleagues in the department for their assistance, opinions and support.

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I. INTRODUCTION

This report presents the results of work conducted during 1988 by the Minnesota Department of Natural Resources (DNR) Water Access Program Archaeological Reconnaissance Survey. In this section, the objectives, history and current structure of the program are explained. Detailed descriptions of the methods used for documentary, field and laboratory research and analysis can be found in the "Research Design" portion of this chapter.

The majority of this report consists of descriptions of individual projects reviewed during 1988. These descriptions are summary versions of the formal research reports prepared for each project and submitted to regulatory agencies for review. The standard research methods described in the Introduction can be assumed to have been used for all project reviews unless otherwise noted in a particular project description. Project location maps based on USGS Quadrangles are provided for every project; more detailed maps are included if cultural resources were identified during review. If more information is needed about a particular project, copies of the original review reports can be obtained from the Program Archaeologist.

For most of the projects described in this report, no cultural resources were identified, and review consisted of reconnaissance-level survey only. DNR's planned development has already taken place for the majority of these projects. A smaller number of reviews resulted in identification of resources that might be affected by proposed construction; for some of these projects, additional work will be done during the 1989 field season. The reports describing these reviews indicate the current status of review for these projects.

Although the work reported here is known as the "Water Access Program Survey", projects reviewed actually fall into several administrative categories. The project descriptions in this report are presented in three separate chapters, reflecting the different types of projects reviewed:

Chapter II: Water Access or River Recreation Program property acquisition projects;

Chapter III: Water Access Program development projects (this includes both projects bid to outside contractors and those completed by DNR Regional staff); and

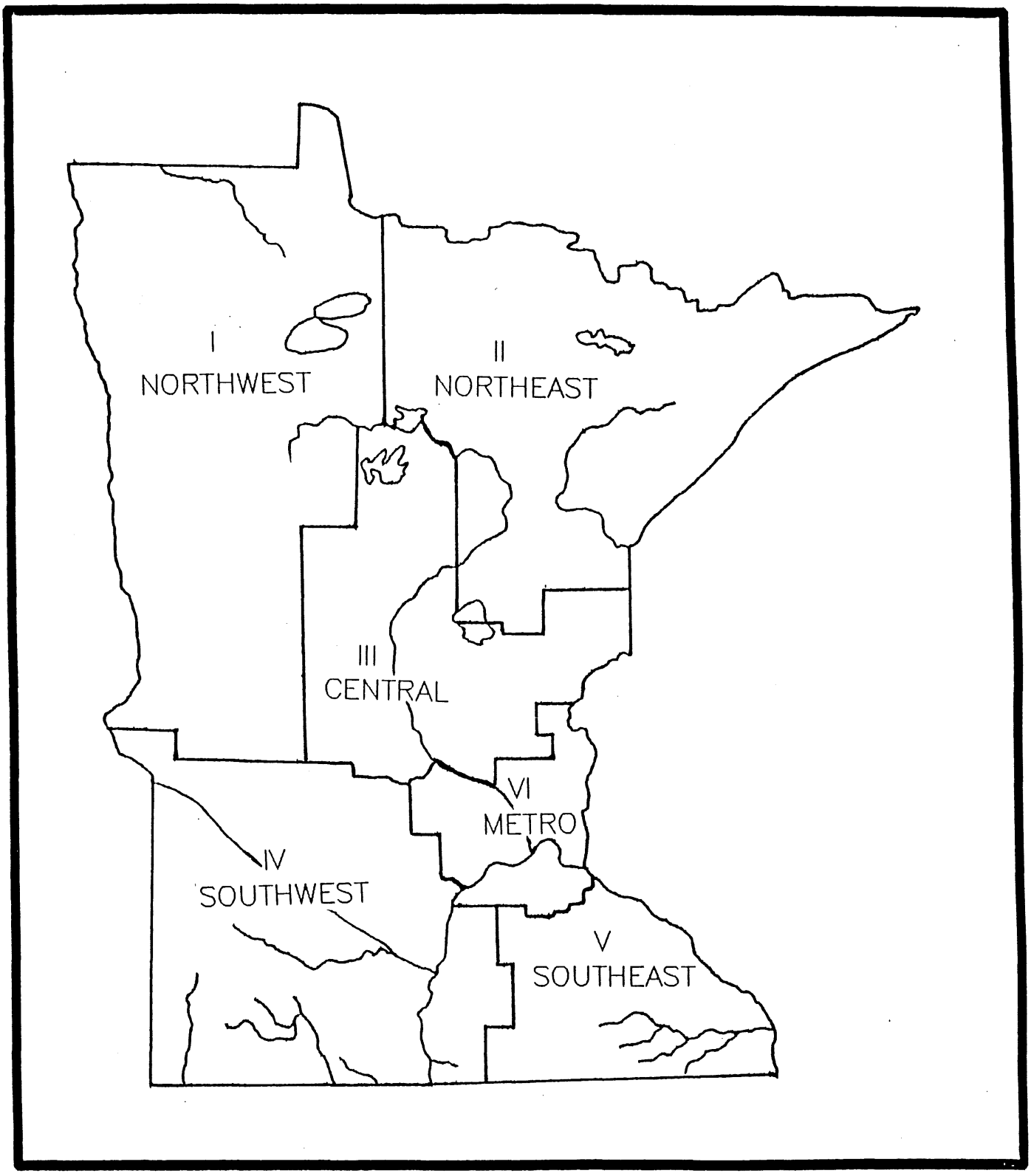
Chapter IV: River Recreation Program development projects.

Project descriptions are arranged alphabetically by county within each of DNR's six administrative regions for each chapter (see Figure 1). Appendices are provided that summarize project review results ordered separately by DNR region and by county. A list of detailed legal descriptions for all projects reviewed and a master map showing approximate project locations can also be found at the back of this report.

Program Background

The Water Access Program Survey was instituted in November of 1985, when DNR contracted with the Minnesota Historical Society (MHS) to provide professional services necessary for undertaking cultural resource management reviews of proposed development projects done by the Water Access and River Recreation Programs. Those programs are both operated by DNR's Trails & Waterways Unit, an administrative division that focuses on construction and maintenance of facilities for water recreation activities. Most of the work undertaken by Trails & Waterways is mandated by MN Statutes Chap. 86A, the Outdoor Recreation Act, which defined specific types of

Figure 1. DNR Administrative Regions



recreational/educational facilities that were to be developed and maintained by DNR. Currently, between 40 and 50 access development projects are undertaken every year by these programs.

Because such facilities are intended for the use of anglers and waterfowl hunters, a portion of the funding to be used for access development is derived from monies paid for state fishing and hunting licenses. Additional funding comes from a percentage of the excise tax on fuel used in boating recreation and other sources such as State bonding programs and the Legislative Commission on Minnesota Resources (LCMR). However, a substantial part of the annual access development budget comes from Federal sources: the Wallop-Breaux Trust Fund, which derives from the Federal excise tax on sport fishing equipment; the Federal Aid in Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service; and U.S. Coast Guard Boating Safety Program grants. Additionally, many access development projects are done under the terms of Special Permits issued by the U.S. Army Corps of Engineers, according to their responsibilities under Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) and Section 404 of the Clean Water Act (33 U.S.C. 1344).

The use of Federal funds and the Federal permitting required for many Water Access and River Recreation Program projects places these projects under Federal jurisdiction for the purposes of Section 106 of the National Historic Preservation Act, as defined in 36 CFR 800. Project planning must therefore include consideration of the possibility that the proposed undertaking will affect properties eligible for listing on the National Register of Historic Places. Project information must be reviewed by the State Historic Preservation Office (SHPO), which is a division of the Minnesota Historical Society, in order to conform to the requirements of 36 CFR 800.

In addition, several State laws require consideration of the effect of state agency projects on sites of archaeological, historic or cultural significance. These include Minnesota Statutes Chap. 138.31-138.42 (the Field Archaeology Act), which requires project review by the Director of the MHS and the State Archaeologist's Office (SAO) if a project will affect areas where there are known or suspected to be archaeological sites. If those sites are related to Indian history or religion, the Minnesota Indian Affairs Council (MIAC) must also be given an opportunity to comment on the proposed undertaking. Minnesota Statutes Chap. 138.51-138.66 (the Historic Sites Act) requires review of projects that will affect properties designated in that law as "State Historic Sites", and also directs agencies to cooperate with MHS in the "preservation of historic and archaeological sites". (For the purposes of Chap. 138, SHPO has assumed the responsibility for doing project reviews on behalf of the Director of the MHS.) Minnesota Statutes Chap. 307.08 (the Private Cemeteries Act) provides protection to human interments not within platted cemeteries. SAO is responsible for determining appropriate preservation strategies when such interments might be affected by agency undertakings; MIAC shares that responsibility when the burial is determined to be Indian.

In order to meet these responsibilities for consideration of cultural resources during project planning, the Water Access and River Recreation Programs, in cooperation with MHS, established the Water Access Program Survey to carry out the research necessary to fulfill the requirements of State and Federal law. The program thus is similar in objective to several other programs operating through the MHS Archaeology Department: the Trunk Highway, County-Municipal Highway and State Parks surveys. Since its establishment, the number of projects reviewed each year by the Water Access Program Survey program has grown, in a reflection of increased levels of funding available for access development.

The current objectives and management structure of the Water Access and River Recreation Programs are central to the effective operation of the review process. As their funding sources have stabilized and expanded in recent years, these programs have made significant changes in operating standards and policies. Those changes have required corresponding adjustments in the policy for review of proposed undertakings. An overview of DNR's current policies and procedures will provide a framework for explanation of the research approaches utilized for project reviews.

Program Research Design

PROJECT TYPES

The types of activities undertaken by the Water Access/River Recreation Programs and therefore reviewed through this program fall into three major categories. For each category, there are special considerations that affect the manner in which the review process is implemented and the timeframe for completion.

Acquisition

The Trails & Waterways Unit is authorized by MN Statutes Chap. 97A.141 Subd. 1 to acquire lands suitable for development of certain types of water recreation facilities. This usually involves the outright purchase of property from private owners, but may also involve a long-term lease, special-use permit or cooperative agreement with another unit of government. The actual process of establishing purchase terms is handled through DNR's Lands Bureau, after information about potential acquisitions is forwarded from the Trails & Waterways Unit. The specifics of the process are defined by State Statute and administrative rule; standard procedures include obtaining a formal "Option to Purchase" that specifies a time period from two to nine months in length, during which DNR may elect to buy the property at a specified price. This option period allows time for DNR to resolve title questions, survey property boundaries, and solicit public comment on the proposed acquisition.

The Program Archaeologist receives information about proposed land acquisitions at the time they are transmitted to the Lands Bureau. A review of available documentation about known sites and previously surveyed areas is done at that time, and DNR is notified of the results of that research. Field review of acquisition properties is not normally done until the transaction is complete and design work has started. In cases where there is a compelling reason to suspect that eventual development of access facilities will affect a site, field review may be carried out before the State assumes title to the property. This provides DNR with information needed to make decisions about appropriate management of the resource early in the planning process.

New Development

These projects involve construction of water access facilities in a new location, usually on a recently purchased parcel of land. Project design is handled through DNR's Bureau of Engineering, which prepares preliminary and final plans according to a set of "typical" facility layouts of various sizes and configurations. Standard facilities for a new access include one or more concrete plank launch ramps 12′ in width, gravel or bituminous-surfaced parking areas, and entry/exit roads, normally 18′ to 22′ wide, as necessary to provide safe access to the parking and launch areas. The sizes and shapes of parking areas are quite variable, dependent on property boundaries, engineering concerns and anticipated levels of usage, but generally are based on allowance of a 12′ by 50′ space for each car/trailer unit, plus drive lanes. Most of the projects reviewed by this program include parking

areas large enough for 8 to 24 units, totaling roughly 9,000 to 30,000 square feet in size.

Information about new development projects is normally received by the Program Archaeologist in June of each year, when a proposed development schedule for the coming fiscal year is compiled. Standard records reviews are conducted at that time, and field review schedules are determined later. Construction information is received as DNR Engineering staff progresses with design work for each project.

During the past year, another type of project was added to those already being reviewed through this program. These were "Regional crew" projects: small-scale developments that are designed and built by Regional staff rather than outside contractors. Implementation of this approach to access development was done in order to increase the number of projects that could be completed each year, and selection of project locations is done by Area Managers in each Region. From an engineering standpoint, these projects are generally small in scale, can be built according to "typical" facility layouts, and thus do not require detailed planning. They can usually be planned and executed in a shorter time than projects that must go through the full design and bidding process. From a CRM perspective, however, these projects require no less consideration of their potential effect than do the larger-scale projects designed each year. They therefore are reviewed in the same manner as other development projects.

Rehabilitation/Cooperative Projects

A number of projects reviewed each year involve modification or expansion of an existing water access facility, usually to upgrade its quality, reduce maintenance problems, or expand capacity. Rehabilitation projects are sometimes done in conjunction with acquisition of new land in order to expand the size of a particular water access facility, or may involve enhancement of facilities previously under the jurisdiction of another unit of government, a utility company or a private organization. Rehabilitation projects are often extensive in scope, and frequently affect areas not previously altered by access development. Therefore, they cannot be assumed to have no potential for adversely affecting cultural resources, and are reviewed according to the same procedures as all other projects.

Water Access Program policy dictates that, whenever possible, the efforts of the Water Access and River Recreation Programs are to be coordinated with other units of government in providing "free and adequate" public access to Minnesota's water resources. This coordination usually takes the form of reimbursement of a portion of development costs for work performed by a local unit of government or on property owned and managed by a county, city or township. Cooperative agreements, which may involve either new access development or rehabilitation of existing facilities, generally require conformance with all applicable state regulations. Therefore, cooperative projects are reviewed in the same manner as other projects. (Since the review process is essentially the same for new development, rehabilitation and Regional crew projects, for the purposes of this report they are treated as a single project category referred to as "development projects".)

REVIEW PRIORITIES

The selection of each year's project locations is done initially by personnel in each of the six Regional offices. Proposed development lists are submitted to DNR's Central Office, where final decisions about project priorities for the year are made. The state fiscal year (July 1 through June 30) is the basis for development priorities; most of the projects reviewed during calendar year 1988 were on DNR's fiscal year 1989 development list.

Establishment of a schedule for field review of upcoming projects is done by the Program Archaeologist in consultation with a designated individual in Trails & Waterways' Central Office. Several factors are taken into account in determining project priorities. Since much of the design work on development projects is done over the winter months, there are usually a number of projects ready for construction by the time field conditions are suitable for survey each spring. These projects are given top priority for preliminary survey if it has not yet been completed. Bidding of these projects normally proceeds regardless of survey status, with the understanding that construction is not to begin until field survey has been done. Contractors are not given approval to proceed with work until the Program Archaeologist has determined that the project will not affect any identifiable resources.

In cases where records review or preliminary survey has indicated that a project will affect cultural resources, projects are normally not bid until appropriate additional research is done and a management plan is formulated. This approach has not been strictly applicable to date, but recent changes in the planning process should improve coordination between project review and implementation schedules.

RESEARCH OBJECTIVES

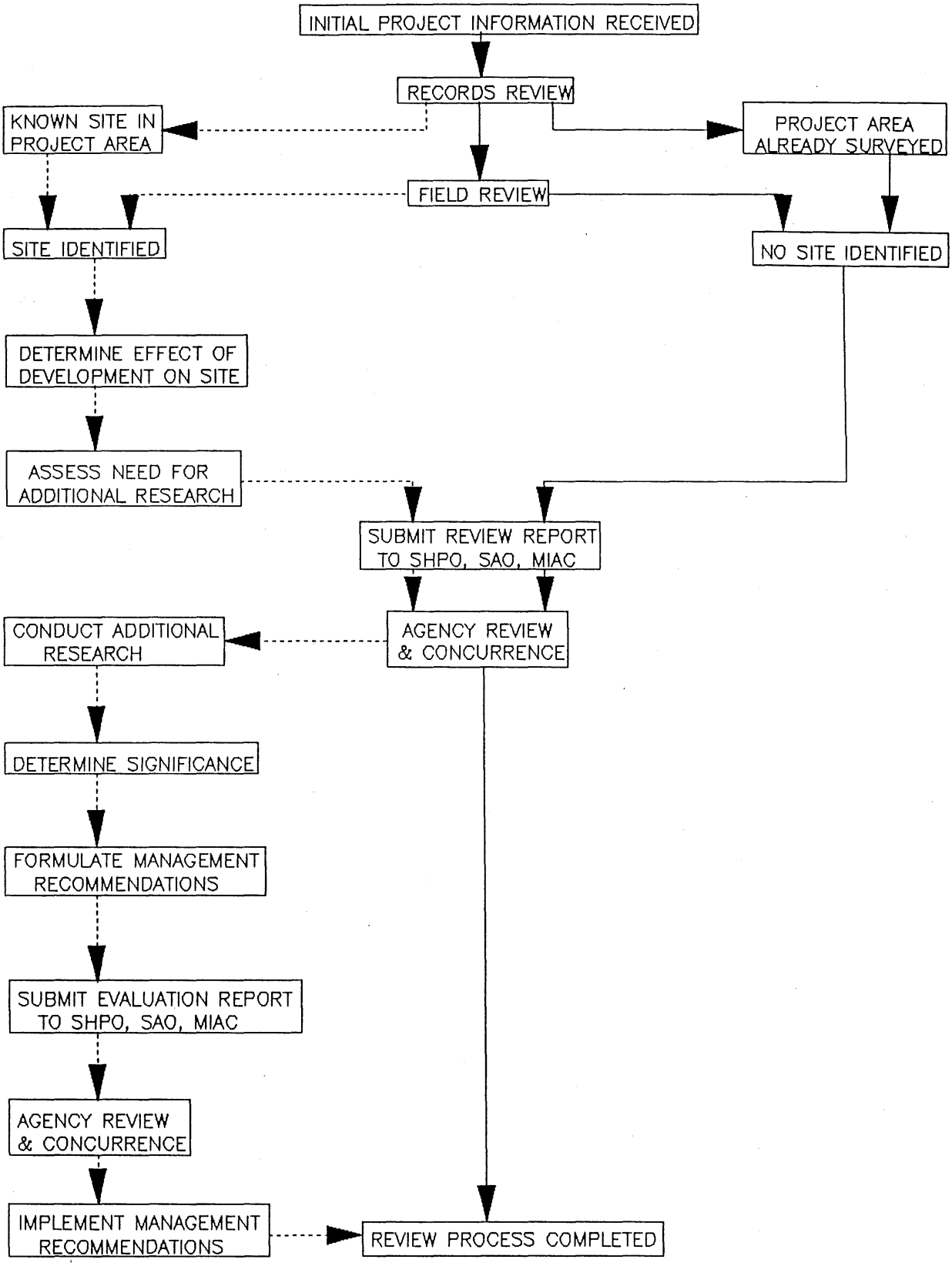
The primary concern of this program is to ensure that the Water Access and River Recreation Programs are in compliance with Federal and State cultural resource regulations. Those regulations are based on the philosophy that "cultural resources" - in the broadest sense, evidence of human occupation of the landscape - are of public value, and their presence should be taken into account when public agencies plan undertakings that might affect them. These resources are valuable in several senses: many of them are sources of scientific information that cannot be obtained anywhere else; some are representations of our common heritage as the inhabitants of this continent; some are of value on a spiritual or cultural basis to members of particular ethic groups; some reflect specific historic incidents or individuals that are of importance in understanding the history of an area. They can take many forms and be valued by many different standards.

The Federal and State statutes that mandate cultural resource review of public undertakings provide broad definitions of the types of research necessary to insure the protection of cultural resources. On the Federal level, a specific phased procedure is defined that allows for flexibility in execution, in order to be applicable to the widest possible range of undertakings. Since the intent of this program is to insure compliance with the law, Federal and State cultural resource management guidelines must be the basis for the program's research design. In very broad terms, the following objectives must be met for each review (see Figure 2):

1) identification of cultural resources within each project area;
2) determination of the extent to which a proposed undertaking may affect those resources;
3) evaluation of the potential significance of each identified resource;
4) establishment of a plan for protection of the resource or the information contained within it; and
5) documentation of the entire review process and its results.

The same guidelines apply to each review, if either historic or prehistoric resources are identified. The specific research methods and management strategies applied vary, however, with the nature of the identified resources and the circumstances of a proposed undertaking. An evaluation of significance may require field research, archival research or a combination of the two, depending on the type

Figure 2. Cultural Resource Review Process - Schematic Representation



of resource involved. Decisions about appropriate management strategies for significant resources must relate directly to the specifics of the proposed undertaking in order to accommodate the needs of individuals and groups with widely disparate concerns. This is not a linear process; it is a multi-phase undertaking that requires consideration of alternative circumstances and actions at every step. Thus, the application of rote approaches simply cannot meet the demands of the process; flexibility and the ability to consider alternative viewpoints are crucial factors in the success or failure of any program within the realm of cultural resource management.

Beyond the need for legal compliance, there are additional principles that underlie the work done by this program. The public value of cultural resources and the need for their protection are implicit, forming as they do the *raison d'etre* of all cultural resource management activities. It is the purpose of this program to serve as an advocate for protection of these resources. This advocacy must be conducted within the strictures of legal, economic and political realities, but those realities are not sufficient justification for disregard of cultural resources during project planning. Careful consideration of all possible means of protecting cultural resources remains the obligation of every public agency, and it is part of this program's responsibilities to provide the advice and encouragement necessary to facilitate execution of that obligation.

There is also a need to expand the boundaries of program objectives beyond the requirements of law to address the concerns of anthropological and historical research. On the Federal level, this integration of "compliance-oriented" and "research-oriented" activities is encouraged as a legitimate part of the process, but is often difficult to put into practice on the project-specific level, particularly in small-scale programs such as this. At minimum, however, program activities should include some consideration of how the descriptive data recovered during project reviews might be used by other researchers in addressing a wide range of questions. There is an obligation inherent in the process to ensure that program activities are conducted in a manner consistent with the standards of the discipline, that research results are understandable and accessible to other researchers, and that documentation is of sufficient quality to be facilitate its use in the future as research material.

RESEARCH METHODS

The methods currently used for project reviews undertaken by this program are primarily those dictated by the requirements of law and the standards of the discipline. However, the manner in which they are applied stems from further considerations, particularly in the case of archaeological resources, which by their nature are more difficult to identify and evaluate than historic resources. Certain procedural considerations arise from what the discipline of archaeology presently understands about the nature of archaeological deposits. Because the ultimate aim of this program is to protect cultural resources, decisions about appropriate methods must be based, first, on the assumption that every project under review has the potential to harm such resources. The alternative would be to assume that some projects will not affect any resources before there is evidence at hand that would support such a view. This assumption, which has in the past been utilized by some as an initial step in the review process, most often hinges on the nature of present landscapes, which may be largely irrelevant to the identification of past occupation surfaces. Assuming that we can readily identify probable (or improbable) site locations from current topographic information can lead to elimination of whole categories of locational settings from consideration in the identification phase of the process. However, our current understanding of the spatial distribution of

cultural resources is simply not precise enough to allow any such generalizations to be made with a reasonable degree of confidence.

Another concern is the subtle nature of much archaeological information and the obscurity which modern landscapes can lend to its discernment. Archaeological sites reflect activities carried out on human scale, and often cannot be readily detected without correspondingly small-scale investigations. Most available cartographic information does not provide and is not designed to provide the level of resolution needed for evaluation of the potential for locating resources within areas to be affected by agency undertakings. At least a minimal level of field examination is necessary for most projects to insure identification of any extant resources. The major exceptions to this practice are cases in which complete alteration of natural terrain can be documented or current conditions prohibit application of standard field methods: borrow pits, artificial or "reclaimed" land, areas underneath bituminous surfacing or buildings, etc. It is important to remember that standard CRM field methods are a compromise between the ideals of scientific research and the realities of publicly-funded projects. They do not provide absolute certainty that nothing of importance will be lost. They must therefore be applied in a consistent manner if the process is to retain its reliability.

At the initial stage of the process, it is not appropriate to eliminate some areas from consideration simply because they don't appear to have the potential to contain <u>significant</u> sites. Such considerations as the size of the project area should not be invoked as the sole justification for eliminating a project from the review process. The objective of preliminary survey is to identify <u>any</u> resources that might be affected; determinations of significance take place at a later stage of review. Retaining a focus on identification of all resources during initial project review also helps to integrate some of the discipline's broader research objectives into the compliance process, by providing positive and negative survey data that are of equivalent reliability. This type of base-line data is needed in order to evaluate the effectiveness of current field methods and devise more efficient means of identifying resources in the future.

Given these considerations, it is apparent that all projects must be subjected to some minimum level of scrutiny in order to conclude with a reasonable degree of confidence that any resources present in a project area would be identified during review. On a program-wide basis, there is a need for a consistent scheme through wihc all projects are reviewed. During the three years of program operation, a review process that is tailored to DNR's operational plan but still provides acceptable levels of reliability has been developed and implemented. The process consists of a set of general procedures that can be modified to accommodate the circumstances of each project while maintaining consistent research standards.

Project Area Description

The first step in reviewing any project is evaluation of the physiographic and geomorphic characteristics of the project area, its present condition, land use history and the degree and nature of past disturbance. The basic information compiled about each project comes from Regional personnel: location, legal description, current condition, ownership, and the general nature of the proposed work are all described on standard information forms forwarded to the Program Archaeologist. In some cases, other information such as detailed property maps, aerial photographs, etc. is also available.

The Program Archaeologist then compiles additional data for each project area. USGS Quadrangles from the 7.5-minute series are used as base-line maps from which

topographic, hydrologic and land-use data are taken. In counties for which USDA-SCS has published detailed soil surveys, the formal soil classification for each project area is also recorded. Occasionally, another public agency has some jurisdiction over or interest in a particular project area. More detailed maps of the area or other specialized information is sometimes available from these sources, and the review process is coordinated with cultural resource specialists from other agencies when appropriate.

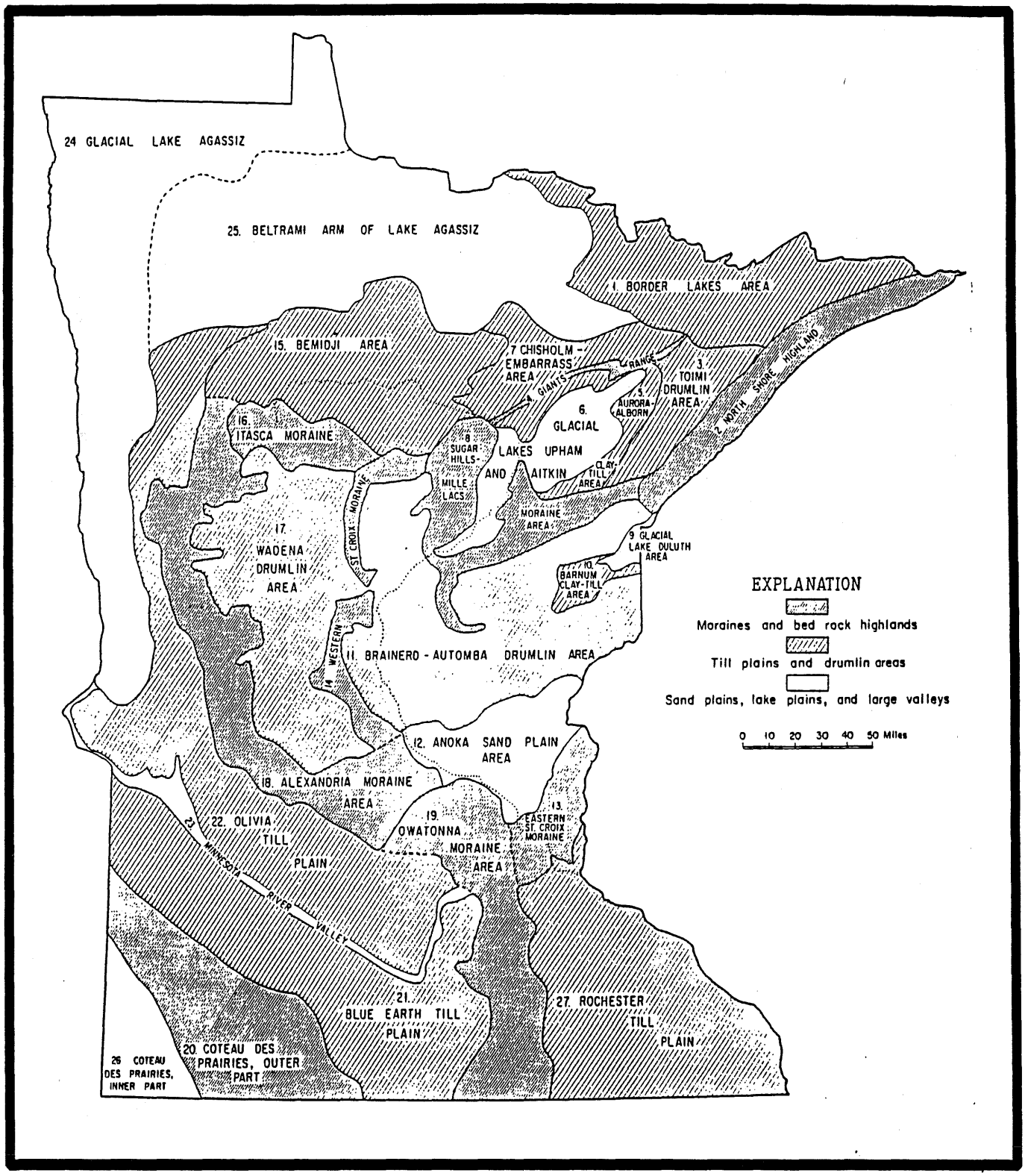
Standard physiographic and geomorphic designations are determined for each project area. Physiographic divisions follow those defined in Wright's "Physiography of Minnesota" (in Sims & Morey, Geology of Minnesota, 1972). Each physiographic subdivision represents an area of the state in which topography, drainage, natural vegetation and other surface features are more or less consistent and definable in terms of specific Pleistocene and Holocene land-alteration events and processes (see Figure 3). They provide a general characterization of the landscape in a particular locality. This information, in turn, can provide insight into the potential for past human settlement on that landscape.

More detailed delineations of physiographic characteristics are taken from a set of eleven publications issued between 1969 and 1981 by the "Minnesota Soil Atlas Project" undertaken by the University of Minnesota Agricultural Experiment Station. Each publication is a topographic map of a portion of the state within which "geomorphic regions" are delineated. These regions are overlapping subdivisions of Wright's physiographic divisions, defined on the basis of local relief, drainage patterns, vegetation and soil types. Accompanying literature defines each geomorphic region and provides summary data about Pleistocene landscape formation processes, water resources, soil types and current land use. Because they are drawn on a smaller scale than physiographic divisions, geomorphic designations provide more exact data about the environmental nature of each project area.

Examination of available geomorphic information is relevant to two aspects of the overall review process. First, it aids in the selection of appropriate field survey methods by facilitating identification of landforms that require special techniques - the presence of alluvial fans possibly overlying older habitation surfaces, for instance, might require consideration of the need for deep testing that is not a normal part of preliminary survey. Second, it provides a starting point for interpreting whatever evidence of past human occupation might be recovered during field survey.

Although many details remain to be defined, our understanding of the human occupation of Minnesota - particularly during the prehistoric era - indicates that choices about suitable locations for a variety of human activities were made on the basis of specific local environmental criteria. Utilization of water routes in Northern Minnesota, for instance, patterned settlement choices in a way that may not have strictly applied in the prairie pothole region of southwestern Minnesota. Limited sources of wood needed for many aspects of material culture affected resource exploitation patterns for prairie populations where it may not have been a significant consideration for the inhabitants of the forested north. Similar variations that appear in many aspects of prehistoric culture can be attributed to micro-environmental factors. Therefore, an understanding of how current landscapes might reflect past conditions is critical to identifying and understanding the evidence of human presence in different ecological settings. Admittedly, the geomorphic information presently available reflects current conditions, which in some cases resemble past landscapes to a minimal degree. It is still the best available means of providing some environmental context during initial project review.

Figure 3. Physiographic Provinces of Minnesota



(Taken from Wright 1972)

Records Review

After base-line descriptive information has been compiled for a project area, an examination of existing documentation about cultural resource research in and near the project area is conducted. This process provides a frame of reference for conducting field research and evaluating research results, and in some cases allows for immediate identification of one or more known resources that may be affected by a proposed undertaking.

The projects reviewed through this program generally involve relatively small parcels of land, averaging no more than 2 acres in size, although larger areas are sometimes acquired or developed. Cultural resources, however, can only be properly interpreted in the context of settlement and resource utilization patterns of larger scale. Data about resources known to be present in the vicinity of a particular project area are therefore considered during records review, even though the proposed undertaking will not necessarily have any direct effect on those resources.

As a practical matter, it has been necessary to restrict the scope of this aspect of the review process to a level consistent with the magnitude of potential effect for a typical project. Initial records review concentrates, therefore, on resources and research within approximately a one-mile radius of each project area. The aims of this process are to determine, first, if there are any identified or suspected cultural resources in or close to the project area and second, if any formal cultural resource surveys have been conducted in that vicinity. At minimum, the following sources are consulted during records review:

- state site files maintained at Ft. Snelling History Center or SAO, which contain data about officially recorded prehistoric and historic sites;
- Winchell's The Aborigines of Minnesota (1911), which contains descriptions and maps of earthworks and habitation sites throughout the state, not all of which have been assigned official state site numbers;
- unpublished data about observed or suspected site locations that have not been confirmed in recent years, including the field notes of T.H. Lewis, Jacob V. Brower's journals, Lloyd Wilford's "County Memos", and data received from private landowners, amateur archaeologists and other informants;
- cultural resource survey report files maintained by SHPO;
- "The National Register of Historic Places: Minnesota Checklist"; and
- SHPO standing structure inventory files.

Additional sources of information are also consulted as appropriate, including survey index lists for the Trunk Highway and County-Municipal Highway Archaeological Survey Programs, and records of the Minnesota Statewide Archaeological Survey (MnSAS). When appropriate, cultural resource inventory files of public agencies such as the U.S. Forest Service and the U.S. Army Corps of Engineers are checked. Information is frequently solicited from other archaeologists when they are known to have a research interest in or unpublished data about a particular area.

These first steps in the review process are generally completed within two weeks of the date on which the Program Archaeologist first receives information about a proposed project. If a known site is identified that might be affected by DNR's proposed work, Regional and Central Office personnel are notified immediately so that they can take that information into consideration during the planning and design processes.

Reconnaissance Survey

The methods applied during this phase of investigation are based upon accepted professional practices, particularly those outlined in "Archaeological Survey

Standards for Minnesota" (Council for Minnesota Archaeology, 1977). Field survey is assumed necessary for every project unless specific information about the project area or the nature of the proposed work obviates that need. For instance, a rehabilitation project that involves only placement of new surfacing material within an existing parking area might not require field survey. Before that determination could be made, however, it would be necessary to review detailed project plans in order to verify the project area's nature of the proposed undertaking.

The aim of this phase of review is to collect enough information about the project area to provide reasonable assurance that any resources that might be affected would, indeed, be identified. Most of the properties developed as Public Water Access locations have fairly heavy vegetative cover and have not recently been under cultivation, which makes the probability of identifying cultural deposits from surface manifestations very low. Therefore, reconnaissance-level field survey is conducted primarily by means of shovel testing; surface reconnaissance is used as a supplementary source of data when appropriate. Shovel tests are a minimum size of approximately 30 centimeters square. Vertical provenience control is maintained by arbitrary levels no more than 10 centimeters in thickness; in many cases, subsurface provenience is determined to the closest 5-centimeter level. All excavated soil is screened through 1/4" wire mesh, and provenience of recovered cultural materials is recorded by test number and level. Generalized soil profiles are recorded for each shovel test. A test interval of 15 meters is considered standard, but is subject to change when warranted by field conditions - verified disturbance, topographic variation, standing structures, etc.

If records review has indicated that there is a known site within or adjacent to a project area and existing documentation about the site is sufficiently detailed, field survey of the project area may not be necessary. In other cases, standard reconnaissance survey may be conducted. Many sites presently in the official state files were initially recorded on the basis of very limited field research. The site forms may have incomplete or incorrect locational data and little or no information about temporal or cultural affiliation. Site area definitions may simply not be detailed enough to allow for a determination of the extent to which a site overlaps with DNR's proposed construction area. In such situations, reconnaissance survey is conducted in order to confirm the existence of the site and define its boundaries in three dimensions.

Site Evaluation

If a cultural deposit is identified during records review or reconnaissance survey, a second level of review is implemented. The first topic that must be addressed at this stage of research is the probable effect of proposed development on the site area. This question can usually be answered by reviewing construction plans or other information provided by the Project Engineer to define the limits of disturbance and the types of land-alteration activities (clearing, cutting, filling, recontouring, landscaping) that will take place. If it is determined that the project as planned will not affect the site area in any way, a recommendation can be made that construction proceed with no additional review. Depending on the size of the property, the type of facility to be built and the configuration of the site area, it is sometimes possible for the Engineer to revise a preliminary design so as to completely avoid impact to a site area identified during reconnaissance survey. When this approach is feasible, it becomes the basis for a recommendation that the planned construction proceed according to the modified plan with no additional review.

If it appears that proposed construction would have an effect on any part of

the site area and there are no feasible alternatives that would eliminate that effect, research on a second topic - the nature, extent and significance of the cultural deposit - must be implemented. Occasionally, sufficient data are recovered during reconnaissance survey to allow for detailed assessment of the site's nature, configuration, condition and research potential. In most cases, however, such determinations of significance require additional fieldwork beyond the reconnaissance level.

During site evaluation, excavation of formal test units is the primary sampling method. These units are normally 1 meter square in size, frequently laid out and excavated in 1 by 2 meter blocks. They are excavated in 5 centimeter arbitrary levels, unless cultural stratigraphy can be clearly defined, and horizontal provenience is normally maintained by unit half. All soil matrix is screened as for shovel tests. If soil conditions warrant, water-screening may be used as an alternative method. Also, when the cultural deposit appears to contain substantial amounts of micro-remains, the excavated soil matrix may be brought into the laboratory and water-processed through geologic screens to facilitate recovery of very small artifacts and organic materials.

The total area excavated and the placement of individual units are determined by reference to shovel test results, construction plans and project area topography. In general, formal excavation focuses on recovery of a representative sample of the cultural materials present in areas that will be affected by proposed construction. Additional field methods are applied when appropriate to the nature of the site; these may include the use of ground-penetrating radar or metal detectors to "map" subsurface features, or controlled collection of surface materials in cultivated fields. In cases where human interments are suspected to be present, the SAO soil scientist may be asked to conduct special studies to define probable burial areas.

In some cases, documentary research is an appropriate strategy for collecting data relevant to evaluations of significance. This is usually the case when dealing with historic-period resources, either in the form of standing structures or archaeological deposits. There may occasionally be sufficient evidence readily available in SHPO or MHS files to reach a conclusion about the value of a historic resource, but it is more often the case that other sources must be consulted. County or local historical societies are frequently the best sources of archival data in these situations.

During both reconnaissance survey and site evaluation, all test locations are mapped in the field with respect to a defined datum, either a permanent benchmark (USGS or DNR) or some other stable structure. When topographic maps of project areas are available, they are used as base field maps and all test locations are tied in to property boundaries, benchmarks and existing surface features. Locational information is transferred to final plans when they become available from Project Engineers.

Data Analysis

Artifact catalogs and curation

Cultural materials recovered from sites identified during field review are accessioned into the collections of the MHS as the property of the State of Minnesota. Detailed artifact catalogs are generated for each site identified in the field. Artifact descriptions are based on characteristics observable in unaided or low-magnification examination. Identifiable ceramic assemblages are given taxonomic designations following the descriptions in Anfinson (1979) and more recent studies. Lithic artifacts, which are not as well defined for Minnesota, are classified on the basis of gross morphology. Debitage is categorized with reference to stages of core

reduction or tool finishing processes. Debitage classes used in cataloguing have been defined on the basis of several attributes, including dimensions, percentage of cortex and overall shape of the piece. Thus, a flake measuring less than 7 mm in length or width might be categorized as a "primary flake" if one surface is more than 50% cortex, or as a "secondary flake" if it exhibits scars from flake removal on one or more surfaces and no surface is more than approximately 20% cortex.

Lithic raw materials are described when possible using terms that refer to probable geological origin, following commonly-accepted definitions. Many lithic materials used prehistorically in Minnesota are known to have been thermally pre-treated to improve workability, and the physical changes resulting from that process have been defined for some of these materials. Lithic artifacts that clearly exhibit such changes are listed as "thermally altered". Items that cannot be classified using source references are described as to color and texture.

A standard terminological scheme is followed in artifact catalogs and also in the artifact summary lists included in this report. For ceramic artifacts, tempering material is described as "grit", which refers to crushed granite, "sand" or "shell". Many sherds, however, appear to contain quantities of more than one tempering material. In cases where the paste is tempered with very finely crushed granite or the clay included large proportions of sand, assignment to either the "grit" or the "sand" category is tentative at best - especially when dealing with very small sherds. In a similar manner, descriptions of surface treatment on individual sherds should not be considered absolute, since partial reconstructions often exhibit what appear to be a variety of different surface modes on a single vessel. Again, accurate description of very small sherds is most difficult, and very often is nothing more than subjective judgment.

To conserve space in the artifact lists presented here, abbreviations are used for commonly-occurring terms: "cr" stands for "cord-roughened", "fi" means "fabric-impressed" (as used here, this term includes net impressions), and "socr" stands for "smoothed-over cord-roughened", which in some cases may actually reflect unintentional smoothing during vessel use. Decorative modes are represented by abbreviations including "cwsi" for "cord-wrapped-stick-impressed" and "inc" for "incised". Sherds on which the exterior surface is missing are marked "exf" for "exfoliated". Not all of the available descriptive details are presented in artifact summary lists; many catalog entries include measurements such as sherd thickness or tool dimensions that have been omitted for the purposes of this report.

Floral and faunal materials are identified to the level of taxonomic detail possible, utilizing standard reference works and a comparative faunal collection housed at Ft. Snelling History Center. Special treatment for preservation of fragile items is applied where appropriate, using acrylic resin solutions or other methods recommended by the Curator of archaeological collections.

In general, the scope of this program does not allow for application of specialized analytical techniques or detailed studies of sub-assemblages. The intent of the descriptive process is to provide enough specific information to support the conclusions and recommendations of a particular review, and to generate a database that will be available for reference or in-depth study by future researchers. When appropriate, samples suitable for soils, paleobotanical, microfaunal or radiometric analysis are collected as part of site evaluation research and are maintained in curation for possible future analysis. All materials recovered during reconnaissance survey and site evaluation are curated in the MHS archaeological collections housed at the Fort Snelling History Center.

Site description

The locations of sites identified during reconnaissance survey are defined using standard legal descriptions, usually to the closest 10-acre parcel (quarter-quarter-quarter section). Universal Transverse Mercator (UTM) coordinates are also calculated for each site area. The vertical extent of each site is defined with reference to artifact proveniences, divided into separate occupation components when it is possible to do so. The types, quantities and distributions of recovered artifacts are used as the basis for functional designations.

Temporal and cultural designations for sites identified during project review are drawn from a model of culture history developed out of more than a century of historic and archaeological research in Minnesota and the Upper Midwest. Although the details of this model are in constant revision as new data become available, the general outline of major cultural trends it provides is useful for base-line site definitions. Under this framework, archaeological sites in various parts of the state are classified as reflecting occupations belonging to one or more of a number of major cultural traditions. This is neither the only such model in current use nor necessarily the most accurate, but it is generally accepted among archaeologists in Minnesota and surrounding states. It therefore provides some common ground for evaluations of significance relative to our current state of knowledge about the prehistoric cultures of the region. (A Comprehensive Plan defining "planning contexts" as required by the Secretary of the Interior's Standards is not yet available for the prehistoric period in Minnesota, but is in the process of being formulated. When that Plan is completed, it will serve as the model for definition and evaluation of resources identified during project reviews.)

Paleo-Indian: The earliest period of human occupation of Minnesota probably started just after the last retreat of Pleistocene Epoch glaciers from the region, approximately 12,000 B.P. (before present). Although Paleo sites in Minnesota are extremely rare, evidence from other parts of the continent suggests a cultural complex characterized by low-density nomadic populations, a subsistence strategy focused on hunting of large game animals, particularly Pleistocene megafauna, and a distinctive stone tool technology. Examples of several types of Paleo period tools have been found in Minnesota, but they have generally not been in association with other habitation material in primary deposition. The existing body of data about the Paleo-Indian period in Minnesota is not sufficient to define any distinctions in different parts of the state, although a temporal lag might be inferred from models of climatic and vegetation successions across the state at the end of the Pleistocene.

Archaic: Early Holocene climatic changes created increasingly complex ecological patterns in Minnesota and resulted in some large-scale changes in the composition of biotic communities. The cultural responses to environmental change during this period included a shift in resource utilization strategies to more efficient means of exploiting a wider range of resources, more emphasis on the use of plant resources as dietary staples, and development of regional distinctions in technologies and settlement patterns. The Archaic is also defined in a negative sense, in that it marks the disappearance of the distinctive lithic technologies of the preceding period and predates the introduction of ceramic technology to the region. The Archaic in Minnesota appears to have had three geographic subdivisions in Minnesota: Shield Archaic in the boreal forest of the far northeast, Eastern Archaic in the deciduous forest areas and Plains Archaic on the western prairies. Although beginning and ending dates for the Archaic period vary in different parts of the state, the general timeframe for this cultural tradition is roughly from 9,000 to 3,000 B.P. Possible temporal subdivisions can be inferred from geomorphic

investigations that have identified a climatic maximum known as the Altithermal which occurred during the early part of the Archaic period. This extended warm and dry episode, which peaked between 6,000 and 8,000 years ago, caused drastic changes to the landscapes created during the late Pleistocene and must have had a severe impact on human adaptive patterns as well. As the climate tempered, cultural responses once again created a new combination of adaptive strategies. As with the Paleo-Indian period, sites dating to the Archaic are rare, and much remains to be done before an accurate model of human occupation during this time can be constructed.

Woodland: The post-Altithermal Archaic period saw an amelioration of climate, and by about 3,000 B.P. the broad climatic and vegetational patterns found in present-day Minnesota were fairly well established, although there continued to be shorter-term regional fluctuations in environmental character. The cultural patterns evident in Minnesota during this time reflect a proliferation of localized adaptive strategies, the appearance of ceramic manufacture as a major new technology, and adaptation of mound-building as a primary burial mode. Archaeological sites dating to the Woodland period have also yielded considerable evidence of cultural interchange between the inhabitants of Minnesota and major cultural complexes in other parts of the continent. The Woodland Tradition can be subdivided into a number of phases with overlapping temporal and geographic boundaries, distinguished on the basis of differing technologies, settlement patterns and subsistence strategies. Some of these cultural patterns seem to have been of limited duration and others appear to have persisted up until the appearance of Europeans in North America. Since identification of Woodland sites in Minnesota is frequently done on the basis of a single criterion - the presence of ceramic sherds - this class of artifacts has become the focus for definition of numerous geographic, temporal and cultural subdivisions. Woodland sites certainly predominate in current archaeological inventories, although the amount of detailed data available about most of those sites is minimal. The perceived proliferation of Woodland habitations is thought by some to reflect a sudden population increase, perhaps spurred by adoption of horticultural practices that stabilized food supplies. It is more likely, however, that the number of identified Woodland sites in Minnesota reflects a combination of factors, including non-cultural phenomena that have favored preservation of Woodland-period archaeological deposits within easily accessible portions of modern landscapes.

Mississippian: A major influence on some Woodland period cultures in Minnesota was the growth, around A.D. 1000, of a complex, state-level agricultural society in the central Mississippi River Valley. This influence is reflected in Minnesota's archaeological record in varying degrees, ranging from local adaptation of specific cultural traits such as intensive corn agriculture to the apparent participation of Minnesota populations in trade networks emanating from Mississippian urban areas in the American Bottoms. Local adaptation of Mississippian cultural is most directly seen in cultural complexes found in southeastern Minnesota; sites reflecting this cultural pattern are referred to as belonging to the "Oneota Tradition". They date roughly from A.D. 800-900 to about A.D. 1400. Some probable Mississippian influence also appears in the technologies and subsistence strategies of central, western and northern Minnesota, although in a more attenuated form.

Middle Missouri: While indigenous cultures in eastern Minnesota were changing as a result of the influence of the Mississippian state, the inhabitants of the prairie regions to the west apparently were being affected by contact with agricultural societies that arose on the Plains of Nebraska and the Dakotas. Specific cultural manifestations identified in Minnesota that reflect this influence include the "Great Oasis" and "Cambria" traditions. Material culture from such sites, particularly ceramic wares, reflect incorporation of Middle Missouri traits

into existing Woodland technologies. Subsistence patterns also reflect an increased reliance on horticultural activities, particularly the use of introduced cultigens such as maize and squash. Bison hunting, however, appears to have remained an essential element of both subsistence and technological practices. The dates for Middle Missouri sites in Minnesota range between c. A.D. 900 and A.D. 1300.

Proto-Historic: By the 17th century, the indigenous cultures of Minnesota began to reflect the appearance of Europeans on the North American continent. The adoption of new items of material culture introduced as trade goods gradually led to the disappearance of traditional technologies, and the arrival of Europeans in the area ultimately resulted in large-scale alteration of long-standing social, technological and ideological traditions. The mechanisms and pace of these changes, which are not yet well understood, can be derived from archaeological sites reflecting both aboriginal and immigrant settlements from c. A.D. 1640 to the time of the first permanent European settlement in the early 1800s.

Historic: Archaeological data that reflect historic-period Indian occupations or the Euro-American presence in Minnesota contain much information that is not readily available from standard historical sources. Sites of this type can take many forms, representative of the variety of settlement patterns, subsistence activities and economic strategies practiced by the state's inhabitants over the past 175 years. In general, historic resources must be more than 50 years old is be considered potentially significant. When appropriate, such sites are evaluated with reference to a set of "contexts" defined as part of the state's draft Comprehensive Plan for preservation of historic-period resources. These study units identify particular themes in Minnesota's history that can be evaluated within a defined framework of current knowledge and research emphases. They include such phenomena as the fur trade, the influx of Euro-American settlers throughout the state, the logging and mining booms, and more recent trends such as the growth of the resort industry in Northern Minnesota.

Determination of significance

When all of the data about a particular site have been synthesized and evaluated, consideration is given to the possibility that the site may qualify for nomination to the National Register of Historic Places under the criteria for evaluation contained in 36 CFR 60. For most archaeological sites, determination of eligibility is based on application of Criterion "D": significant properties are those "that have yielded, or may be likely to yield, information important in prehistory or history". If sufficient evidence has been accumulated to support a determination of eligibility under this Criterion or the other standards of significance defined for Register properties, the procedures for nomination (as described in 36 CFR 60 and supporting documentation) may be undertaken.

Although determinations of significance are sometimes oriented towards gross measurements such as site size or number of artifacts recovered, these sorts of standards are not necessarily the most important aspects of a site. There is a need to give due consideration to disturbed or small sites with sparse artifact assemblages, also. Such sites may reflect particular time periods, traditions or activities within a cultural pattern that do not appear elsewhere in the archaeological record. They may constitute important data classes, underrepresentation of which in site inventories could bias both theoretical and empirical studies. Dealing with such sites is usually difficult, for there are few established standards by which they can be judged. There is little precedent for declaring that they may be likely to yield important information, so they rarely are intensively investigated, and their "non-significance" thus becomes a self-fulfilling

prophecy. The research potential of these resources needs to be more fully addressed in the future, particularly within the framework of comprehensive preservation planning.

In the case of a project that involves no Federal funding or permitting, criteria for defining the significance of a resource are not well defined. State laws identify a number of specific locations that are legally protected as significant, but do not set forth detailed guidelines for evaluating the importance of other sites. It has been the practice in this program to apply the Federal criteria to determinations of significance for non-Federal projects; in particular, Criterion "D". However, application of Federal guidelines to non-Federal projects is not strictly followed. In the Federal process, management strategies must be formulated only for resources that are eligible for NRHP nomination. This dichotomous standard provides little protection to sites for which NRHP status cannot be justified. These sites are not completely unimportant, however, and still deserve some consideration in the planning process. It is clear that the intent of State law is to compel agencies to at least consider the effects of their actions on all cultural resources. If it is possible to minimize damage to those resources within the scope of the agency's operations, every effort should be made to do so.

When a particular resource has been identified as significant, recommendations are formulated for protection of the resource or the information it contains by application of a variety of management strategies. This is done in consultation with SHPO (acting both in its Section 106 role and on behalf of the Director of MHS), SAO, MIAC and DNR. Very often, protection of a site may be accomplished by modification of construction plans to completely avoid disturbance to the site area as defined by the results of field review. When complete avoidance is not feasible, specific construction restraints may be implemented that will reduce the extent of impact to the site area, often coupled with limited excavation to define the nature of cultural deposits that construction may make inaccessible for future research. If damage to a site during construction is unavoidable, a recommendation is sometimes made for recovery of site data that would otherwise be destroyed, usually by means of extensive archaeological excavation and application of special research techniques. Although data recovery has been recommended for a few projects reviewed by this program, none of those recommendations have yet been implemented. Because of the time commitment they require, it is anticipated that they will be dealt with beyond the scope of this program.

Once a proposed management plan is agreed upon by all concerned parties, implementation of necessary activities is coordinated through the Program Archaeologist. This may involve monitoring of all or part of the actual construction process or making arrangements for data recovery research by other archaeologists. If a site has been determined eligible for nomination to the NRHP and there is Federal involvement in the project, review and comment by the Advisory Council on Historic Preservation are part of the process.

Review Documentation

If, for a particular project, no resources are identified during records review or reconnaissance survey, the final stage of the review process is the production of a research report which includes a description of the project area, the proposed development, the research methods applied, and a discussion of all information gathered during each stage of the review process. A recommendation is made that the project proceed with no additional review, which completes the review process for most of the projects dealt with through this program. These reports are then submitted to SHPO, SAO and MIAC for their review. If those agencies concur with the

stated recommendations, DNR is notified that project planning can proceed with no further coordination with the Program Archaeologist.

If a cultural deposit has been identified in a project area, an initial review report is prepared which includes a description of the data recovered from the site and the type of construction proposed by DNR; these items are used to support management recommendations if they are necessary. When no additional research is to be conducted, this initial project report constitutes the final phase of the review process. If site evaluation is conducted, a second report is prepared that presents the results of that work in support of a second set of management recommendations. If data recovery is recommended, the Scope of Work for that research includes a requirement for generation of a detailed formal report after completion of field research and data analysis.

In addition to individual project reports, a summary report of program activities is prepared and forwarded to DNR, SHPO, the Head of the MHS Archaeology Department, SAO and MIAC each month. These reports identify project-specific review activities that have been initiated or completed during a given month. During the field season, DNR and the Head of the Archaeology Department are also provided with project status reports on a biweekly basis. These reports indicate what stages of the review process have been completed for each project on the current development priority list and identify project areas for which there is some particular concern regarding potential effect on cultural resources. Copies of both the monthly reports and the project status reports are forwarded to Area Managers from Trails & Waterways Central Office. This allows field personnel to track the progress of each project and alerts them to situations that may require special attention.

Documentation of program activities also includes preparation of official records such as state site forms, National Register nominations and collections accession documents. Master lists of all projects reviewed since the inception of the Program are maintained as reference for other researchers. This information, along with original field notes, maps and photographs, is part of the permanent files of the program, which are maintained at the offices of the MHS Archaeology Department at Fort Snelling History Center.

II. WATER ACCESS/RIVER RECREATION PROGRAM ACQUISITION PROJECTS

REGION III - CENTRAL

Pine County

Cross Lake/Snake River (21PN57) (SHPO Ref. #89-0745)

Location
North bank of the Snake River, downstream from the Cross Lake outlet, just outside of Pine City, MN (see Figure 4).

Funding/Construction Status
Eventual development of access facilities may involve Federal funding or permitting. No construction schedule has been established yet.

Physiographic Province/Geomorphic Region
Brainerd-Automba Drumlin Area (Wright 1972); McGrath Till Plain (Minnesota Soil Atlas Project-Duluth Sheet 1977).

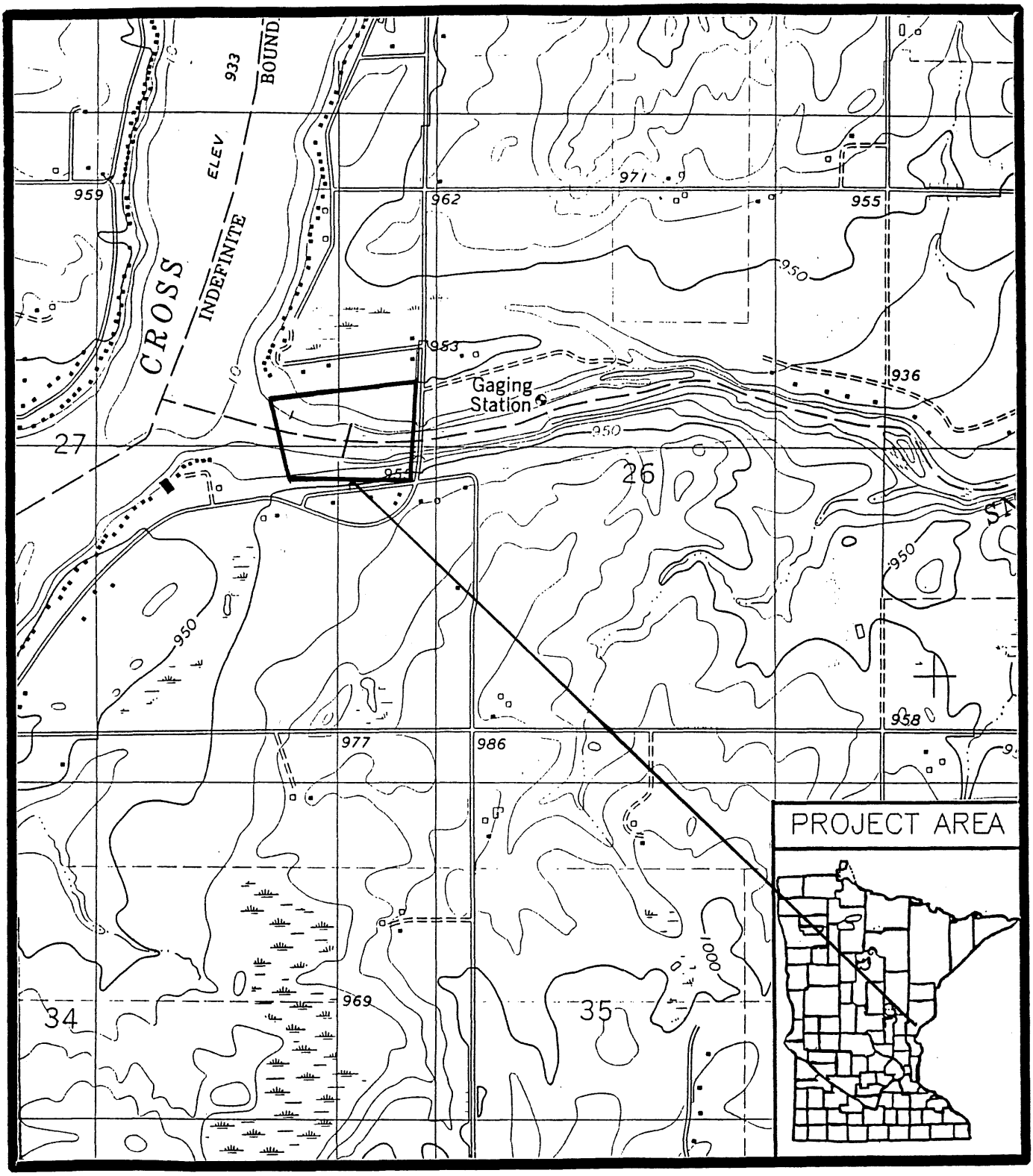
Scope of Project
Acquisition of property for eventual development of a Public Water Access to Cross Lake and a canoe access to the Snake River. Tentative proposals for development include two separate facilities: ramp access into the Snake River close to the Cross Lake outlet, and a carry-in canoe access on the downstream side of the UPA control structure. The ramp access would have a parking lot approximately 53 by 53 meters in size adjacent to it, and the canoe launching area would include a small pull-in parking lot, timber steps and a small landing at the water's edge.

Description of Project Area
The project area is located on a level terrace above the Snake River. At the time of survey, the river level was quite low - 2.0 to 2.5 meters below the terrace elevation. This property is presently owned by United Power Association, which has made it available for public recreation for several decades. Vegetative cover is dense over the entire property; there is a fringe of older softwoods bordering the river, brush and grass in the western half, and young hardwoods, brush and invasive species along the eastern side of the property.

Since 1986, DNR has been negotiating for acquisition of two outlots on the north side of the Snake River from United Power Association. Final details of a formal option to purchase are now being resolved. The option will cover Lots 8 and 11, which total 24 acres, of which 8.8 are riverbed, bounded on the south by the Snake River, on the west by Cross Lake, on the north by private residential property and on the east by CSAH #9. In addition, it is anticipated that DNR will secure a conservation easement over two outlots on the south bank of the Snake River, and will have right of first refusal if UPA ever decides to sell that property.

Due to the presence of numerous known prehistoric and historic resources in the area, DNR wished to have preliminary field review of probable development areas undertaken before the purchase was finalized. For the purposes of preliminary survey, the Regional Trails & Waterways Coordinator defined a proposed ramp access development area in the field. Selection of the probable canoe access location was

Figure 4. Cross Lake/Snake River Project Area



USGS Pine City Quadrangle, 1983, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

done on a tentative basis, since installation of an adequate facility will require consideration of water level fluctuations below the control structure. Field review in 1988 therefore focused only on the upstream access area. After engineering design work is initiated, additional survey will be conducted as necessary to examine all areas to be affected by construction.

The lots on the south side of the river are known to contain structural remnants related to the Chengwatana townsite, which was occupied between 1856 and about 1870. They also contain at least one prehistoric habitation area and possibly a portion of 21PN3, a large mound group. Because DNR intends to maintain these lots in their current condition, no field survey was done on the southern side of the river in 1988.

Records Review

Previous surveys: there have been several archaeological/historic studies done in the Cross Lake locale in the past, which have resulted in identification of a number of prehistoric and historic sites. In 1978, MnSAS surveyed most of the project area, re-examining known sites and locating several new ones. The most recent work is a study done in 1988 by Douglas Birk of the Institute for Minnesota Archaeology. The Cross Lake Association contracted with Birk to do a preliminary study of the historic Chengwatana townsite (platted in 1856), which was located at the Cross Lake outlet. This study included an overview of existing information about the prehistory and history of the area, and limited field examination of the townsite locale to assess its probable archaeological content.

Known sites: identified sites within and adjacent to the project area are listed below. This list includes only sites and find spots in the immediately vicinity of the project area. Numerous other prehistoric sites are recorded in the Cross Lake area and on Lake Pokegama a few miles to the west.

Site No.	Type	Location	Recorded by/Date
21PN3	116 burial mounds	SE, S. 27; N 1/2, S. 34	Lewis 1889
PN3 extension	Woodland artifact scatter	NE, S. 27	MnSAS 1979
21PN30	historic townsite; prehistoric artifact scatter	SW, S. 26	MnSAS 1979
21PN31	historic roadbed; prehistoric artifact scatter	NE, S. 27	MnSAS 1979
21PN32	possible mound (unauthenticated)	NW, S. 26	MnSAS 1979
21PN45	multi-component habitation	SE, S. 27	MnSAS 1979
21PN57	Woodland habitation area	NE, S. 27	Emerson 1988
21PNFS09	2 sherds, Late Woodland	NE, S.26	MnSAS 1979
21PNFS12	1 possible mound	NE, S. 27	MnSAS 1979
21PN9020	artifact scatter; Chengwatana millsite & bldgs.; historic copper mines	SE, S. 26	MnSAS 1979

Field Review

Methods: the area defined by DNR personnel as the probable ramp access facility location, which is approximately 140 to 190 meters upstream from a small control structure that regulates the level of Cross Lake, was shovel-tested in a 15-meter grid pattern. Ground surface exposure was limited to a few areas along the riverbank and a few small portions of a road cut that runs parallel to the river through the tested areas. These areas were visually examined, but no cultural materials were found. Intensive surface reconnaissance was not done, but vegetation in most of the western half of the property was low enough that obvious cellar depressions or other structural remnants should have been noted. No such historic features were observed within or near the proposed construction area.

Results: The only evidence of historic occupation of the area noted during preliminary survey was a single small whiteware fragment recovered from ST #1, at a depth of about 20 cm below the surface. No other cultural materials that might relate to the settlement of Chengwatana were found. This conforms to Birk's (1988:27-28) supposition that the present-day boundaries of Lots 8 and 11 reflect the configuration of the "Mill Reserve" set aside in the original Chengwatana plat, within which there was little or no townsite construction. Birk does note one probable cellar depression within the optioned parcels, on the far northern edge of the lots. Because this area is some distance from DNR's proposed development location, it was not surveyed during this phase of work.

Artifacts reflecting a prehistoric occupation of the area were recovered from 10 of the 17 shovel tests done in the proposed ramp access parking lot area (see summary below). This artifact assemblage is primarily debitage, although a few ceramic crumbs and small cord-roughened body sherds were recovered, as were a small biface and a rounded glacial cobble that may have been utilized. The presence of grit-tempered ceramics allows for temporal definition of the site as Woodland, but the sherds are not sufficiently diagnostic for a more precise assignment of cultural affiliation (see Figure 5).

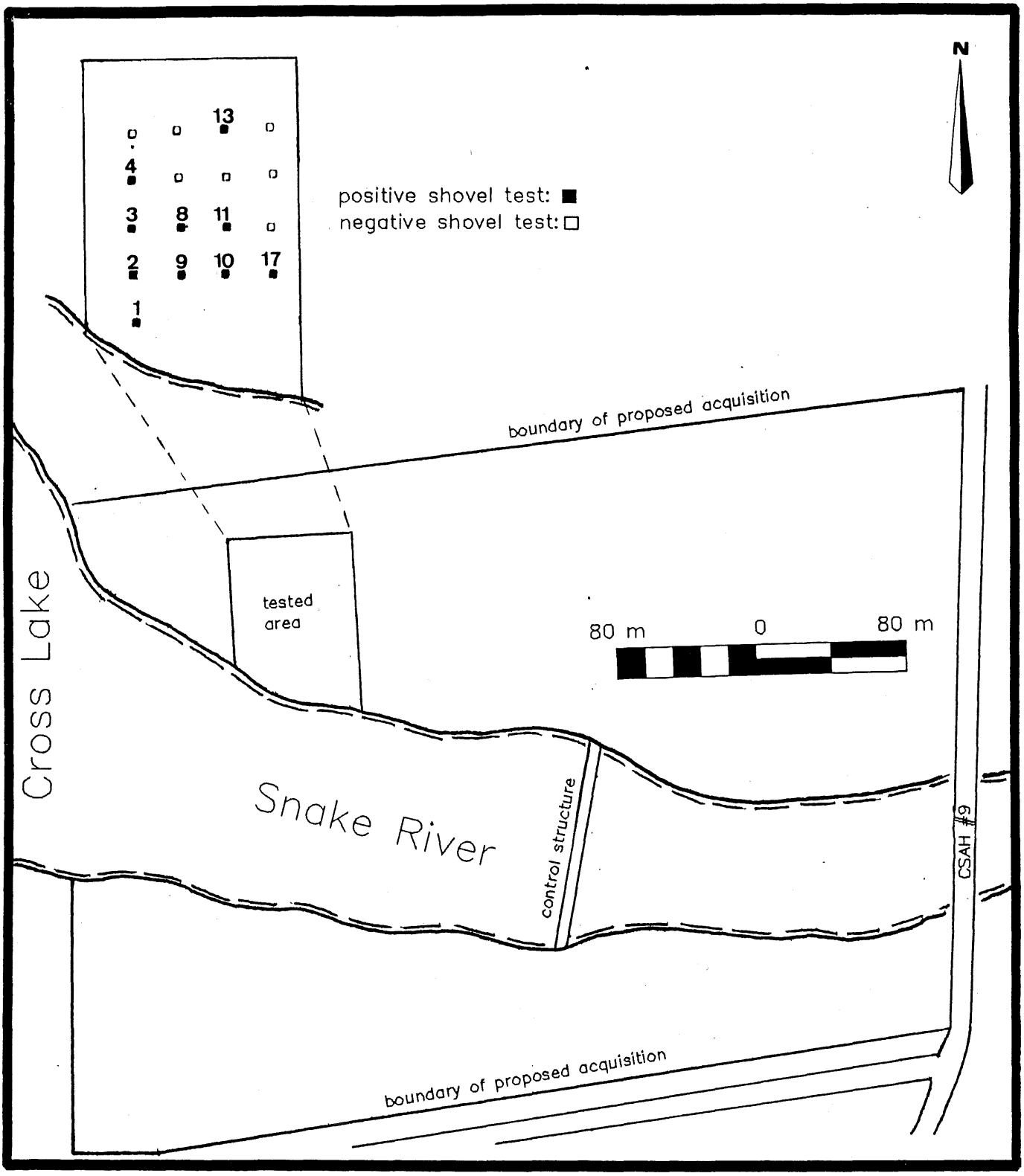
ST 1, 0-10 cm: 1 chert secondary flake
10-20 cm: 2 quartz shatter fragments
ST 2, 10-20 cm: 1 ceramic crumb
20-30 cm: 2 chert tertiary flakes
1 groundstone grinding/pecking tool
1 grit body sherd, cr
30-40 cm: 1 mammal joint fragment
1 chert tertiary flake
ST 3, 30-40 cm: 1 quartz secondary flake
ST 4, 10-20 cm: 4 small bone fragments
ST 8, 20-30 cm: 1 quartz secondary flake
ST 9, 10-20 cm: 2 oolitic chert shatter fragments
2 oolitic chert secondary flakes
2 oolitic chert tertiary flakes
ST 10, 10-20 cm: 1 quartz shatter fragment
2 tertiary flakes (quartz, chert)
20-30 cm: 1 quartz shatter fragment
ST 11, 30-40 cm: 1 quartz core fragment
ST 13, 10-20 cm: 1 jasper taconite tertiary flake
1 chert secondary flake
ST 17, 0-10 cm: 1 Knife Lake Siltstone secondary flake
10-20 cm: 3 quartz shatter fragments
1 chert secondary flake
1 oolitic chert tertiary flake
20-30 cm: 1 Swan River Chert biface
1 quartz core fragment
4 shatter fragments (3 quartz, 1 chalcedony)
1 jasper taconite primary flake, utilized
1 chalcedony primary flake
3 secondary flakes (jasper taconite, Tongue River Silica, Knife Lake Siltstone)
8 tertiary flakes (6 flint, 2 oolitic chert)
30-40 cm: 2 secondary flakes (quartz, chalcedony)

There appeared to have been very little deposition of overbank sediments on the north side of the river, even though the level of the Snake River fluctuates widely during the year. Artifacts were found at relatively shallow depths, with the highest density between about 20 and 30 cm below the surface. Horizontal distribution was consistent - a single shovel test on the northern edge of the tested area was the only non-contiguous positive test - and defines an occupation area concentrated within 50 meters of the riverbank. Soils observed in shovel tests were consistent with the geomorphic description of this area as part of a Late Wisconsin till plain. Silty to sandy silt loams with high proportions of cobble-sized rock overlay subsoil that ranges in texture from sandy silt to silty clay. The only obvious source of disturbance to natural stratigraphy in the tested areas seems to have been construction of the road cut, although the parcel was undoubtedly cleared at some time in the past.

Management Recommendations

The field survey done during 1988 was intended to provide DNR with a preliminary estimation of the nature and location of cultural resources in areas that likely to

Figure 5. 21PN57 - Site Area



be affected by future access development. It was not intended to provide a level of detail sufficient for making determinations of significance or developing resource management plans. DNR has been informed of the results of the preliminary survey and intends to proceed with acquisition of the property. A final decision on purchase will be made by the summer of 1989.

DNR personnel are aware that further field research will be necessary before development of access facilities can take place. The items below summarize preliminary survey results and delineate recommendations for further research.

1). Field survey results indicate that the proposed development area does not overlap with any archaeological deposit related to the historic-period settlement of Chengwatana. The probable cellar depression identified by Birk along the northern property line is the only evidence of historic-period occupation known to be present on the property. Although it should not be affected by development of the access facilities proper, construction of a new entry road from CSAH #9 might encroach on this feature. To insure that it is not affected by development, it should be mapped when DNR's topographic survey of the property is done, so engineering personnel are aware of its existence. The Project Archaeologist should be notified prior to the survey date, so all potential historic features can be flagged for inclusion on the engineering base map.

2). When preliminary design of proposed facilities is completed, areas to be affected by construction should be compared to the area surveyed in 1988. Any portion of the construction zone not yet surveyed - including a new entry road alignment if proposed - should undergo standard reconnaissance survey.

3). At the same time, additional shovel testing should be done to define the boundaries of the prehistoric site located during 1988 fieldwork beyond the limits of proposed construction. In order to define significance and determine appropriate management plans, it will be necessary to determine the relationship between the site on DNR's property and other prehistoric sites known to be present nearby. Of particular concern should be the spatial relationship between this site and 21PN31, defined by MnSAS in 1978 along the lakeshore to the northwest. Given existing evidence of prehistoric occupation in the area, it seems possible that both sites are part of a single large cultural deposit that may represent multiple overlapping occupations.

4). After additional reconnaissance survey has been completed, site evaluation research may be necessary to further define the nature of the site. Information provided by DNR personnel indicates that, due to the level terrain and the difficulty involved in excavation of the extremely rocky soil, construction will be done mainly by filling over the existing surface. Minimization of cutting in this way would reduce the severity of impact to the site. However, it is anticipated that some limited excavation will still be necessary to define the nature of the deposit that would be buried under fill.

5). After field research is completed, consideration should be given to the eligibility of the Chengwatana locale for nomination to the NRHP as a District. This determination would be facilitated by the body of data already available, including artifact collections housed at public institutions as well as in the hands of private collectors; Caine's work (1969, 1974) on the prehistory of the Snake River Valley; Birk's (1988) cultural overview study for the Cross Lake Association; trace-element analysis studies of prehistoric copper sources (Rapp *et. al* 1980, 1984; Rapp 1985); and unpublished documentation on the historic settlement of

Chengwatana as discussed in Birk (1988:29-30). Factors that should be taken into account in a determination of eligibility include the intensive prehistoric and historic occupation of the area evidenced by previous investigations; copper mining as a specialized extractive activity during both the prehistoric and historic periods; the implications of that practice vis-a-vis prehistoric trade networks in light of the appearance of Snake River copper in distant archaeological contexts; the relatively undisturbed condition of the archaeological components within the outlots that border the river; and the applicability of the "St. Croix Triangle Lumbering" historic context as a framework for interpretation of the development and ultimate failure of the town of Chengwatana.

6). Regardless of the area's NRHP eligibility, strategies for long-term management of the prehistoric and historic resources on the property including explicit limitations on alteration of the existing terrain should be defined, perhaps within a Memorandum of Agreement. In order to incorporate other related resources on the south side of the river, this might be done in cooperation with United Power Association. The Cross Lake Association, which has expressed an interest in utilizing the interpretive potential of the area for promoting local history and tourism, should also be consulted in developing management plans.

REGION IV - SOUTHWEST

Brown County

Clear Lake (21BW20) (SHPO Ref. #89-0953)

Location
East shore of Clear Lake, about 5 miles southwest of New Ulm, MN (see Figure 6).

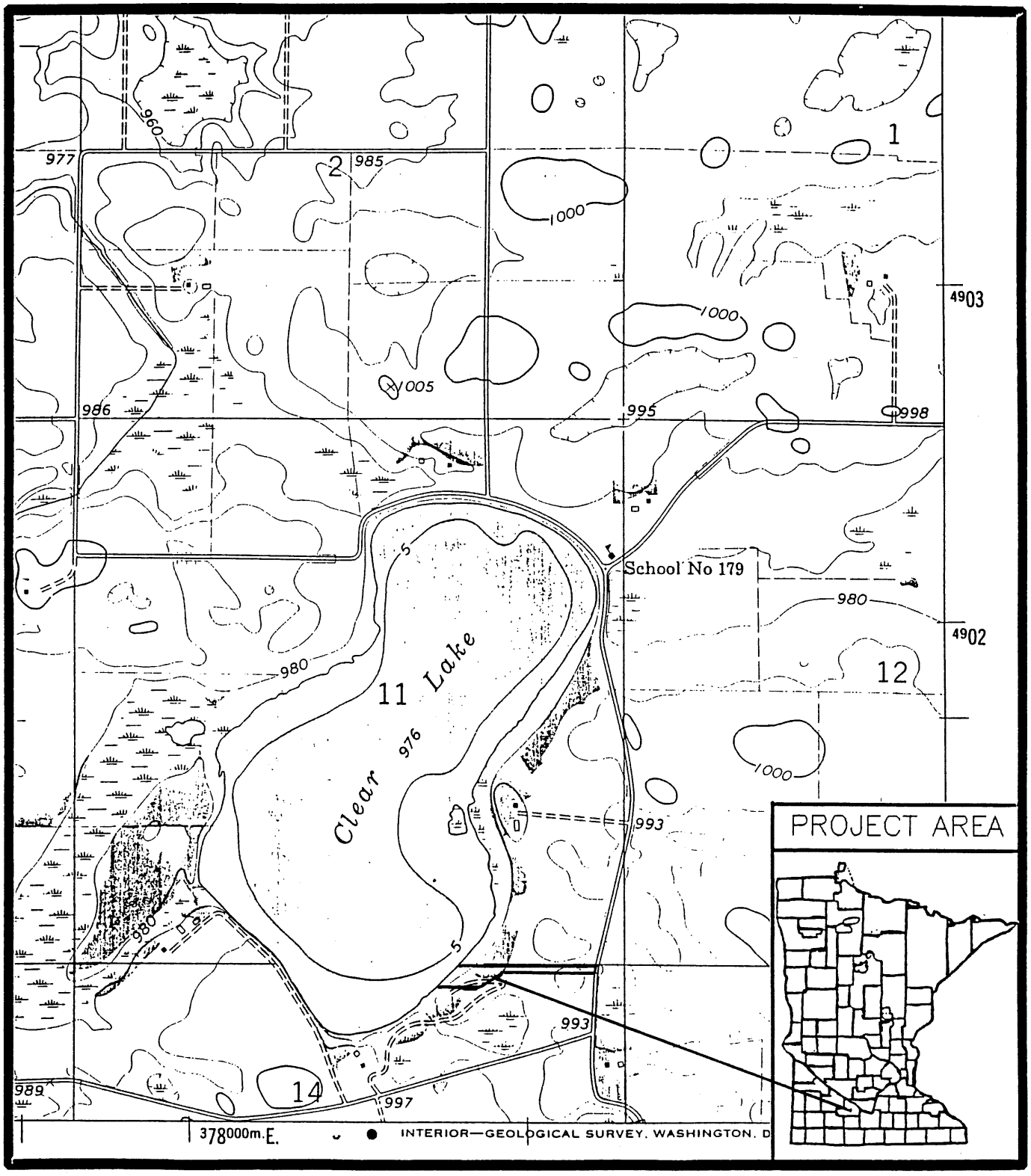
Funding/Construction Status
This project may be funded wholly or in part from the Minnesota apportionment of the Wallop-Breaux Trust Fund; construction is scheduled for the spring of 1989.

Physiographic Province/Geomorphic Region
Blue Earth Till Plain (Wright 1972); Minnesota Valley Outwash at south end of lake and Blue Earth Till Plain around it (Minnesota Soil Atlas Project-New Ulm Sheet 1977).

Scope of Project
Development of new Public Water Access facilities on Clear Lake. The preliminary construction plan calls for a 10-unit main parking area, about 95' by 170' in size, with a 4-unit grass overflow lot adjacent to it, a concrete plank ramp and c. 1,000' of new entry road. Most of the work will be done at or near existing grade.

Description of Project Area
DNR's property consists of one lot on the lakeshore and a 66' wide road easement running along the edge of a field from the lakeshore lot east to a township road. The property to the south is a private sportsman's club, and to the east and north is agricultural land. DNR's lot includes parts of two wooded areas composed mostly of mature oaks which, according to the former landowner, were planted by his father and grandfather. An opening between the two wooded areas will be the parking lot location. The remainder of the State land has been under cultivation for about 5 years, and was in alfalfa in 1988. The field through which the entry road will run

Figure 6. Clear Lake Project Area



USGS Essig Quadrangle, 1964, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

has been under cultivation since the property was homesteaded.

Records Review
Previous surveys: MnSAS Brown County Survey, 1978; no other formal cultural resource survey is known to have been done in the vicinity of the project area.

Known sites: DNR's property overlaps with the recorded location of **21BW20**, a prehistoric habitation site identified by MnSAS. Survey members were initially informed of surface finds (points, hammerstones and flakes) by a local collector. During an on-site visit in 1978, three chert flakes were collected from exposures along a dirt road that runs parallel to the lakeshore (shown on the 1974 Essig Quad). No subsurface testing of the site was done at that time.

21BW20 is recorded as covering an area about 1,200' long from southwest to northeast, which includes property maintained as a private sportsman's club as well as the southern part of DNR's property. Information obtained from MnSAS field notes and a former crew member indicates that the local informant had done most of his collecting on the sportsman's club property to the south of DNR's lot, but the site boundaries shown on the site form accurately reflect the whole area from which surface materials were collected. It is assumed that this means that at least one of the flakes recovered in 1978 came from a location close to or within the area now owned by DNR.

Field Review
Methods: surface reconnaissance along lakeshore, exposed areas along road cut and along plowed portion of road easement; shovel test grid over remainder of property.

Results: no cultural materials were found during surface reconnaissance, although visibility was very good in most examined areas. The easement area was free of crops, appeared to have been recently plowed, and a light snow had fallen and melted shortly before the survey was done. Two shovel tests were also dug along this corridor to check the depth of the plow zone, which appeared to extend about 35 cm, into the sandy clay subsoil.

Soil profiles in the parking lot area reflected the presence of two different geomorphic features. Very coarse, poorly sorted soils typical of a wave-and-ice formed ridge were found in the shovel tests along and just off the crest of the ridge closest to the lake. Landward of the ridge, DNR's property slopes gently down into a low area to the southeast, which may have been an arm of Clear Lake before formation of the ridge cut off its drainage. Shovel test profiles from this sloping area showed fine-grained silts and silty clay soils that may have formed in lakebed sediments. The lower area has been under cultivation for about five years, since a tiled ditch was installed to drain it through a natural break in the shoreline south of DNR's property line.

A total of eight prehistoric artifacts were recovered from 5 of the 16 shovel tests done in the proposed parking area (see Figure 7):

ST 4, 10-20 cm:	1 chert tertiary flake	ST 5, 10-20 cm:	1 small grit-tempered body sherd, exfoliated
20-30 cm:	1 chert tertiary flake	ST 6, 40-50 cm:	1 oolitic chert tertiary flake
	1 chert retouch flake	ST 9, 30-40 cm:	1 oolitic chert tertiary flake
30-40 cm:	1 chert tertiary flake	ST 10, 10-20 cm:	1 oolitic chert primary flake

The oolitic chert flakes all show evidence of thermal alteration, and the material appears to be Shakopee Chert, which is available from Prairie du Chien Group bedrock formations in the nearby Minnesota River Valley. The only diagnostic

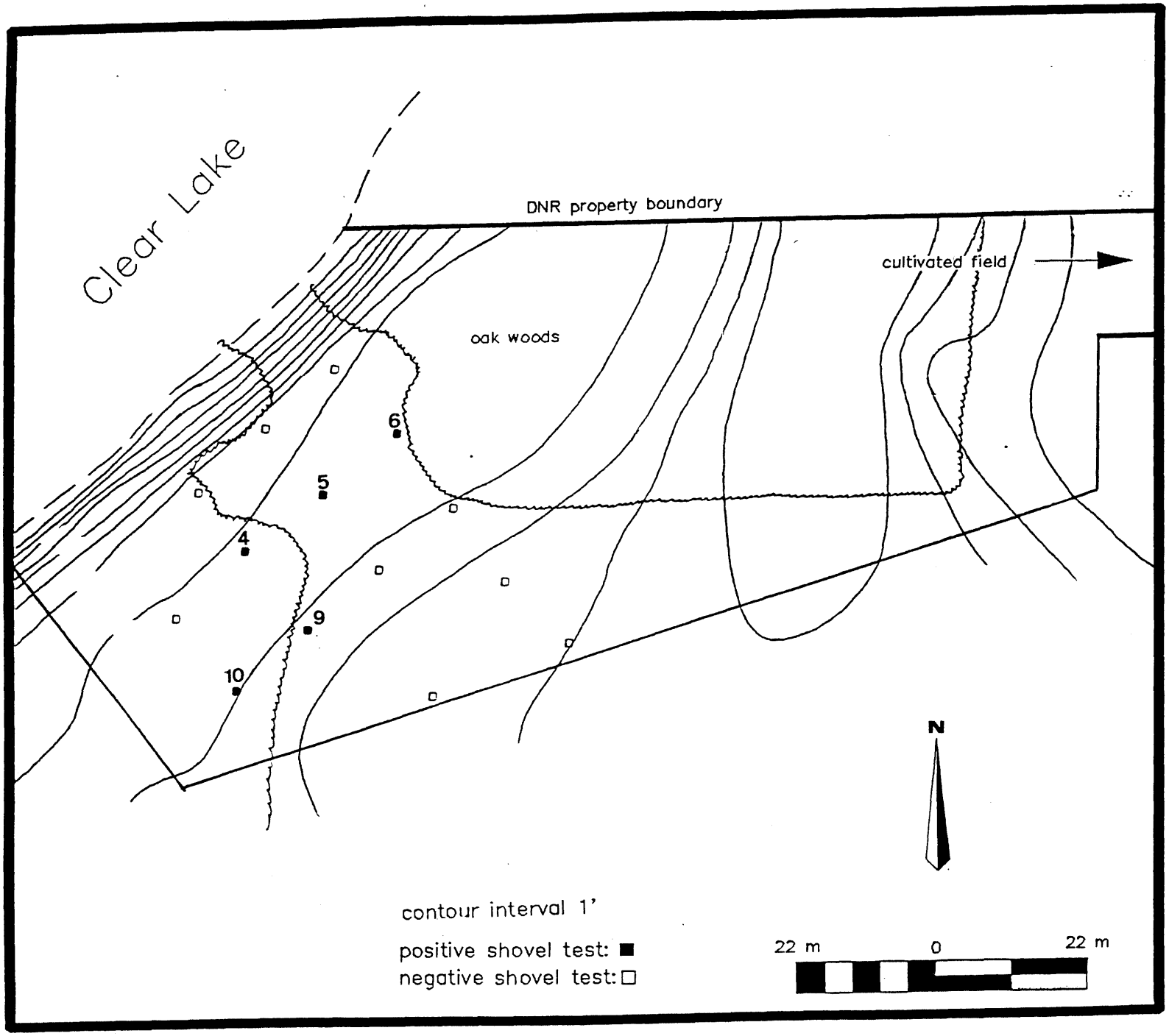


Figure 7. 21BW20 - Site Area

artifact in this small assemblage is the ceramic sherd, which is about 1.5 cm in diameter and tempered with coarsely crushed granite. The exterior surface of the sherd is missing.

The observed artifact distribution is very sparse and somewhat erratic in vertical distribution. It may be the result of historic-era activities such as tree-planting, although disturbance of natural stratigraphy was difficult to discern in the dark-colored soils. There was quite a bit of variability in the depths at which subsoil was encountered, which may relate to downslope movement of sediment on the landward side of the shoreline ridge. There was not, however, a consistent relationship between the thickness of the A horizon and the depth at which artifacts were recovered.

This artifact deposit is considered part of the site already defined in this location, although the possibility exists that it actually represents a distinct occupation episode. Because most of the defined site area is on private property, the additional work necessary to investigate that possibility is beyond the scope of this survey. Even coupled with the 1978 survey data, the minimal amount of information retrieved from this site does not allow for much definition of its age or function, except to say that it may represent a short-term, Woodland Period occupation. The tools reportedly collected by the MnSAS informant would undoubtedly be of more value in defining the site, but they are not described in any detail in the MnSAS notes.

Management Recommendations

Based on survey results, it appears that DNR's proposed construction area overlaps with a portion of 21BW20, a recorded prehistoric habitation site. However, available information suggests that the main portion of the site area is further to the south, beyond the boundaries of the state property. The part of the site within the construction area appears to consist of a very sparse deposit, which may have been disturbed by recent agricultural activities.

According to DNR Regional personnel, the planned construction will involve virtually no recontouring in the parking lot area. The existing slope is acceptable for proper drainage of the lot, so construction will consist largely of placement of fill on the existing surface. The only areas where any cutting will be done will be along the entry road easement to lower a ridge and at the shoreline for ramp installation. Additionally, two of the five positive shovel test locations are in the wooded area on the south side of the property. DNR intends to fence this area off to prevent damage to the trees during construction. Access development should be possible with minimal disturbance to whatever archaeological materials might be present in subsurface context. It was therefore recommended that DNR proceed with construction according to its current plan with no further review.

III. WATER ACCESS PROGRAM DEVELOPMENT PROJECTS

REGION I - NORTHWEST

Becker County

Lake Melissa (SHPO Ref. #88-1657)

Location

East shore of the lake, adjacent to CSAH #17, about 5 miles south of Detroit Lakes, MN (see Figure 8).

Funding/Construction Status

This project was designated for construction funding from a U.S. Coast Guard grant; access development took place in the spring of 1988.

Physiographic Province/Geomorphic Region

Wadena Drumlin Area (Wright 1972); Detroit Lakes Pitted Outwash Plain (Minnesota Soil Atlas Project-Brainerd Sheet 1969).

Scope of Project

Development of new Public Water Access facilities. Work included resurfacing of an existing entry road, construction of a 12-unit gravel-surface parking area and placement of a concrete plank ramp. Most of the work was to be done at or above existing grade.

Description of Project Area

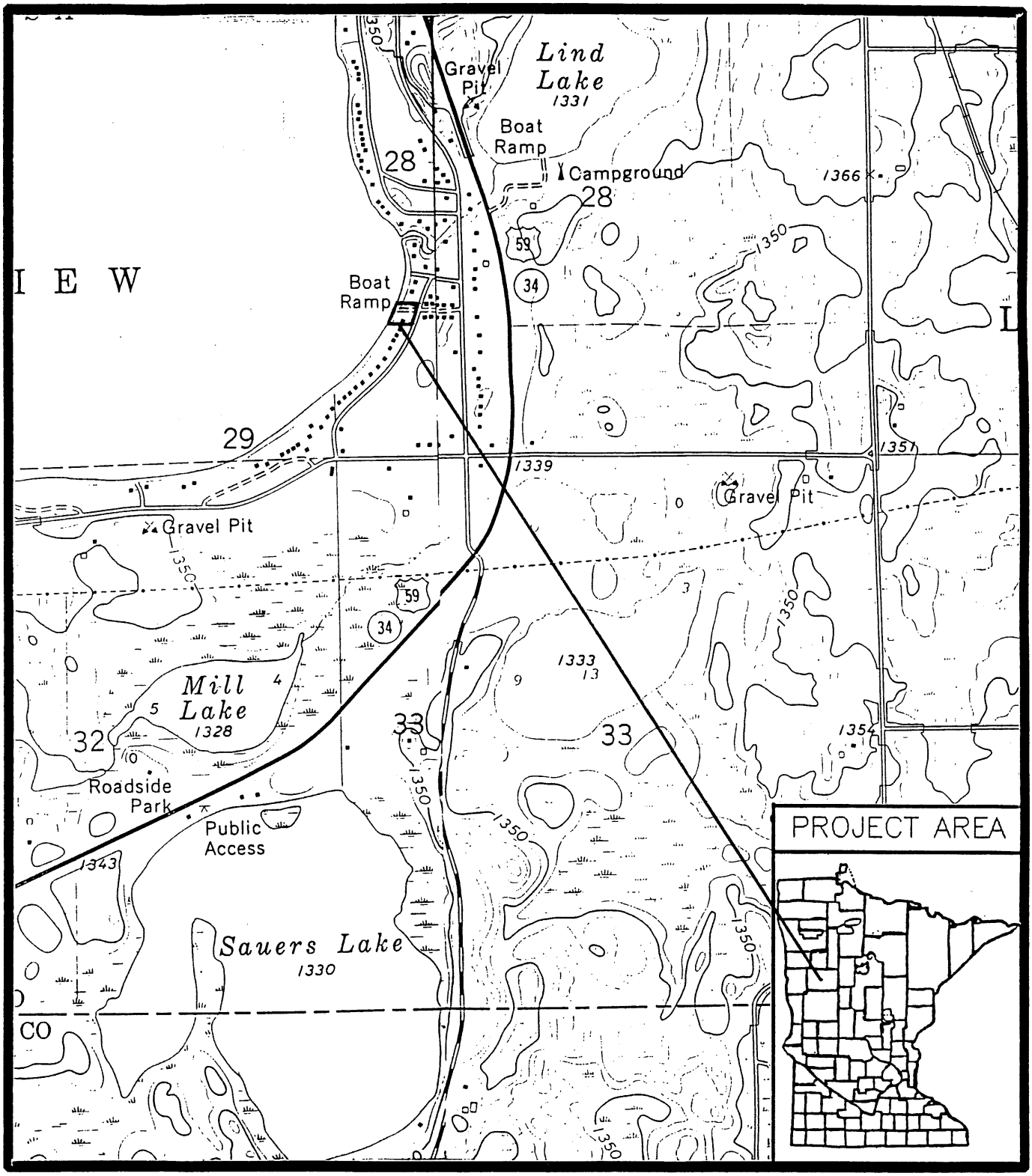
DNR's property is a level, low-lying parcel that was formerly a private resort lake access. Existing facilities included an entry road leading from CSAH #17 to the lakeshore, a gravel-surface turn-around loop and a concrete ramp. A mobile home was present on the property when purchased by the State; this had been removed by the time of survey, but several concrete slabs remained in place. Vegetation consists of residential lawn with a few scattered hardwoods and ornamental trees. Most of the property is less than 3' above the current lake level, but it does rise abruptly at the far eastern side (away from the shoreline) to an old beach ridge about 15' above the waterline. The county road is situated on this beachridge.

Records Review

Previous surveys: The only formal cultural resource survey in the vicinity of Lake Melissa was the 1986 review of DNR's proposed access rehabilitation of the Lake Sallie Access (Emerson 1987:33-39), which is about 2 miles north of the project area.

Known sites: There are no recorded prehistoric or historic sites on the shores of Lake Melissa. The nearest known sites are two prehistoric habitation areas on Sallie and Muskrat Lakes (21BK32 and BK33) 1.5 to 2 miles north; 21BK15, a mound group and 21BK16, a habitation site on the shores of Buck Lake, about 1.5 miles to the south of DNR's property. (In the 1950s, Lloyd Wilford received an informant report of "mooring stones" in a lowland area across the county road from DNR's property. No formal confirmation of the presence of these stones was ever done.)

Figure 8. Lake Melissa Project Area



USGS Lake Franklin 1973 & Vergas 1973 Quadrangles, 7.5 minute series enlarged x 1.42; scale approximately 1:17,000

Field Review
Methods: Surface reconnaissance along beachline, shovel test grid over construction area.

Results: At the time of survey, the lake level was somewhat low, and the shoreline of DNR's property consisted of a narrow sandy flat with a very low cutbank in which coarse sand and cobble-sized till were exposed. These exposures were examined for cultural materials, but none were found. In most of the shovel tests within the construction area, soils consisted of a thin layer of recent loamy fill over coarse sandy beach sediments. In the slightly higher areas further back from the shoreline, a layer of peat was encountered below the clean beach sediments. No cultural materials except a few pieces of recent debris were found in any shovel test.

Management Recommendations
It appeared that the proposed development would not affect any significant prehistoric or historic resources; a recommendation was made that construction proceed as planned with no additional review.

Beltrami County

Gilsted Lake (USFS CRR #090301108)

Location
South shore of the lake, about 4 miles south of the City of Blackduck, MN (see Figure 9).

Funding/Construction Status
The property is owned by the U. S. Forest Service; access development was a cooperative project between DNR and Chippewa National Forest. Construction was scheduled to take place in the late summer of 1988.

Physiographic Province/Geomorphic Region
Bemidji Area (Wright 1972); Blackduck Till Plain (Minnesota Soil Atlas Project-Bemidji Sheet 1978).

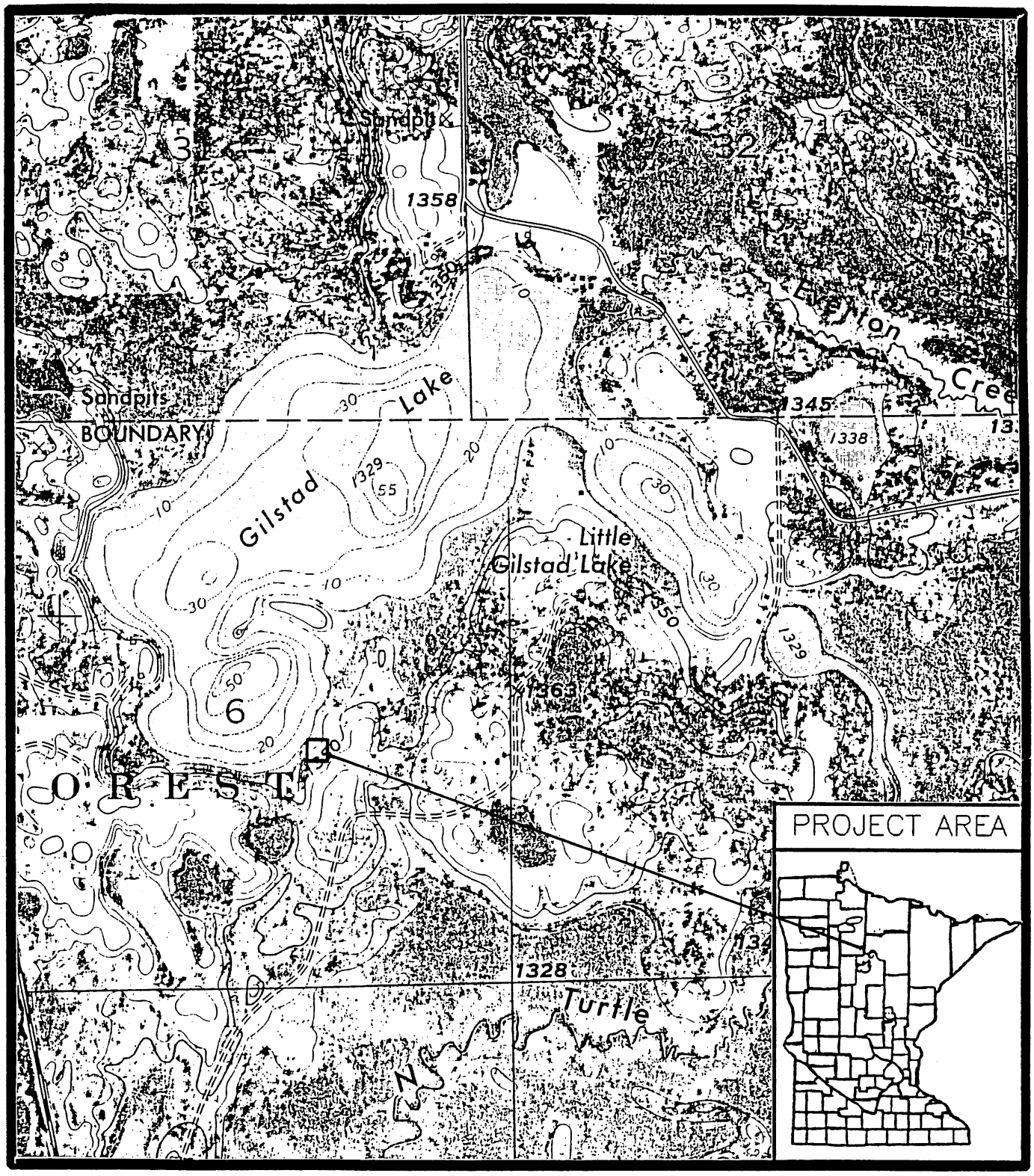
Scope of Project
Development of new Public Water Access facilities. Construction elements included an 8-unit parking lot and about 400' of entry road.

Description of Project Area
Low-lying parcel along shoreline, bordered to landward by a steep rise to an upland ridge. The access development area was primarily aspen-birch forest. Much of the surrounding area has been cleared by timber cutting in the past 15 years.

Records Review
Previous surveys; USFS survey of proposed timber cut areas and access location in 1984.

Known sites: there are no formally recorded sites within one mile of the project area. The cultural resource files of Chippewa National Forest do include one informant report of a prehistoric site to the north and several historic buildings in nearby compartments.

Figure 9. Gilsted Lake Project Area



USGS Blackduck Quadrangle, 1972, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

Field Review
The project area was surveyed by USFS personnel in 1984. No historic or prehistoric resources were located in the area to be affected by access construction.

Management Recommendations
It was the determination of the Chippewa National Forest Archaeologist that the proposed project would not affect any cultural resources. Because the project was reviewed in 1984 by USFS, no review report was submitted to SHPO by the Water Access Program Archaeologist.

Douglas County

Lake Christina (21DL46) (SHPO Ref. #89-0972)

Location
East shore of the lake, just north of the channel that connects it to Pelican Lake, about 3 miles east-southeast of the City of Ashby, MN (see Figure 10).

Funding/Construction Status
The work done in 1988 was funded by private donations. Additional construction to be done in the future may involve Federal funding.

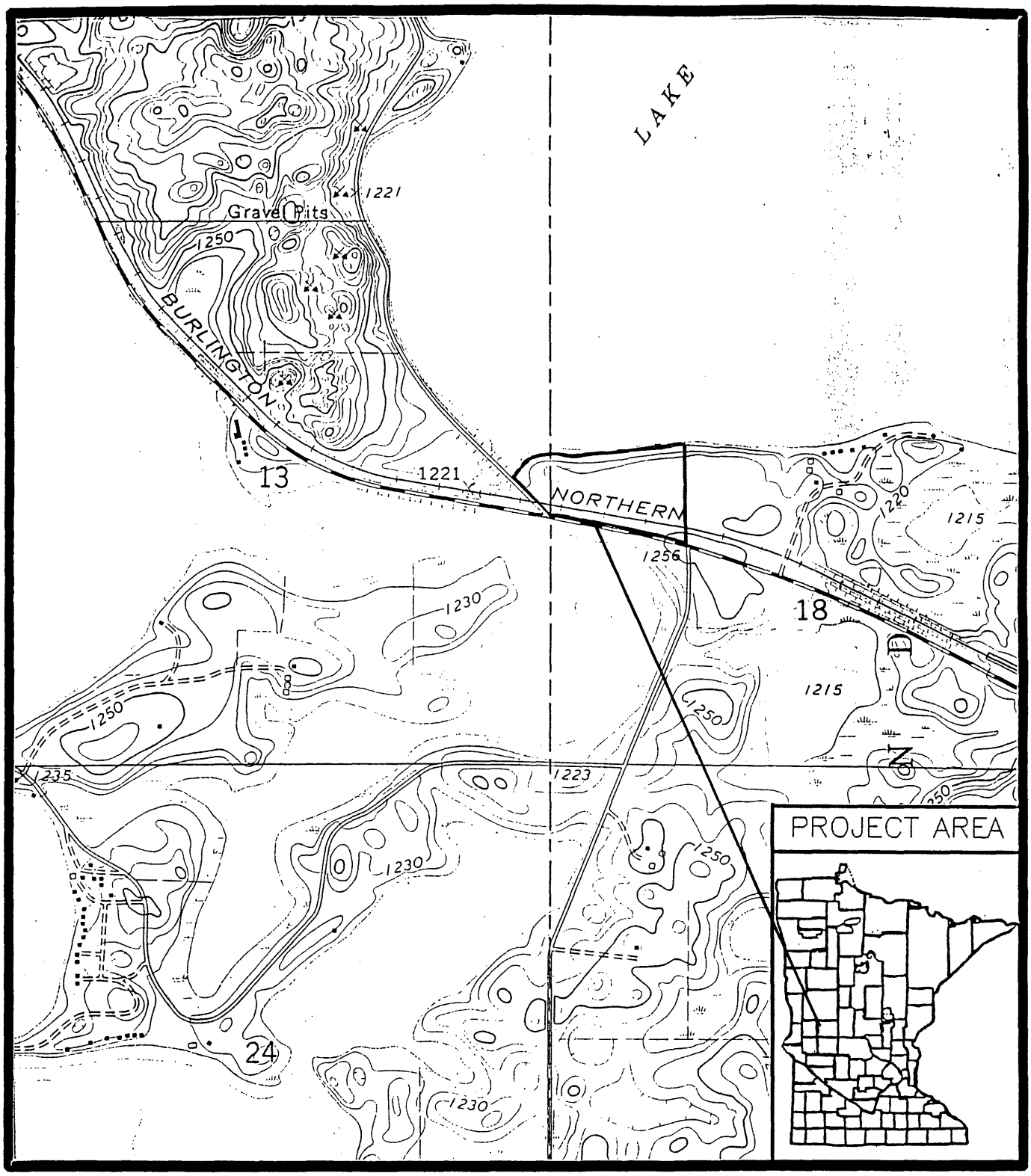
Physiographic Province/Geomorphic Region
Alexandria Moraine Area (Wright 1972); Alexandria Moraine Complex (Minnesota Soil Atlas Project-Brainerd Sheet 1969).

Scope of Project
Construction of a parking lot and concrete ramp for access to Lake Christina was initially on the Water Access Program FY88 development list. However, before design work for the project was completed, DNR-Division of Fisheries announced that Christina would be closed to fishing for three years, so that a long-range lake reclamation project could be completed. DNR-Trails & Waterways Unit then postponed the full-scale access development project until FY91 or later. The work that was done in 1988 consisted only of installation of a small launching area for waterfowling use, which was funded by donations from the local Sportsman's Club.

Description of Project Area
The project area is located on a level upland ridge, bordered by steep slopes along the lakeshore. The property was originally homesteaded by Gustav Melby in the 1860s, and is part of a large land donation made to DNR in the early 1980s. Most of the donated property, which was previously agricultural land, is being managed as wildlife refuge. The homestead parcel is located north of CSAH #82 (old Highway 52) on the Grant-Douglas county line. Buildings on the property included a farmhouse, barn, silo and several outbuildings. At one time, the owners of the property also had several small cabins close to the lakeshore, which were rented to hunters and fishermen. Only one of these, a small log cabin, was still standing in 1988. Most of the structures were burned as practice fires in 1986 by the local volunteer fire department, and the resultant cellar depressions were filled in by DNR. Except for clearings around the structures, the homestead area is wooded (mostly oak, elm and basswood). The farmstead is bordered to the east and south by a large field that was planted in prairie grasses in 1987 as part of DNR's wildlife management project.

Records Review
Previous surveys: in 1980, MnSAS surveyed several areas around Lake Christina; in

Figure 10. Lake Christina Project Area



USGS Ashby Quadrangle, 1973, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

1987, SAO mapped a portion of a large mound group on a peninsula in Pelican Lake, just south of the project area (a portion of the peninsula is within DNR's Wildlife Management Area). There have been no other formal cultural resource surveys in the vicinity.

Known sites: the project area is adjacent to the recorded location of **21DL46**, a large prehistoric habitation area identified by MnSAS in 1980. The owner of the land just east of DNR's property reported finding artifacts in a field between Lake Christina and CSAH #82; surface reconnaissance by the MnSAS crew in this field resulted in recovery of a small assemblage of lithics and ceramics. The map on the site form indicates that the site area includes a portion of what is now DNR's property, but an attached larger-scale sketch map indicates that surface reconnaissance was confined to the neighboring property. Additional sites in the vicinity include a number of mound groups around both Pelican and Christina, but no other habitation areas.

When the Program Archaeologist was notified of the proposed access development project, the Regional Trails & Waterways Coordinator indicated that Tom Carlson, Manager of the Melby Wildlife Refuge, had been told by a local resident that there were historic-era graves somewhere on the Melby homestead. When Mr. Carlson was contacted, he said that a long-time resident of Ashby had told him that two children in the Melby family had been buried on the homestead in the late 1800s, but that the graves were not marked. He indicated that this information was confirmed by the family member who had donated the property to DNR. This individual remembered having heard about the graves, but never knew exactly where they were located, except that they were somewhere west of the house overlooking the lake. Mr. Carlson also noted that the donor mentioned having found arrowheads around the old barn on the property every spring when the ground thawed.

Field Review

Because the parking lot construction originally proposed by DNR might affect the burials that supposedly were located on the property, preliminary survey was to be directed towards identification of the graves, if possible, as well as standard reconnaissance survey of the construction area. DNR had selected a cleared area with a rather pronounced slope in the southwest corner of the property as the parking lot and ramp location. Construction could be accomplished with no subgrade work except for a cut at the shoreline for ramp installation, and the remainder of the property would be left undisturbed. After consultation with SAO, it was decided that the minimal information available about the exact location of the burials was insufficient to identify a high-potential area suitable for full-scale field investigations. It was deemed probable that, if burials are present, they were on the higher ridge to the north of the construction area, where they would not be disturbed. The following steps were to be taken: the construction zone, which was covered with tall grass, would be mowed as close to the ground as possible; the cleared area would be examined for surface indications of burials; and if no evidence was found to indicate that the graves were located in the construction area, work on the access facilities could proceed as planned.

Survey had not yet begun when it was learned that the lake was being closed to fishing and the full-scale development project was removed from the 1988 project list. Shortly thereafter, a local sportsman's group approached DNR with a request for installation of a ramp that could be used by waterfowl hunters. Private funding was offered, contingent on completion of the project prior to the opening of the duck hunting season. The Program Archaeologist was then contacted by the Area Wildlife Manager and asked to review the proposed ramp installation.

The location at which the ramp was to be installed is at the base of a clearing on the west edge of the property. This area has a moderate but consistent slope up from the lake level (about 1212' in 1988) to the level upland where the farm buildings are located (elevation c. 1240'). In 1988, the lake level was about 3 feet below the "normal" high water elevation, which was marked by a pronounced beach ridge. Installation of the ramp would require a cut about 12' wide and 30' long, starting just below the beachridge. The cleared area would be left unaltered to serve as "informal" parking space for hunters using the ramp. The ramp location was adjacent to an area where several hunter's cabins had previously stood, and there were large piles of trash - mostly tin cans and bottles - scattered throughout the area. Most of this material appeared to date from the last 30 years.

Four shovel tests were dug within and just above the proposed ramp cut location (see Figure 11). These tests revealed that the area has quite disturbed due to its use as a trash dump. In every shovel test, a layer of buried debris was found between roughly 5 and 50 cm below the surface. Tin cans, bottle glass and scraps of building materials were extracted from this midden. In three of the tests, prehistoric artifacts were also found within disturbed strata, except for the lower portion of ST #4, which was beyond the proposed ramp cut area. The extent of disturbance did appear to be less in this shovel test than in the others, but there was still evidence of disruption in the form of mixed stratigraphy and a layer of recent fill, possibly the result of cabin construction or demolition. Because there was so much evidence of previous disturbance to this area, the disturbance to be caused by the proposed ramp cut did not seem sufficient to warrant postponement of the work, so DNR proceeded with installation of the ramp.

No additional shovel testing was done in the proposed parking lot area, but DNR was informed that such survey would be necessary before further work could take place. Because of the proximity of 21DL46, the possibility was considered that the prehistoric materials found near the shoreline represent a continuation of that site. The MnSAS work which defined 21DL46 had apparently been confined to the private property just east of the Melby homestead, but it was considered likely that the site area extended further west, into the field planted in prairie grass by DNR. The only portions of the field that were not densely vegetated were run-off areas where the planted grass had not survived. These areas totaled no more than about 35% of the field, but, because there had been several heavy rains just before the survey date, the exposure in these bare spots was quite good. The entire field was walked just after a rainstorm, and all open areas as far east as DNR's property line were closely examined.

A number of prehistoric artifacts were recovered from this field during surface reconnaissance (see Figure 12). Cultural materials were found in every area where there was any ground surface visibility. The observed density of materials seemed to be fairly consistent throughout the field, with the exception of an apparent increase in artifact frequency on the crest of a small rise in the middle of the field. Due to the erratic surface visibility, however, no accurate conclusions could be drawn about the actual distribution of the cultural deposit.

It was assumed that these materials represent a continuation of the site area recorded as 21DL46. Given the informant report of artifacts on the homestead property and the materials recovered from shovel tests at the lakeshore, it appeared that the site covers a large area from the lakeshore east at least 900 meters, and south at least to the railroad right-of-way and county road grade. (The field immediately south of CSAH #82 was examined by the MnSAS crew in 1980, but no cultural material was found.)

Figure 11. 21DL46 - Site Area

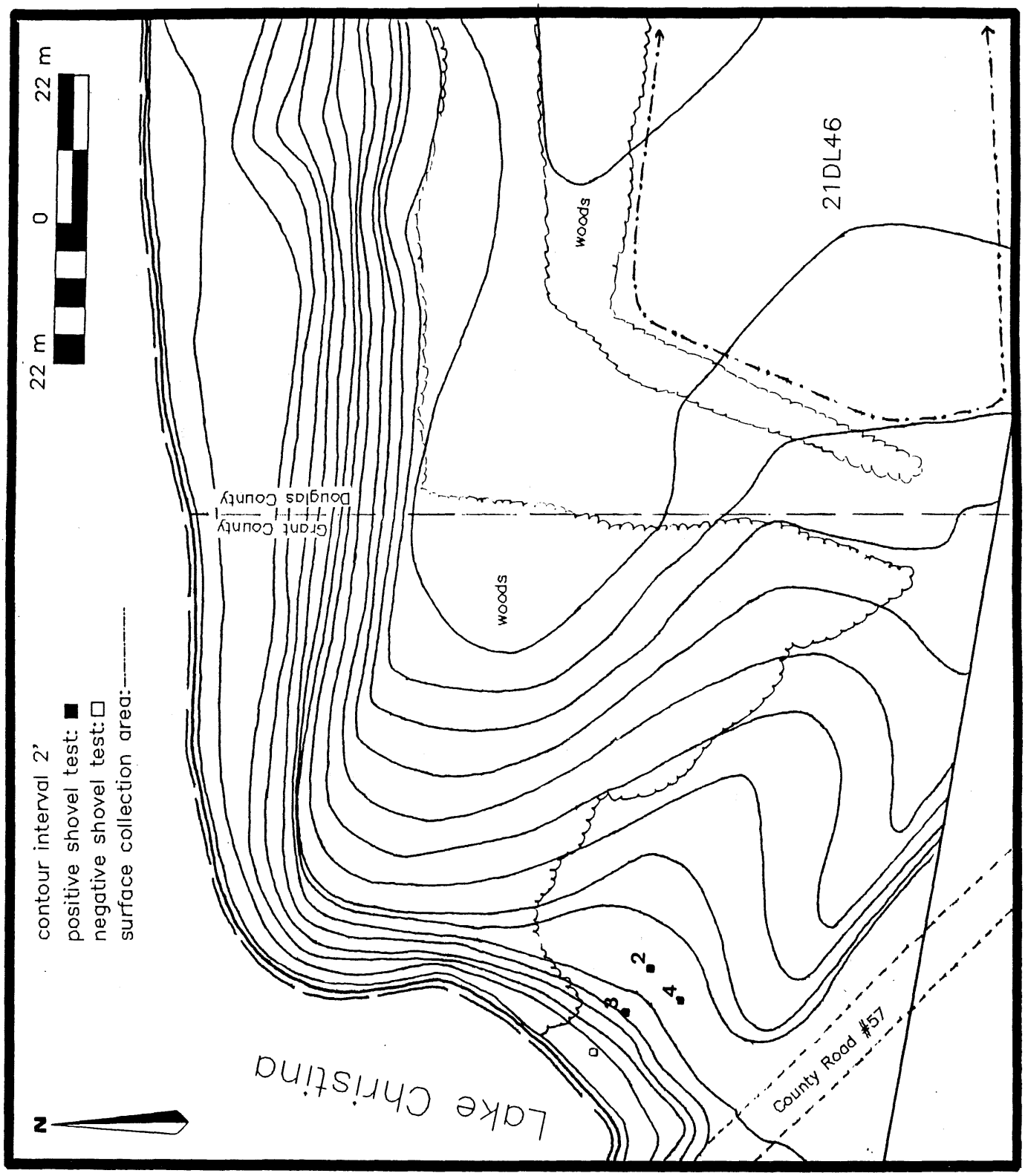


Figure 12. 21DL46 - Artifact Summary

1980 surface reconnaissance (MnSAS):

1 grit-tempered near-rim sherd, dentate-stamped
5 grit-tempered body sherds, cwp
1 grit-tempered ceramic crumb
1 chert projectile point, base missing
1 chert biface
2 scrapers: chert, quartzite
55 flakes: 20 chert, 13 quartzite, 13 quartz
fire-cracked rock observed

1988 surface reconnaissance:

16 grit-tempered body sherds: 8 cr, 8 exfoliated
1 quartzite projectile point, sub-triangular
2 chert projectile points, side-notched
1 chert scraper
27 shatter fragments: 8 quartz, 7 chert, 6 Swan River Chert, 3 quartzite, 1 jasper taconite, 1 chalcedony, 1 quartz
5 primary flakes: 2 Tongue River Silica, 2 chert, 1 quartzite
13 secondary flakes, 1 utilized: 6 quartzite, 4 chert, 2 Knife River Flint, 1 oolitic chert
29 tertiary flakes: 17 chert, 5 Tongue River Silica, 6 quartzite, 1 Gunflint Silica
12 chert retouch flakes
1 jasper cobble, utilized
1 clamshell fragment, possibly incised

Shovel tests, ramp cut area:

ST 2,	30-40 cm:	4 grit body sherds: 1 cr, 1 smooth, 2 exfoliated
		3 tertiary flakes: 1 Tongue River Silica, 1 chert, 1 quartzite
		1 bone fragment
	40-50 cm:	1 chert tertiary flake
ST 3,	40-50 cm:	1 grit body sherd, exfoliated
ST 4,	10-20 cm:	2 ceramic crumbs
	20-30 cm:	1 grit body sherd, simple-stamped
		1 ceramic crumb
		1 chalcedony retouch flake
	30-40 cm:	2 grit body sherds, cr
		1 ceramic crumb
	40-50 cm:	1 ceramic crumb

The total assemblage of artifacts recovered from 21DL46 includes several diagnostic items. Ceramics include cord-roughened, simple-stamped and smooth body sherds, and a partly exfoliated near-rim sherd decorated with a single row of small rectangular dentate stamping. Three projectile points recovered from surface in 1988 include one small (c. 2.3 cm long) sub-triangular and two small (c. 2 cm long) side-notched points. These materials suggest a late Middle Woodland affiliation and, although the available evidence is minimal, they are consistent with assemblages associated with St. Croix Stamped ceramics in Central and Western Minnesota.

Management Recommendations
Surface examination of the cleared area that will eventually be developed as a parking lot did not reveal any indication of the presence of burials; it was concluded that any burials on the property are most likely to be in the wooded area to the north of the ramp. DNR will monitor public use of the area, and any evidence that comes to light in the future of possible gravesites will be referred to SAO.

The cultural materials recovered from shovel tests in the ramp cut area, and the artifacts recovered from the surface of the field indicate that there is a continuous deposit of cultural materials from the area now defined for 21DL46 to the eastern shore of Lake Christina. The density of the artifact distribution, given the very small percentage of the area that was actually examined, suggests that the cultural deposit is substantial. Although a portion of the site area was under cultivation for better than 100 years, and other parts have been disturbed by the historic-era occupation of the property, the site may still retain sufficient integrity to warrant further research.

DNR plans no further disturbance of the field area; the prairie grass planted in 1987 will be left as a waterfowl food plot. No other work will be done on the property except the eventual construction of a formal parking lot adjacent to the ramp. Before that project is re-scheduled, additional reconnaissance survey will be conducted to define the cultural deposit in the cleared area and determine what further research is necessary.

Otter Tail County

Lake Marion (21OT97) (SHPO Ref. #88-0628)

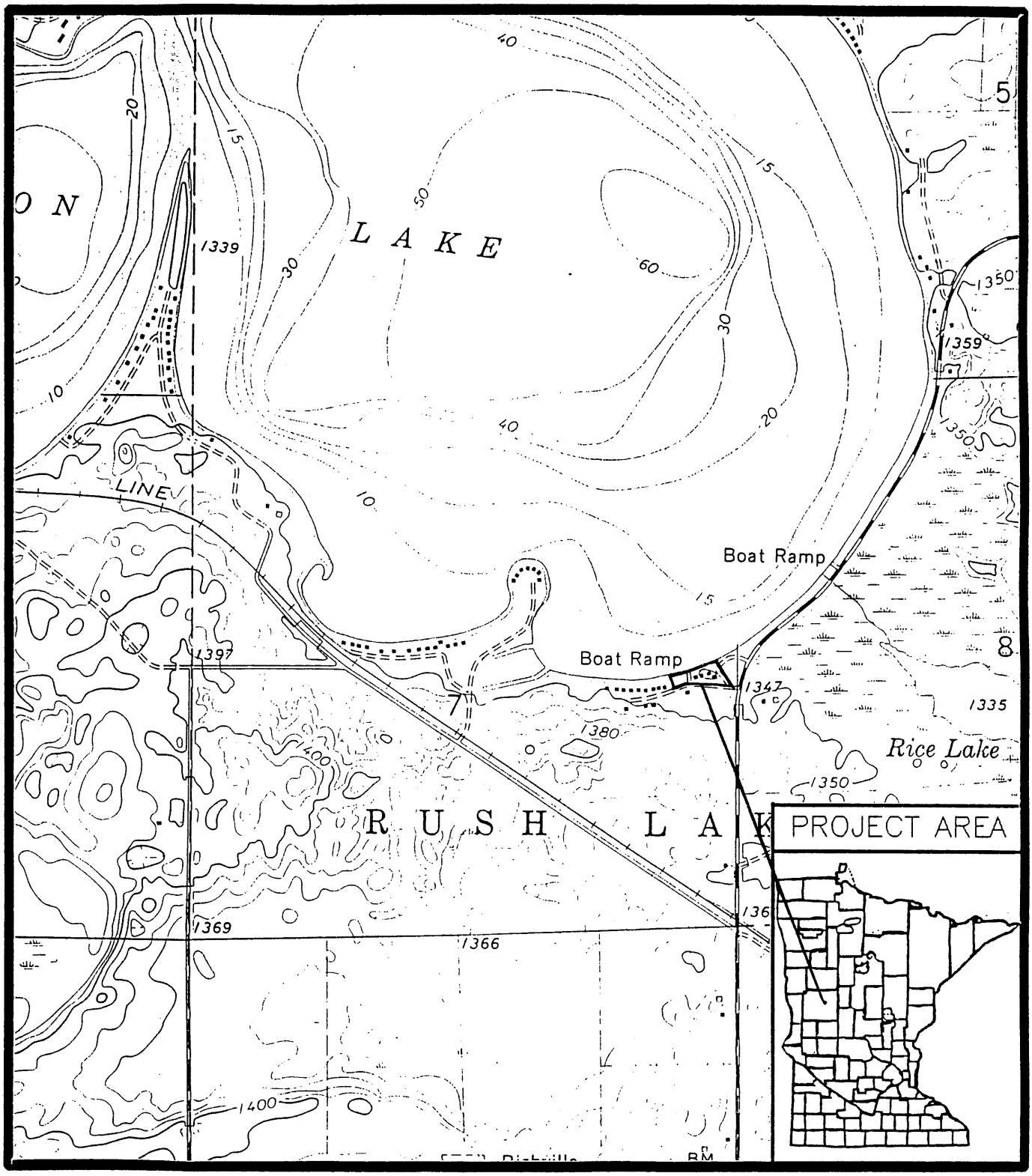
Location
Southeast corner of the lake, about 10 miles southwest of the City of Perham, MN (see Figure 13).

Funding/Construction Status
Funding for this project may derive from the U.S. Coast Guard Boating Safety Fund. Construction is tentatively scheduled for sometime in 1989.

Physiographic Province/Geomorphic Region
Alexandria Moraine Area (Wright 1972); Detroit Lakes Pitted Outwash Plain (Minnesota Soil Atlas Project-Brainerd Sheet 1981).

Scope of Project
Development of new Public Water Access facilities. The property was formerly a private resort which had a concrete launch ramp. This ramp was upgraded by DNR in 1987, but no other work was done on the property. Additional construction will consist of resurfacing the existing parking facility that takes up most of the west

Figure 13. Lake Marion Project Area



USGS Dent Quadrangle, 1973, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

side of the parcel, and development of an additional parking area on the eastern half of the property.

Description of Project Area

The property contains two distinct topographic areas. The western half, which includes the existing boat ramp, is level and low-lying. The eastern half is a hill bordered by very steep slopes on the north and west. The crest of this hill is about 12' above the current lake level. Four resort cabins and a bathhouse were located on the top of this hill when DNR purchased the property in 1984. The buildings were demolished shortly thereafter (SHPO Ref. #AA-466); structural remnants left in place include concrete slab foundations, underground waterlines and septic vaults.

Records Review

Previous surveys: there have been no formal cultural resources survey near Lake Marion; the closest survey areas are on Otter Tail Lake, about 10 miles south.

Known sites: there are numerous recorded prehistoric sites on Rush Lake to the southeast, Otter Tail Lake to the south, and Dead Lake to the southwest; no sites are known to be present within one mile of Lake Marion.

Field Review - Reconnaissance Survey

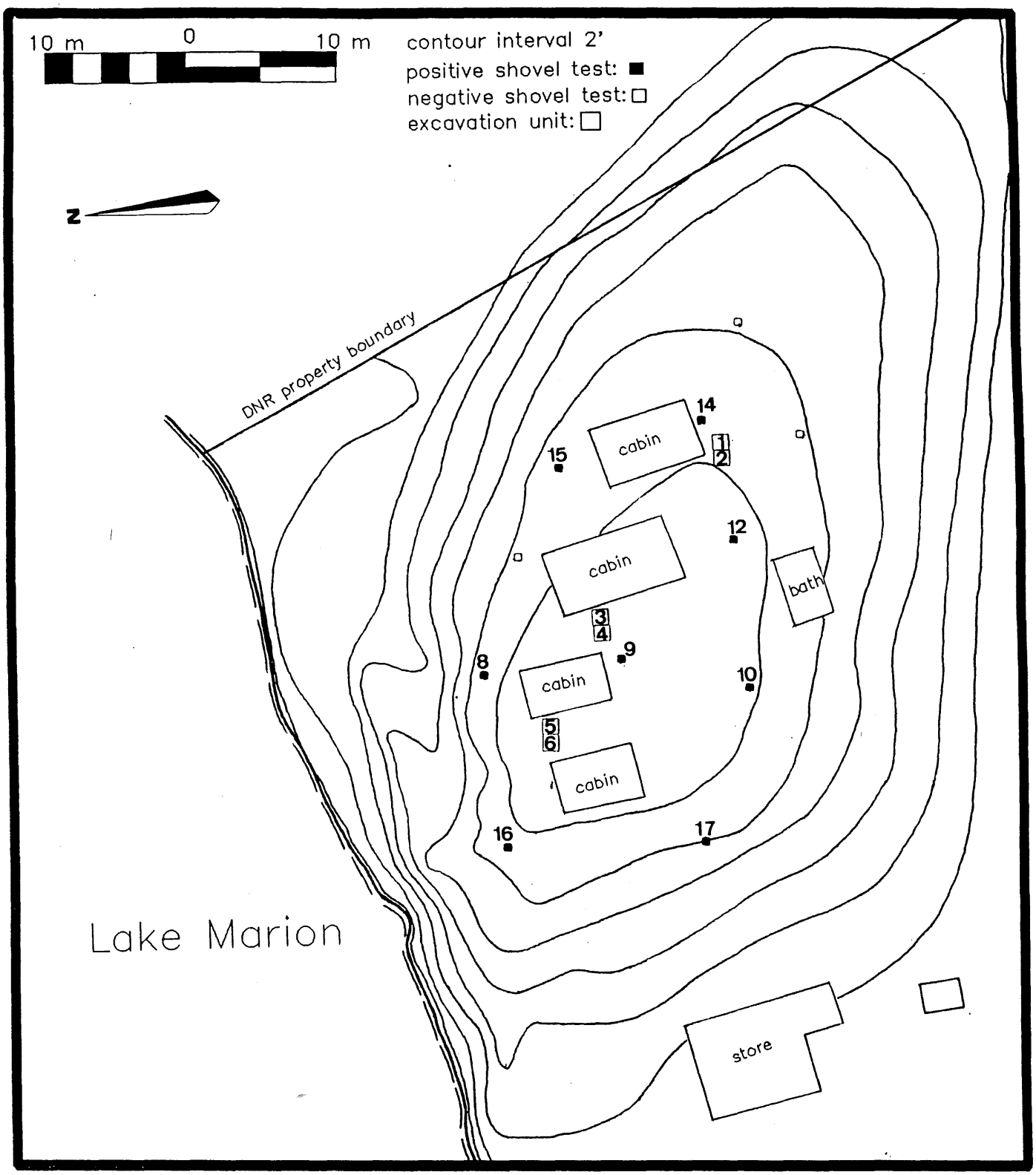
Preliminary survey of this project area was completed in 1987, as described in the Water Access Program Annual Report for that year (Emerson 1988:54-59). That work resulted in identification of a prehistoric habitation area, 21OT97, located on top of the hill on the eastern side of the property. Cultural materials recovered from shovel tests included three small projectile points, ceramic sherds tempered with shell and crushed granite, and one Blackduck "cord & punctate" rim sherd. Additional materials were retrieved from the surface of unvegetated areas on the hilltop where cabins had formerly been located. Some portions of the site area appeared to have been very badly disturbed by resort facilities, but other areas were essentially intact. It was recommended in 1987 that additional research be conducted at this site before further work was done on project design. Some initial discussions were held with Engineering personnel regarding proposed facility layout, during which it was learned that construction would almost certainly include removal of at least the top two to three feet of the hill upon which the site is located.

Site Evaluation

Additional field research was conducted at 21OT97 in the fall of 1988. A total of 6 square meters were excavated on the hilltop (see Figure 14). Information about the recent history of the property was obtained from the former owner, whose parents had started Klein's Resort in the 1930s. Mr. Klein provided some details about modifications of the hilltop when the resort cabins were constructed, and also noted that, as a child, he had often found projectile points in the sandy soils on the steep lakeward side of the hill, especially just after wave action or human activities had caused another portion of hillside to slump away. Several years ago, Mr. Klein donated his entire collection of points (except one large, stemmed quartzite point, which he recalled as having been found on the resort property) to the Otter Tail County Historical Society for display in their museum. A review of that material was not undertaken, since it included artifacts found in numerous other locations around the county, and records had not been kept as to provenience of most of the individual items.

The results of site evaluation research showed that the cultural deposit at this site is more substantial than shovel test results indicated, and confirmed the

Figure 14. 21OT97 - Site Area



multi-component nature of the occupation. Cataloguing and analysis of data retrieved during this phase of research have not yet completed; summary lists for the two units that have been completely catalogued are presented in Figure 15. In general, relatively dense deposits of artifacts were encountered in all excavation units, in a consistent horizon down to about 45 cm below the present surface. The presence of large quantities of very small flakes and organic materials in many levels required water-screening in the laboratory to retrieve all cultural materials from the soil matrix. Differences in the distribution of artifact types among excavation units is apparent from preliminary summaries, and suggests that the site may have a high degree of internal patterning.

Two discolored areas that might represent cultural features were encountered during excavation, although the exact nature of neither one could be defined in the field. Both appeared during excavation of Unit 5, when the floor of the unit was at a depth of 15 cm. The soil matrix in most of Unit 5 and all of the adjoining Unit 6 was a brown sandy silt loam. In the southeastern corner of Unit 5, a darker stained area containing a high proportion of charcoal was observed; samples of the charcoal and surrounding matrix were taken at this level. Another discolored area was noted in the approximate center of the excavation block. The soil in this area had a distinctly reddish cast, but did not exhibit any textural differences from the surrounding brown soil. The reddish area did not appear to contain charcoal in any appreciable amount, nor other indication of fire. A soil sample was also taken from this feature between 15 and 20 cm. Both areas were photographed and then excavated and screened separately from the rest of the level. There was not noticeable difference in frequency of artifacts or organic remains between the feature areas and the rest of Unit 5 for that level. Both of the discolored areas had disappeared by the time the 20 cm level had been reached, and no further anomalies in soil color or texture were observed in this unit.

Debitage was the most common artifact class in every excavation unit, much of it consisting of small flakes reflecting the later stages of the tool manufacturing process. Many of the lithic materials can be identified as to geologic source: Swan River Chert, Tongue River Silica and Knife River Flint together comprise about half of the assemblage. A high percentage of the recovered materials appear to have been thermally pre-treated, resulting in readily observable changes in color and texture. This is particularly true of the Swan River Chert and Tongue River Silica items. A number of finished tools were also recovered, including several small triangular unnotched or side-notched points, scrapers and utilized blades made from unifacially modified secondary flakes.

Only a few of the recovered ceramic artifacts appear to be Sandy Lake Ware, which was represented in the shovel test sample by a number of shell-tempered sherds. Information obtained from the previous owner indicates that much of the Sandy Lake occupation stratum may have been removed when the hilltop was leveled before cabin construction. An earlier occupation episode is reflected by the ceramics retrieved from excavation units. Most of these fall into a single descriptive category: smooth-surfaced, relatively thick - averaging 7 to 9 mm - , and tempered with crushed granite and high proportions of sand. A number of rim segments were recovered which are either undecorated or decorated only with a single row of bosses or short oblique incised lines on the interior or exterior of the lip. The rim form on these sherds is generally straight to very slightly everted, and lips are rounded to very slightly flattened. These materials appear most closely related to ceramics of the Malmo Focus, a Middle Woodland manifestation identified by Wilford at Mille Lacs Lake (Wilford 1941, 1944, 1955). Although Wilford's discussion of materials recovered at Mille Lacs did not present "Malmo" as a formal

Figure 15. 21OT97 - Artifacts Recovered

Surface

1987:
1 core fragment
6 secondary flakes
5 primary flakes

1988:
3 sand body sherds (smooth, cr, fi?)
1 ceramic crumb
3 core fragments
2 secondary flakes
9 tertiary flakes
6 primary flakes
1 bison? tooth fragment
8 bone fragments

Shovel Tests

ST 8, 20-25 cm:
2 secondary flakes

ST 9, 5-10 cm:
1 primary flake

ST 10, 5-10 cm:
1 projectile point, small side-notched

10-15 cm:
1 tertiary flake

15-20 cm:
2 primary flakes
1 tertiary flake

ST 12, 0-5 cm:
1 flake tool, utilized

10-15 cm:
1 tertiary flake
4 bone fragments

15-20 cm:
1 tertiary flake
1 bone fragment

ST 14, 5-10 cm:
1 glass fragment
5 whitewear fragments
1 projectile point, small side-notched
3 sand body sherds, smooth
20 shell body sherds, cr
10 bone fragments
ceramic crumbs

10-15 cm:
3 primary flakes
1 secondary flake
1 tertiary flake, utilized
1 sand rim sherd, smooth, straight
7 sand body sherds: 2 smooth, 5 exfoliated
13 shell body sherds, cr
4 bone fragments, burned
ceramic crumbs

ST 14, 15-20 cm:
1 secondary flake, retouched, utilized
1 secondary flake
1 tertiary flake
4 shell body sherds, cr
2 bone fragments
ceramic crumbs

20-25 cm:
1 primary flake, utilized
1 secondary flake
4 shell body sherds, cr

25-30 cm:
1 shatter fragment
1 primary flake
1 shell body sherd, cr

ST 15, 5-10 cm:
1 primary flake, utilized
1 tertiary flake
1 shell body sherd
2 bone fragments

10-15 cm:
2 tertiary flakes

ST 16, 15-20 cm:
3 secondary flakes

ST 17, 20-30 cm:
1 tertiary flake

Figure 15, continued

Excavation Units

U-1, 15-20 cm:
- 2 sand body sherds, cr
- 1 grit body sherd, smooth
- 3 primary flakes
- 2 secondary flakes
- 1 tertiary flake
- 4 bone fragments

20-25 cm:
- 1 shell rim sherd, burned - rolled lip
- 1 grit rim? sherd, crimped
- 1 grit decorated sherd, smooth, bossed
- 31 grit body sherds, 5 cr, 11 smooth, 14 exfoliated
- 5 sand body sherds: 2 cr, 3 smooth
- ceramic crumbs
- 8 primary flakes
- 22 secondary flakes
- 44 tertiary flakes
- 1 utilized blade flake
- 1 retouched tool tip
- 1 retouched tool fragment
- 68 bone fragments, 26 burned
- 1 core fragment
- charcoal fragments
- 1 whitewear fragment

25-30 cm:
- 1 grit rim sherd, smooth, bossed
- 23 grit body sherds, smooth
- 2 primary flakes
- 11 secondary flakes
- 32 tertiary flakes
- 2 shatter fragments
- 8 bone fragments, 6 burned

30-35 cm:
- 2 primary flakes
- 5 secondary flakes
- 5 tertiary flakes
- 3 bone fragments, 1 burned

35-40 cm:
- 2 primary flakes
- 5 secondary flakes
- 9 tertiary flakes
- 1 charcoal fragment

40-45 cm:
- 2 grit body sherds, cr
- 2 primary flakes
- 1 secondary flake
- 2 tertiary flakes

U-2, 0-5 cm:
- 1 secondary flake

10-15 cm:
- 1 sand body sherd, fi?
- 1 scraper
- 11 secondary flakes
- 22 tertiary flakes
- 8 bone fragments, 3 burned
- charcoal fragments

15-20 cm:
- 1 shell body sherd, cr
- 4 grit body sherds, 2 smooth, 2 cr
- 1 triangular projectile point
- 1 bifacially retouched tool
- 2 shatter fragments
- 7 primary flakes
- 28 secondary flakes
- 54 tertiary flakes
- 109 bone fragments, 42 burned
- charcoal fragments

20-25 cm:
- 2 grit rim sherds: smooth, bossed
- 9 grit body sherds: 6 smooth, 3 exfoliated
- ceramic crumbs
- 1 corner-notched projectile point
- 3 primary flakes
- 60 secondary flakes
- 46 tertiary flakes
- 38 bone fragments

25-30 cm:
- 18 grit body sherds: 10 smooth, 8 exfoliated
- 1 shell? body sherd, exfoliated
- 1 ceramic crumb
- 1 utilized blade
- 4 primary flakes
- 21 secondary flakes
- 35 tertiary flakes
- 13 bone fragments
- 1 shatter fragment
- charcoal fragments

30-35 cm:
- 1 shist? biface/celt (midsection)
- 11 secondary flakes
- 2 tertiary flakes
- 4 bone fragments

type designation, the term has been used in that manner to refer to virtually any smooth-surfaced, mostly undecorated ceramics found in central Minnesota. At present, this classification is something of a "catch-all", with no firm association to any clearly defined cultural manifestation within the Middle Woodland period. Other sites in the Otter Tail River drainage that have yielded similar ceramics include the Morrison Mounds (21OT2), the Riverside Site (21OT99 - see discussion below), and the Graham Lake mound group (21OT5).

Organic materials were relatively common in excavation units, generally appearing in isolated clusters rather than as a diffuse scatter throughout the occupation strata. Materials that have been identified thus far include several complete or partial mandibles and loose teeth from mature deer, found in a constricted area in Unit #6. Fire-cracked rock was observed occasionally, although never in association with other evidence of a hearth or other feature.

Excavation unit locations were selected so as to avoid areas known to have been badly disturbed, such as waterline trenches. Recent debris was frequently encountered during excavation, much of it in conjunction with prehistoric materials. However, most of the historic material consisted of isolated items, and their presence did not seem to have been the result of any large-scale disruption of stratigraphy throughout the site area.

Management Recommendations

The site evaluation research conducted at 21OT97 has demonstrated the presence of a substantial deposit of prehistoric habitation materials that represent at least two occupation episodes. Occupation during the Terminal Woodland Period is indicated by the presence of shell-tempered Sandy Lake Ware sherds and a Blackduck Ware rim segment. An earlier occupation is reflected by large numbers of thick, smooth-surfaced body sherds and several smooth, bossed rim sherds tentatively classified as "Malmo".

Although there has been some disturbance to the cultural deposit at this site, it has not resulted in disruption of the total vertical extent of the habitation material. Most of the disturbance is confined to approximately the upper 10 cm, which appears to have been the location of most of the Sandy Lake and Blackduck deposits. This is illustrated by the concentration of shell-tempered sherds encountered in ST #14, which reflects grading of the hilltop or water-line trenching rather than primary deposition. Other disturbance consists primarily of the introduction of 20th century materials into the prehistoric occupation strata, probably as a result of the activities of resort visitors since the 1930s.

Preliminary analysis of the range and quantity of artifacts recovered thus far from 21OT97 suggest that the site may hold considerable potential for future research. The lithic assemblage includes a high percentage of exotic materials that appear to have been preferred materials for tool manufacture. Differential distribution of lithic material types within the site area may provide evidence regarding material-specific technological differences, which may be illuminated by the presence of finished tools in conjunction with the debitage.

The ceramic assemblage presents similar opportunities for study. This site appears to have potential for providing data relevant to clarifying the nature of Middle Woodland ceramic types and associated cultural manifestations in the Otter Tail County area. Further work at 21OT97 may make it possible to refine existing typologies or define new classifications that more accurately reflect Middle Woodland cultural traditions in the forest-prairie interface zone.

Discussions with DNR personnel have indicated that construction of an adequate access facility on this property can only be accomplished by excavation of all or most of the hill upon which the cultural deposit is situated. The steepness of the hillsides and the height of its crest make other plans for utilization of the area unfeasible, and it is necessary to make use of the eastern half of the property in order to expand the parking area to an acceptable size. This construction plan would result in complete destruction of the remaining intact portion of the site area.

When analysis of the site evaluation data is completed, it is anticipated that a recommendation will be made for further research at 21OT97 prior to access construction. This will likely take the form of extensive data recovery by means of large block excavations in the less-disturbed portions of the site area. DNR has been informed of this preliminary recommendation. A full report on the site evaluation research and formal recommendations for a third phase of work will be formulated sometime before the summer of 1989.

Otter Tail Lake/Riverside (21OT99) (SHPO Ref. #88-1739)

Location

South shore of Otter Tail Lake, at the lake outlet, about 5.5 miles north of Battle Lake, MN. DNR owns property on both sides of CSAH #72, which crosses the Otter Tail River at this point (see Figure 16).

Funding/Construction Status

No Federal funding was to be used for development of this facility. Construction took place in the fall of 1988.

Physiographic Province/Geomorphic Region

Alexandria Moraine Area (Wright 1972); Detroit Lakes Pitted Outwash Plain (Minnesota Soil Atlas Project-Brainerd Sheet 1981).

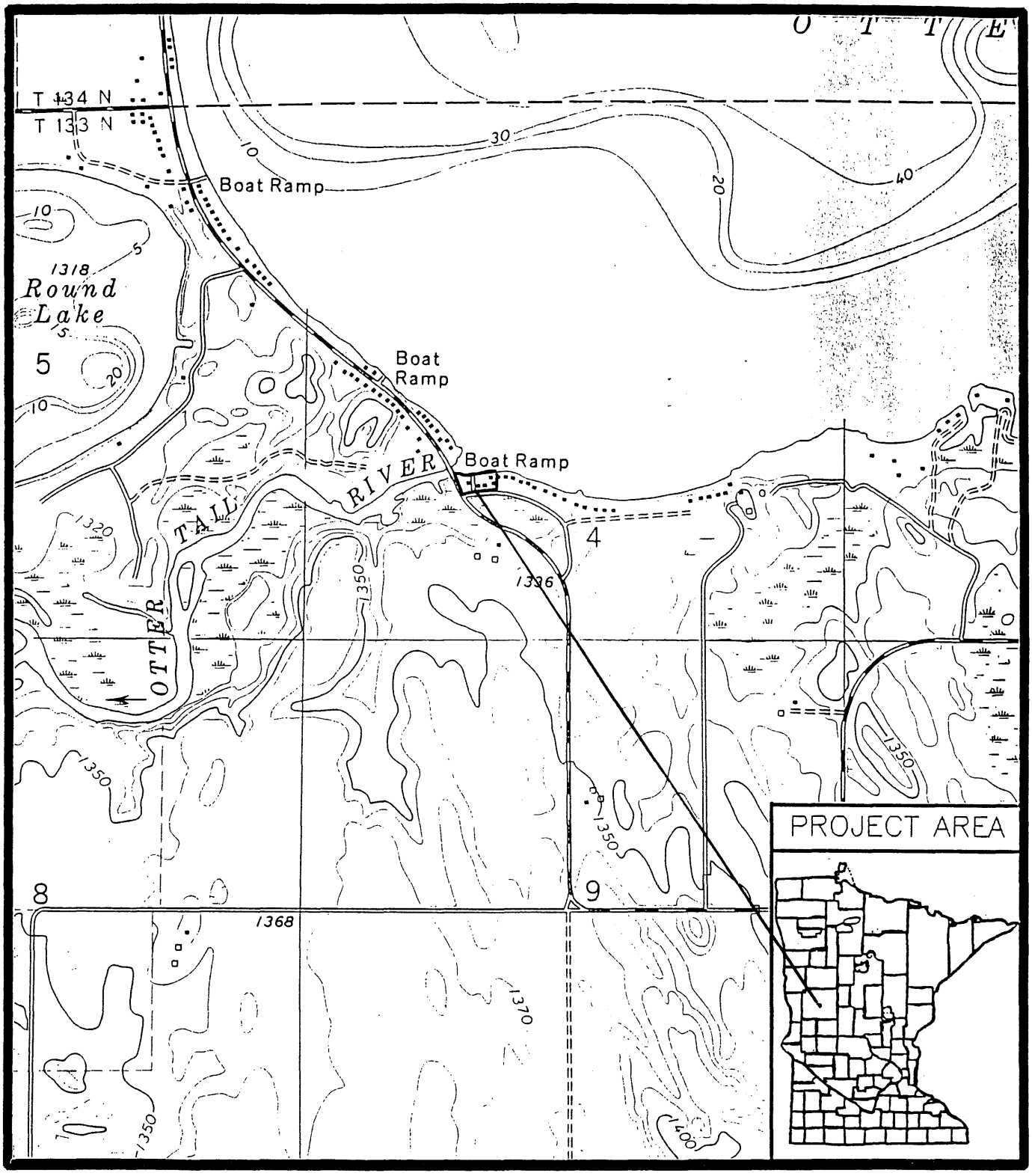
Scope of Project

DNR's construction project included work on both sides of CSAH #72. One aspect of the work was rehabilitation of the existing shorefishing access/parking area on the fill section west of the county road and south of the river. It was resurfaced and slightly expanded in size, and a fishing pier was installed. On the eastern side of the project area, a former private launch ramp was upgraded and a new 15-unit parking lot was built.

Description of Project Area

The western side of the project area is a sandy fill section bordered on the west and south by wetlands. It was created about 10 years ago when the CSAH #72 bridge over the Otter Tail River was replaced. DNR's property on the east side of the county road was formerly the Riverside Resort, purchased by the State in 1984. The far western edge of this parcel, where it is bordered by CSAH #72, is fill over wetland and beach sediments. The southern boundary of the property is formed by a township road ditch. The remainder of the parcel is a level beach ridge that rises 4 to 5 feet above the current lake level. Ground cover is grass, with a number of hardwoods scattered throughout the property. The old resort cabins and associated structures have been demolished (SHPO Ref. #W-114-122). Structural remnants still visible at the time of survey included eight concrete slab foundations, a stone fireplace, a dirt entry road and launch area, and several septic vaults (these were covered with fill by DNR when the structures were removed). A picket fence separates DNR's property from a line of private cabins to the east.

Figure 16. Otter Tail Lake/Riverside Project Area



USGS Battle Lake Quadrangle, 1973, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

Records Review

Previous surveys: there have been numerous investigations of prehistoric sites on the shores of Otter Tail Lake and the Otter Tail River, but none of these appears to have included formal survey of the property to be affected by this project. There was a survey conducted in 1984 in connection with installation of sewer lines for private residences around Otter Tail Lake. However, this was quite cursory in nature and did not include thorough testing of all areas to be disturbed by the construction.

Known sites: there are several known prehistoric habitation and burial sites in the vicinity of the project area. 21OT2 is the Morrison Mound group, which is listed on the National Register of Historic Places. The mounds are located on an upland ridge overlooking the Otter Tail River just downstream from the lake, about 650' from DNR's property. 21OT11 is another mound group in the uplands overlooking the lake about 800' southeast of DNR's property. An additional, previously unrecorded mound group has just been identified on the east shore of Deer Lake, about 1 mile west of the project area. 21OT73 is a habitation site on the north shore of Deer Lake, about 1.25 miles from DNR's property.

Field Review - Reconnaissance Survey

Methods: surface examination of cutbank exposures along water's edge; grid of shovel tests over entire eastern portion of the project area. Because the Project Engineer confirmed that the existing access area to the west of CSAH #72 is a fill section, no subsurface testing was conducted on that part of DNR's property.

Results: shovel tests on the former Riverside Resort property revealed the presence of a subsurface deposit of prehistoric habitation debris, confined to roughly the northeastern quarter of the project area (see Figure 17). Cultural materials were recovered from 5 contiguous shovel tests at depths ranging from 15 to 60 cm below the surface (see Figure 18). Shovel tests in the western half of the property were sterile; soil profiles indicated that the area between the existing entry road and the county road is a fill section.

The site area appears to correspond to a beach ridge formation that apparently has been stable for some time, since there are rather deeply developed soils in this area. The 1914 15-minute quadrangle map of the area was examined, but the topography of this location is difficult to discern because of the small scale of the map. The map does show a road running along the southern lake shore immediately at the water's edge, bordered by wetlands to the south. It is possible that this road was built on the tope of the beach ridge, as has been done in other locations around the lake.

The results of preliminary survey indicated that this property contains a prehistoric habitation area that is at least partially intact. Although a few diagnostic artifacts were recovered, they are all of very small size and it was difficult to clearly discern tempering material and surface treatment. Organic materials were fairly common in shovel tests, but only in fragmentary quantities. No evidence of intact features was noted. Although the density of materials was not particularly high, the vertical distribution was reasonably consistent, with the highest density of artifacts occurring between roughly 30 and 40 cm below the surface (see Figure 18). Since the distribution of positive shovel tests suggested that the area examined is the far western edge of the occupation area, it is possible that there is a more dense deposit of cultural materials on the private property to the east of DNR's property.

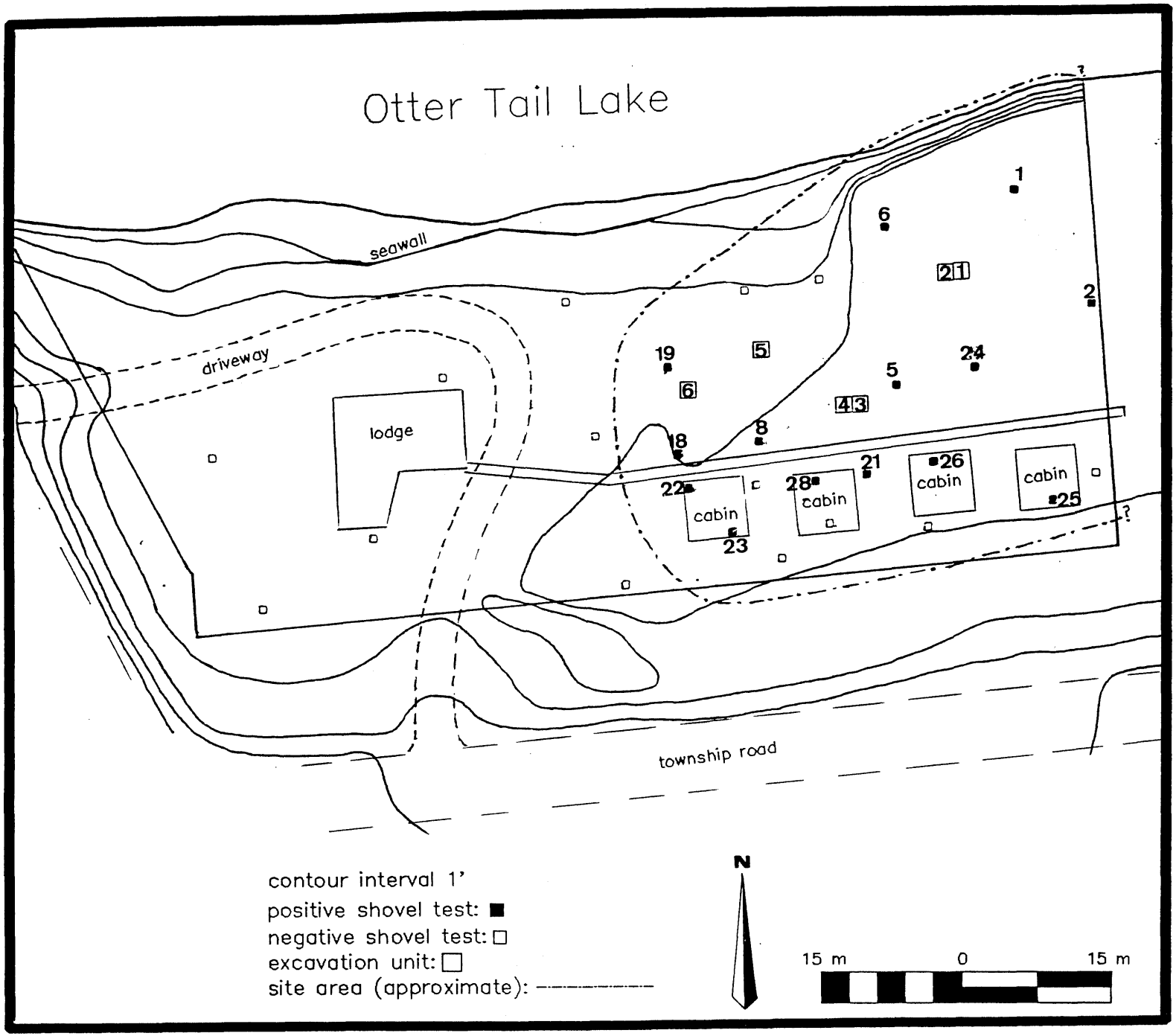


Figure 17. 21OT99 - Site Area

Figure 18. 21OT99 - Artifacts Recovered

SHOVEL TESTS

ST 1,	35-40 cm:	1 tertiary flake, thermally altered Swan River Chert
		1 bone fragment
ST 2,	30-35 cm:	1 grit body sherd, fabric-impressed
	40-45 cm:	1 grit body sherd, fabric-impressed
		1 fish bone fragment
		charcoal fragments
	45-50 cm:	1 secondary flake, thermally altered Swan River Chert
		1 secondary flake, quartzite
		1 bone fragment, burned
	50-60 cm:	1 grit body sherd, exfoliated
		1 tertiary flake, jasper taconite
		2 bone fragments: 1 burned turtle, 1 mammal
ST 5,	25-30 cm:	2 bone fragments: 1 burned, 1 fish
		1 charcoal fragment
	30-40 cm:	2 grit body sherds, smooth
		7 bone fragments: 1 turtle
		clamshell fragments
	40-50 cm:	3 bone fragments: 2 burned, 1 turtle
ST 6,	15-20 cm:	1 shatter fragment, quartz
		2 fish bone fragments
ST 8,	20-30 cm:	5 grit body sherds: 4 smooth, 1 exfoliated
		1 charcoal fragment
	30-40 cm:	1 grit body sherd, exfoliated
ST 18,	10-20 cm:	1 grit body sherd, smooth
	20-30 cm:	1 grit body sherd, surface indistinct
ST 19,	30-40 cm:	1 grit body sherd, exfoliated
ST 21,	50-55 cm:	1 grit body sherd, cr
		1 bone fragment
ST 22,	0-10 cm:	1 grit body sherd, smooth
	10-20 cm:	2 bone fragments: 1 fish, 1 burned
		charcoal fragments
	30-40 cm:	1 secondary flake, Tongue River Silica
	40-50 cm:	1 mammal longbone fragment, burned
ST 23,	0-10 cm:	1 grit body sherd, cr
		2 tertiary flakes, chert
		3 yellow ochre fragments
	10-20 cm:	1 bone fragment
	20-30 cm:	1 bone fragment
ST 24,	30-40 cm:	5 bone fragments: 1 fish
		3 ceramic crumbs
	40-50 cm:	2 mammal joint fragments
ST 25,	0-10 cm:	2 tertiary flakes, chert
		1 bone fragment
	10-20 cm:	1 primary flake, dark gray chert
		1 secondary flake, Hixton Quartzite
		1 grit body sherd, smooth
		2 bone fragments
	20-30 cm:	1 grit body sherd, smooth
		2 ceramic crumbs
		1 tertiary flake, chert
		1 tertiary flake, gray quartzite
		yellow ochre fragments
	30-40 cm:	1 secondary flake, chert
		yellow ochre fragments
	40-50 cm:	1 primary flake, chert
ST 26,	0-10 cm:	1 tertiary flake, Knife River Flint
		5 grit ceramic crumbs
	10-20 cm:	1 grit body sherd, smooth
		2 ceramic crumbs
		2 bone fragments: 1 burned
	20-30 cm:	1 tertiary flake, chert
		1 ceramic crumb
ST 28,	0-10 cm:	2 bone fragments
	10-20 cm:	1 tertiary flake, chert
		2 bone fragments: 1 fish
	20-30 cm:	3 bone fragments

EXCAVATION UNITS

U-1,	10-15 cm:	5 grit body sherds, smooth
		6 bone fragments: 1 turtle, 2 fish
U-1,	15-20 cm:	2 grit body sherds, smooth
		1 ceramic crumb
		1 secondary flake, chert
		6 bone fragments
		1 tooth fragment (C. canadensis)
U-1,	20-25 cm:	1 grit rim sherd, smooth
		2 grit body sherds: 1 smooth, 1 exf
		1 ceramic crumb
		20 bone fragments: 2 fish, 2 turtle, 3 burned
		charcoal fragments
U-1,	25-30 cm:	2 grit body sherds, smooth
		2 tertiary flakes: 1 Tongue River Silica, 1 chert
		19 bone fragments: 1 turtle, 4 fish

Figure 18, continued

U-1, 30-35 cm:
4 grit body sherds, smooth
1 ceramic crumb
1 tertiary flake, Tongue River Silica
13 bone fragments, 1 fish

U-1, 35-40 cm:
1 grit body sherd, cr
2 ceramic crumbs
15 bone fragments: 1 turtle, 5 fish, 1 burned

U-1, 40-45 cm:
1 primary flake, chert
1 tertiary flake, chert
7 bone fragments: 2 fish, 1 turtle

U-1, 45-50 cm:
1 primary flake, chert
4 bone fragments: 1 turtle, 1 fish

U-1, 50-55 cm:
9 bone fragments: 2 fish, 1 burned turtle

U-1, 55-60 cm:
1 turtle bone fragment

U-2, 10-15 cm:
2 grit body sherds, smooth
2 ceramic crumbs
13 bone fragments, 1 fish, 4 burned
charcoal fragments

U-2, 15-20 cm:
1 grit body sherd, cr
1 tertiary flake, chert
1 primary flake, chert
1 secondary flake, chert
16 bone fragments: 1 fish, 5 turtle

U-2, 20-25 cm:
1 tertiary flake, chert
18 bone fragments: 3 fish, 1 turtle
charcoal fragments

U-2, 25-30 cm:
2 grit body sherds, socr
1 ceramic crumb
1 tertiary flake: 1 quartzite, 1 utilized Knife River Flint
1 shatter fragment, chert
18 bone fragments: 3 fish, 2 turtle, 1 burned
charcoal fragments

U-2, 30-35 cm:
5 ceramic crumbs
1 primary flake, chert
1 tertiary flake, chert
26 bone fragments: 3 fish, 6 turtle, 1 burned fish, 1 mammal
charcoal fragments

U-2, 35-40 cm:
2 grit body sherds, smooth
12 bone fragments, 2 turtle
charcoal fragments

U-2, 40-45 cm:
1 ceramic crumb
9 bone fragments: 2 fish
yellow ochre fragments
charcoal fragments

U-2, 45-50 cm:
1 grit body sherd, smooth
2 turtle bone fragments

U-2, 50-55 cm:
1 grit body sherd, smooth
1 rodent mandible
5 bone fragments

U-3, 10-15 cm:
1 grit rim sherd, smooth, round lip
4 grit body sherds, smooth
1 tertiary flake, quartzite
12 bone fragments: 8 fish, 5 burned
charcoal fragments

U-3, 15-20 cm:
1 grit rim sherd, smooth
4 grit body sherds, smooth
2 tertiary flakes, chert
34 bone fragments: 6 fish, 2 bird longbone, 2 turtle, 10 burned
charcoal fragments

U-3, 20-25 cm:
8 grit body sherds, smooth
1 shatter fragment, thermally altered chert
25 bone fragments: 6 fish, 7 burned, 1 rodent, 1 turtle
1 charcoal fragment
yellow ochre fragments

U-3, 25-30 cm:
1 grit body sherd, smooth
25 bone fragments: 9 fish, 1 turtle, 4 burned
charcoal fragments
yellow ochre fragments

U-3, 30-35 cm:
1 endscraper, Knife River Flint
15 bone fragments: 4 fish, 1 mammal, 5 burned
charcoal fragments

U-3, 35-40 cm:
2 grit body sherds, smooth
1 tertiary flake, Knife River Flint, utilized
22 bone fragments: 7 fish, 1 bird longbone, 11 mammal, 1 burned
charcoal fragments

U-3, 40-45 cm:
1 secondary flake, white chert
10 bone fragments: 4 fish, 2 burned
charcoal fragments

U-3, 45-50 cm:
1 grit body sherd, smooth
19 bone fragments: 9 fish, 1 turtle, 1 burned turtle, 2 burned

U-3, 50-55 cm:
6 fish bone fragments, 1 fish

Figure 18, continued

U-4, 5-10 cm:
1 grit neck sherd, smooth, curved
1 grit body sherd, smooth
1 bone fragment

U-4, 10-15 cm:
7 grit body sherds, smooth
1 grit body sherd, smoothed-over cr
1 secondary flake, white chalcedony
1 secondary flake, quartz
1 mammal tooth fragment
21 bone fragments: 5 fish, 2 bird longbone, 4 burned
charcoal fragments

U-4, 15-20 cm:
6 grit body sherds, smooth
1 ceramic crumb
19 bone fragments: 6 turtle, 11 fish, 11 burned
1 yellow ochre fragment
charcoal fragments

U-4, 20-25 cm:
1 grit rim sherd, smooth, incised
4 grit body sherds: 3 smooth, 1 exf
1 tertiary flake, Knife River Flint
21 bone fragments: 9 fish, 2 turtle

U-4, 25-30 cm:
2 grit body sherds, smooth
29 bone fragments: 5 fish, 1 burned fish, 3 turtle, 3 burned turtle
charcoal fragments

U-4, 30-35 cm:
3 grit body sherds, smooth
1 secondary flake, quartzite, utilized
11 bone fragments: 4 fish, 3 burned turtle, 1 burned fish, 1 mammal
charcoal fragments

U-4, 35-40 cm:
1 grit body sherd, smooth
1 secondary flake, jasper
26 bone fragments: 21 fish, 1 mammal longbone, 4 burned
charcoal fragments

U-4, 40-45 cm:
1 grit body sherd, faint trailing
1 secondary flake, thermally altered Swan River Chert
23 bone fragments: 15 fish, 1 turtle, 5 burned turtle, 1 mammal, 1 burned
charcoal fragments

U-4, 45-50 cm:
1 grit rim sherd, smooth, incised
5 grit body sherds, smooth
9 bone fragments: 8 fish, 1 bird longbone
1 charcoal fragment

U-4, 50-55 cm:
2 grit body sherds, smooth
22 bone fragments: 15 fish, 2 turtle, 3 burned fish, 1 burned turtle, 1 bird longbone

U-5, 10-15 cm:
6 grit body sherds: 3 smooth, 3 exf
2 shatter fragments, Swan River Chert
5 bone fragments: 1 fish
charcoal fragments

U-5, 15-20 cm:
1 secondary flake, chert
1 tertiary flake, Swan River Chert
5 bone fragments, 1 fish
charcoal fragments

U-5, 25-30 cm:
2 grit body sherds, socr
4 bone fragments
charcoal fragments

U-5, 30-35 cm:
1 grit body sherd, smooth
3 bone fragments

U-5, 35-40 cm:
1 grit body sherd, exfoliated
3 bone fragments
charcoal fragments

U-5, 40-45 cm:
5 fish bone fragments
1 charcoal fragment

U-5, 45-50 cm:
1 fish bone fragment

U-5, 55-60 cm:
2 grit body sherds, smooth

U-6, 10-15 cm:
1 grit body sherd, faint trailing

U-6, 15-20 cm:
6 grit body sherds: 5 smooth, 1 exf

U-6, 20-25 cm:
1 grit body sherd, smooth
2 tertiary flakes: 1 quartz, 1 jasper taconite
2 bone fragments

U-6, 25-30 cm:
1 grit body sherd, faint cr
1 secondary flake, gray chert

U-6, 30-35 cm:
1 bone fragment

U-6, 35-40 cm:
1 grit body sherd, socr
1 bone fragment, burned

U-6, 45-50 cm:
1 grit body sherd, smooth

Figure 18, continued

	Shovel Tests	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	TOTALS
rim/neck sherds	-	1	-	2	3	-	-	6
body sherds	20	16	9	20	33	12	11	121
ceramic crumbs	x	x	x	-	x	-	-	-
SUBTOTAL CERAMICS	20	17	9	22	36	12	11	127
shatter fragments	1	-	1	1	-	2	-	5
primary flakes	2	2	2	-	-	-	-	6
secondary flakes	5	1	1	1	5	1	1	15
tertiary flakes	11	4	5	4	1	1	2	28
tools	-	-	-	1	-	-	-	1
SUBTOTAL LITHICS	19	7	9	7	6	4	3	55
fish bone fragments	7	19	14	58	98	8	-	204
turtle bone fragments	3	9	19	6	25	-	-	62
other bone	34	73	87	105	60	18	4	381
charcoal	x	x	x	x	x	x	-	-
ochre	x	-	x	x	x	-	-	-
SUBTOTAL ORGANICS	44	101	120	169	183	26	4	647
TOTALS	83	125	138	198	225	42	18	829

The Program Archaeologist was not notified that this project was scheduled for construction until after design work had been completed and bids were being accepted. Immediately after reconnaissance survey was completed, DNR was informed of the existence of the site and told that additional fieldwork should be conducted before any construction work started. DNR's proposed construction plan included a number of items that could damage the cultural deposit, including removal of trees and structural elements. Therefore, additional research was considered necessary in order to determine more clearly the size, nature and current condition of the site, its spatial relationship to the area that will be disturbed during construction, and to define the probable magnitude of the adverse effect caused by construction of the proposed public access facilities. After the results of preliminary survey were reported to appropriate agencies, a plan for evaluation of the site was formulated. The contractor was notified that work could not begin until site evaluation was completed and appropriate management strategies were identified.

Site Evaluation

Limited formal testing of this site, recorded as 21OT99, was conducted in July of 1988. This research consisted mainly of excavation of 6 square meters within the site area to further define the dimensions and content of the cultural deposit. (Materials recovered from these excavation units are listed in Figure 18.) During this phase of work, several on-site meetings were held with DNR personnel to define specific work items in the proposed development that would adversely affect the site area.

The artifact assemblage recovered during intensive testing is not a significant departure from the quantities and types of materials collected during preliminary survey. The majority of the materials are organics, primarily small fragments of bone and charcoal. The only identifiable bone fragments are from fish and turtles and, while their association with the cultural materials is not absolutely certain, the density of these items in excavation units did appear to rise and fall consistently with the presence or absence of lithics and ceramics.

Diagnostic items consist exclusively of ceramics that are for the most part smooth-surfaced, undecorated, moderately thick (c. 2.5 to 6 mm) body sherds tempered with finely crushed granite and small proportions of sand. Five rim segments were recovered, most of which are quite small. They are all of similar design: slightly rounded lips, either straight or very slightly everted rims, and no decoration except short oblique incised "slashes" on the interior of the lip in one case and on the exterior below the lip in another case. Two of the body sherds recovered show faint traces of trailing over a smooth surface.

The morphological attributes of the recovered ceramics suggest that they fall into the ceramic type known as "Malmo", a Middle Woodland ware designation derived from Wilford's description of ceramics from the Malmo site at Lake Mille Lacs (Wilford 1944). Its use in this context is colored to some extent by the fact that materials recovered from the nearby Morrison Mounds were designated Malmo. A 1969 publication (Wilford, Johnson & Vicinus 1969:21-25) describes the few sherds retrieved during Wilford's 1937 excavations as smooth-surfaced, tempered with coarse grit and averaging 8 mm in thickness. The only finished tool found during evaluation at 21OT99 was a Knife River Flint endscraper; two similar artifacts were found at 21OT2, one during surface reconnaissance and one possibly in association with an intrusive burial in Mound #13.

If there is an association between these two sites, the possibility arises that the occupation of 21OT99 was contemporaneous with the construction of those

mounds. A radiocarbon date of 690 B.C. was obtained for charcoal taken from one of the mounds, which became the basis for this group being designated "the oldest known burial mounds in Minnesota". This date, however, has never been corrected according to present standards for interpretation of such data, and it appears somewhat early in light of current work on the Middle Woodland period in Central Minnesota. More recent estimates place Malmo ceramics between roughly 200 B.C. and A.D. 200 (Anfinson 1979:137-141).

The overall density of artifacts in the excavated areas is quite low; if organic remains are not considered, the average number of artifacts recovered per 5-centimeter unit level excavated ranges from a low of 1.17 for Unit 6 to a high of 3.58 for Unit 4. Most of the material was concentrated between 25 and 40 cm below the surface. Virtually every artifact recovered at 50 cm or deeper was in association with some sort of recent disturbance, either a rodent run or root mold, which made their provenience open to question. The lower artifact densities observed in excavation units close to the edge of the fill section may reflect the edge of the main occupation area. The overall low artifact frequencies, however, make any hypotheses about the causes of differential recovery rates very difficult to support.

The artifactual evidence does not suggest multiple components at this site, so the concentration of material apparently reflects either a single occupation episode or multiple occupations by the same group within a relatively brief time span. While such a circumstance might afford an opportunity for better understanding of a discrete cultural manifestation without the complications introduced by mixing of debris from widely disparate occupations, the utility of 21OT99 for this purpose is limited by a number of factors. The probable loss of a portion of the site area to recent erosion along the lakeward edge of the beach ridge, other forms of disturbance from resort operation that were evident in excavation units, very low artifact densities, and poor preservation of ceramic and organic materials combine to reduce the possibilities for detailed analysis of this site.

Management Recommendations

Because DNR planned to use no Federal funding for this project, determination of this site's eligibility for nomination to the NRHP was not necessary prior to formulation of a management plan. It should be stated, however, that the results of testing do not seem to indicate that the site would qualify for such designation. Although a case could not be made for leaving the site completely untouched, it did seem to have some limited potential for future research, assuming eventual refinements in our ability to interpret disturbed or limited archaeological deposits.

After the results of site evaluation were presented to DNR, Water Access Program staff agreed to incorporate a number of construction restraints in the project plan, in order to reduce irreversible damage to the site. The following items were made part of the construction specifications:

- trees to be removed would be cut and stumps would be chipped instead of grubbed out;
- remaining structural elements would be left in place wherever possible; removal of other items (concrete cabin foundation slabs and a brick fireplace) would be accomplished in the least disruptive manner possible, under the supervision of the Program Archaeologist. An opportunity would be afforded for additional shovel testing in the cabin locations after slabs were removed, in order to check for continuation of the cultural deposit along the southern edge of the property.

- proposed installation of wooden posts to restrict traffic flow would be changed to placement of boulders as parking lot and road boundary markers.
- the eastern parking area would be built entirely on fill placed over filter fabric, which would be laid down on top of the existing vegetation.
- shoreline stabilization would be accomplished by placing rip-rap along the existing cutbank, with no backsloping.

These procedures were discussed with the contractor during an on-site meeting prior to the start of construction. The Program Archaeologist monitored the initial stages of construction, during which concrete foundation slabs were broken in place and the pieces removed by backhoe. After the slabs had been removed, additional shovel tests were dug inside the areas that had been covered. The old ground surface was readily discernible in these locations below a layer of sand, and did not appear to have been too badly disrupted by cabin construction. A few artifacts were recovered from each of these tests, confirming the suspicion that the cultural deposit does extend to the back (landward) side of the old beach ridge formation. Construction of the access facility was completed during the fall of 1988.

Star Lake (SHPO Ref. #88-1675)

Location

Northeast corner of the lake, adjacent to a township road, about 5 miles southwest of the City of Dent, MN (see Figure 19).

Funding/Construction Status

This project was to be funded wholly or partially from U.S. Coast Guard grants. Construction took place in the summer of 1988.

Physiographic Province/Geomorphic Region

Alexandria Moraine Complex (Wright 1972); Detroit Lakes Pitted Outwash Plain (Minnesota Soil Atlas Project-Brainerd Sheet 1981).

Scope of Project

Development of new Public Water Access facilities. Project plans included a 12-unit parking area, a grass overflow lot for 5 vehicles and a concrete plank ramp. An existing access road was to be used for ingress/egress to the parking lot. Because the northern half of the property has a very steep slope, some hillside excavation was necessary, but the majority of the construction involved fill placement on lowlands.

Description of Project Area

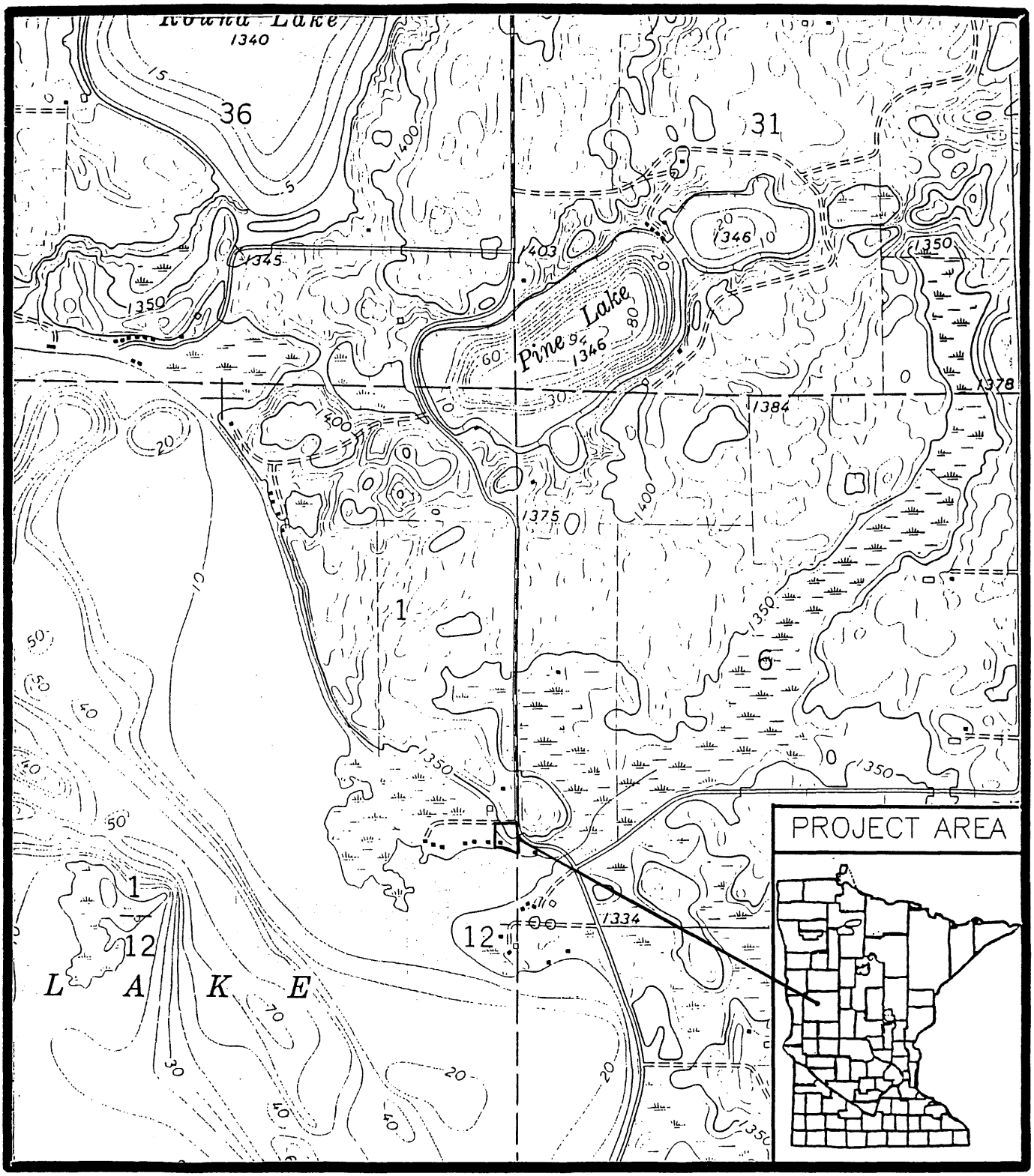
The parcel was formerly privately owned, and a summer cabin and other outbuildings were present at the time of survey. The southern half is very low (maximum elevation about 3' above the current lake level) and the northern half consists of the steep sideslope of a high ridge, the crest of which is about 30' above the lake. The hillslope is wooded; the rest of the property was residential lawn with a few shade trees and brush along the shoreline.

Records Review

Previous surveys: the only cultural resource survey known to have been done in the vicinity of the project area was Lucking's (1977) review of prehistoric sites in Otter Tail County, which involved no formal field research.

Known sites: there are two known prehistoric sites in the vicinity of Star Lake: 21OT75, a group of burial mounds on the north shore of Dead Lake, about 3 miles from

Figure 19. Star Lake Project Area



USGS Star Lake Quadrangle, 1973, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

DNR's property, and 21OT85, a single burial about 300' west of OT75.

Field Review
Methods: grid of shovel tests over proposed development area. The only portion of the property that had any surface visibility was the hillside, which was briefly examined.

Results: in the lower part of the property, soils were sandy to sandy clay loams over coarse sand and beach sediments with very mucky organic soils appearing in some locations. In the higher areas, sandy loams with a slightly higher clay content overlay coarse sand and till. No cultural materials were found in any shovel test or during surface examination.

Management Recommendations
It appeared that the proposed development would not affect any significant historic resources. It was recommended that construction proceed as planned.

Pope County

Lake Minnewaska/Eagle's Point (SHPO Ref. #89-0561)

Location
Small peninsula on the northeast shore of the lake, within the City of Glenwood, MN (see Figure 20).

Funding/Construction Status
This project may involve funding partially reimbursable from the Federal Aid in Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service. Construction was scheduled for the fall of 1988; work was to be done by the Pope County Highway Department during a curb & gutter project along the adjacent County Road.

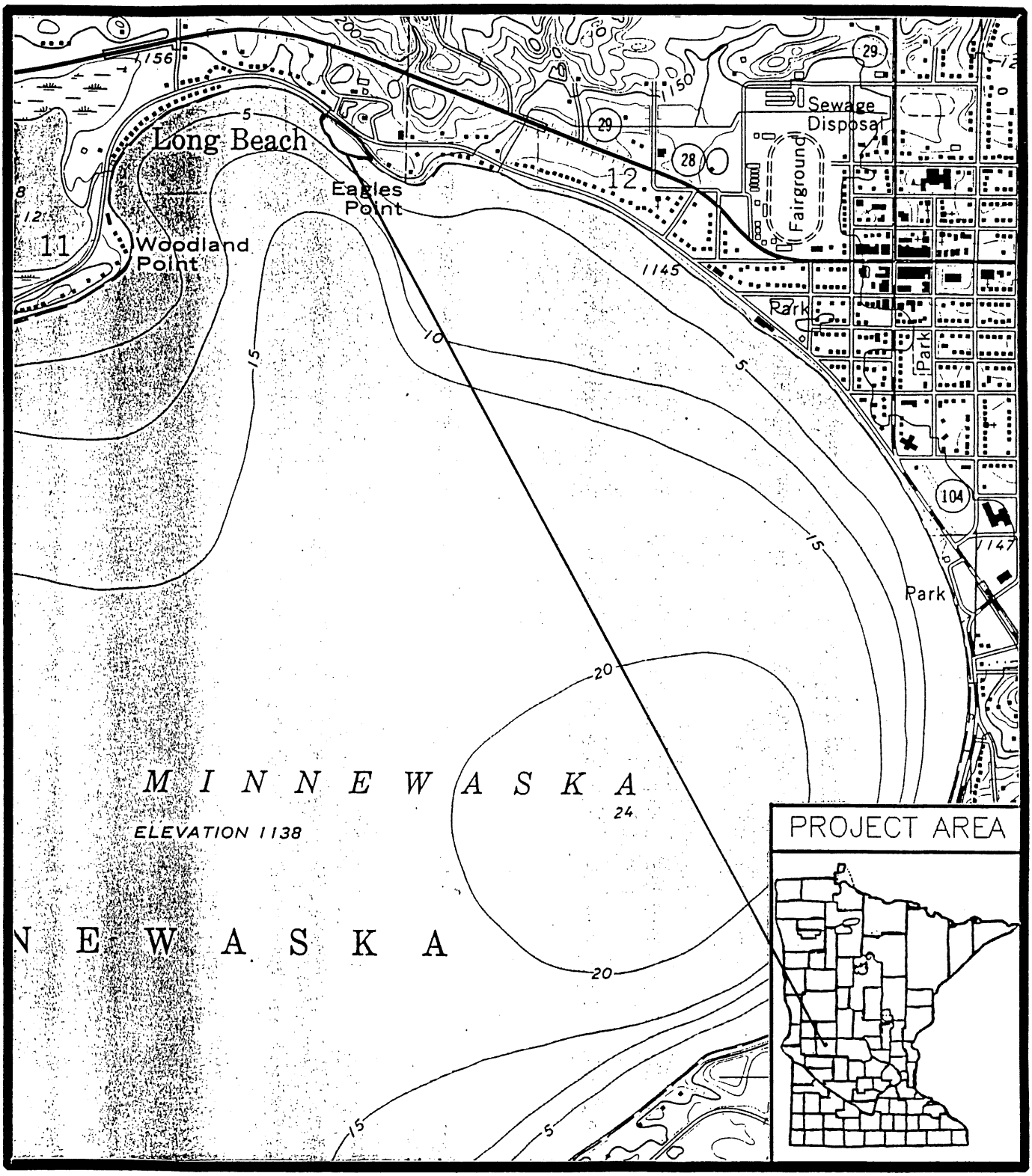
Physiographic Province/Geomorphic Region
Alexandria Moraine Area (Wright 1972); Alexandria Moraine Area; Belgrade-Glenwood Outwash Plain adjoins (Minnesota Soil Atlas Project, St. Cloud Sheet, 1975).

Scope of Project
Rehabilitation of existing Public Water Access at Eagle's Point, on the north shore of Lake Minnewaska. Existing facilities included a gravel-surfaced parking area and a single concrete plank ramp. DNR entered into a cooperative agreement with the County to have the parking area re-surfaced and new ramps installed. The work would not involve any expansion beyond the current boundaries of the facility.

Description of Project Area
Eagle's Point is a small peninsula that has been extensively altered by residential construction and DNR-Fisheries operations. The area in which the current access is located was excavated for hatching ponds by Fisheries when they established the Glenwood Hatchery. The ponds were later filled in to create the access parking lot. The lakeward edge of the existing lot is a concrete retaining wall from which the control structures for filling and emptying ponds still protrude.

Records Review
Previous surveys: the County-Municipal Highway Archaeologist was consulted regarding cultural resource review of the proposed county road work. He indicated that design

Figure 20. Lake Minnewaska/Eagle's Point Project Area



USGS Glenwood Quadrangle, 1968, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

information received from the County Engineer showed that all work would be confined to the existing alignment, so no field review was necessary. There have apparently not been any other formal cultural resource surveys in the immediate vicinity of the project area.

Known sites: there are a number of prehistoric habitation and burial sites around Lake Minnewaska, most of which are located in the uplands overlooking the lake. Additionally, the WPA "Historic Markers and Mounds Survey" cites the Registrar of Deeds Office as its source in stating that "Eagle's Point" is so named "because an Indian named Eagle is buried there". If this is accurate, any gravesite in the access area would have been long ago destroyed by construction of the hatching ponds.

Management Recommendations
Because of the existing facilities in the project area, and its history of past disturbance, no formal field survey was considered necessary. It appeared that the proposed access rehabilitation would not affect any significant resources. A recommendation was made that construction proceed with no additional review.

REGION II - NORTHEAST

St. Louis County

Lake Superior/Brighton Beach (SHPO Ref. #89-1080)

Location
On the shore of Lake Superior, at the northeastern edge of Duluth, MN. The project area is within Brighton Beach, a Duluth City Park (see Figure 21).

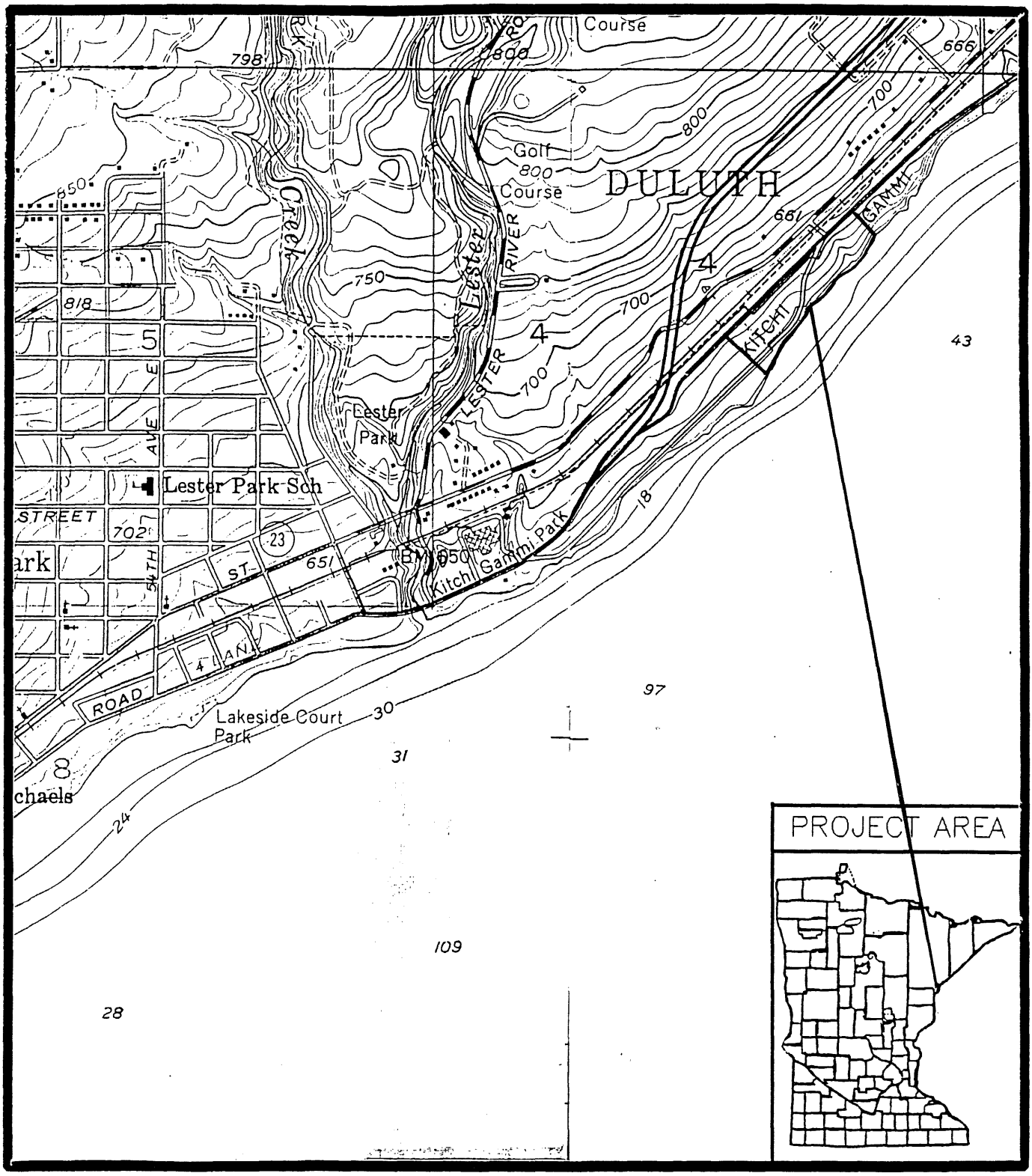
Funding/Construction Status
DNR has entered into a cooperative agreement with the City of Duluth for development of a new Lake Superior harbor facility. The City will retain ownership of the property and be responsible for maintenance after construction; DNR will handle all project planning and provide necessary funding. It is anticipated that construction costs will be covered by funds derived from a variety of sources, including LCMR and U.S. Coast Guard grants. Development costs are estimated to be approximately $5 million; construction is tentatively scheduled to begin sometime during 1989.

Physiographic Province/Geomorphic Region
Glacial Lake Duluth Area (Wright, 1972); Nemadji-Duluth Lacustrine Plain (Minnesota Soil Atlas Project, Duluth Sheet, 1977).

Scope of Project
This project proposes development of a new Lake Superior harbor facility for commercial and sport fishing. A preliminary construction plan for this project (prepared by Warzyn Engineering of Minneapolis) shows multiple launching ramps, one main parking area and two auxiliary lots that will accommodate a total of approximately 150 vehicles, entry and access roads, dockage, a breakwater, and restroom facilities. The total area to be affected by construction is approximately 17,500 square feet in size.

Description of Project Area
The project area is a narrow strip of sloping land located between the bedrock-lined

Figure 21. Brighton Beach Project Area



USGS Duluth 1953 & Lakewood 1953 Quadrangles, 7.5 minute series enlarged x 1.42; scale approximately 1:17,000

lakeshore and the northbound TH #61 grade. Brighton Beach has been maintained as park land by the City for about 65 years. Currently, a bituminous roadway splits off from London Road just southwest of the junction with TH #61, transverses the park parallel to the lakeshore, and curves up to meet the highway about 1.5 miles further to the northeast. The area between this park road and the highway grade is wooded; there are several stands of planted pine, but aspen and birch predominant. Undergrowth is quite dense in some parts of the wooded park land, although the City has recently started clearing underbrush. The narrow strip of land between the park road and the lake is mostly developed for public use: several picnic shelters, fire grates, restrooms, paved parking areas and benches are located here. The City property northeast of the end of the park road is densely wooded; it contains no formal park facilities but is occasionally used by park visitors.

DNR plans to use the northeastern third of the park for harbor development. This includes the densely wooded northern section and a portion of the developed park area southwest of the northern end of the park road. Construction will include re-routing of the existing park road to provide separate entrances for park and harbor traffic.

The soils in the project area developed from lacustrine sediments deposited in the Superior Basin by Glacial Lakes Nemadji and Duluth during the retreat of the Superior Lobe at the end of the Wisconsin glaciation. At one time, the level of Glacial Lake Nemadji was as much as 500' higher than the present level of Lake Superior, which is approximately 612' AMSL. As outlet channels opened and the water level dropped, Glacial Lake Duluth was formed with an initial elevation of about 1,010'. Continued drainage to the east finally lowered the lake to approximately its current elevation, leaving a narrow band of former lakebed below the Superior Highlands. Holocene rebound of bedrock compressed by ice sheets has resulted in the lands adjacent to the lake basin rising 35 to 40 feet since the end of the Pleistocene.

Topography in the project area alternates between small but deeply-incised ravines perpendicular to the lakeshore and gently sloping ridges between the ravines. Micro-relief is irregular, especially in the wooded northern portion of the project area, with occasional exposed erratics, tree-fall depressions and small drainage channels occurring on the ridges. There are only a few bedrock outcrops in this portion of the park; soil boring data provided by DNR's engineering consultants indicate that the depth to bedrock in most of the project area is 5 to 20 feet.

Records Review

Previous surveys: there have been no formal cultural resource surveys in the vicinity of Brighton Beach. The closest survey area is the I-35 re-alignment currently under construction near downtown Duluth, which was reviewed by the Trunk Highway Survey. The present alignment of TH #61 near Brighton Beach Park was completed prior to inception of that program.

Known sites: there are no recorded prehistoric sites within a 1-mile radius of the Brighton Beach; the closest known sites are on Park Point near downtown Duluth. The only recorded historic resources near Brighton Beach are standing structures; the nearest of these is a stone picnic shelter in the park, constructed during the 1930s, that is listed in the St. Louis County Standing Structures file maintained by SHPO. This shelter will not be affected by the proposed harbor development. (The WPA-era date for this shelter is noted in the SHPO files as an unconfirmed estimate. It is supported, however, by a photograph in the County Historical Society Archives, dated 1932, that shows the shelter under construction.)

Field Review
Methods: grid of shovel tests over entire development area; surface reconnaissance in selected areas.

Results: Soil profiles observed in shovel tests consisted of a fairly thin dark reddish-brown clay loam "A" horizon over dense reddish-brown sandy silt and clay. This is consistent with the soils data provided by DNR's consultant: the only variation from this profile noted in the boring logs is the occasional presence of a stratum of brown fine sand and rock fragments overlying the bedrock.

No materials indicative of a prehistoric occupation of the project area were found in any shovel test. In the wooded area at the northeast end of the park, small historic-era trash dumps or single items of debris were noted intermittently. None of these were in association with anything suggestive of an *in situ* historic occupation. At the southwestern end of the proposed development area, however, a number of surface features were noted that at first seemed to be indicative of a historic occupation site. After the entire subsurface test grid was completed, additional research was focused on this area.

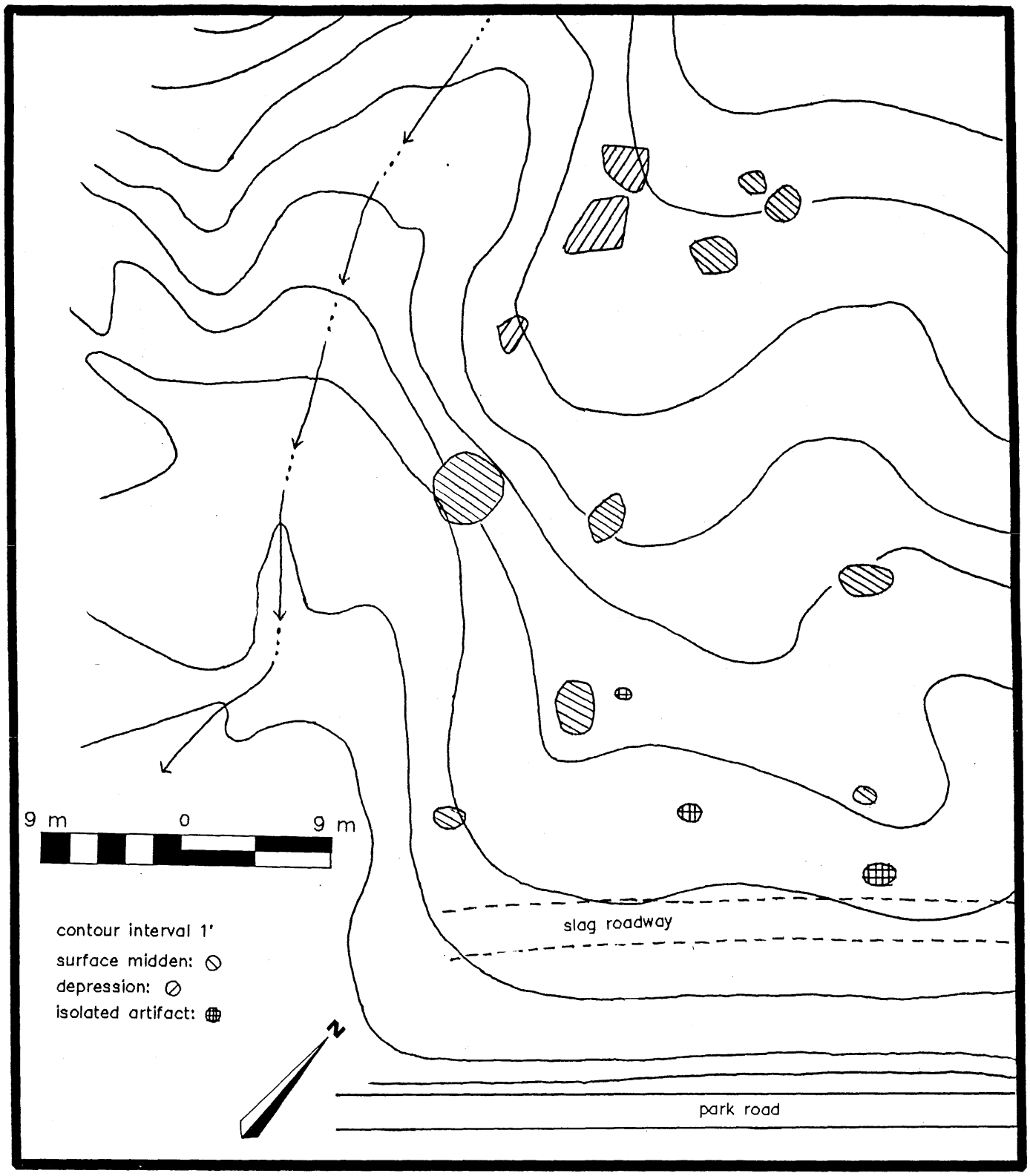
The area in which the surface features were found, as shown in Figure 22, is on the landward side of the park road, across from a parking and picnic area. It had been recently cleared of brush, and is vegetated with scattered birch and aspen, most of which appear to be less than about 30 years old. One of the features noted is a segment of old park road or trail, the bed of which is composed of cinders, coal clinkers, ash and other combusted materials. The raised grade of this road is clearly visible in several parts of the park, especially at the far southern end where it can be traced to the edge of the existing highway grade. In all areas where it is visible, this road runs parallel to the new bituminous park road on the landward side of it.

Other features encountered at the southeastern end of the proposed development area included several obviously artificial depressions, 2 to 4 feet deep, and a number of trash heaps. These middens were variable in length and breadth but averaged 1 to 1.5 feet in height. They were composed of the same slag-like material used for the old roadbed, with a mixture of broken and whole bottles, crockery and other debris on the surface of all but a few of the middens. Examination of these materials showed that virtually all of the items date between roughly the late 1880s and the 1920s.

After these features were noted, intensive surface reconnaissance was conducted over the entire ridge, the adjacent ravines and on the ridgetop just to the north. Grass cover here is rather sparse, so surface visibility was quite good. A small number of additional isolated bottles or portions of bottles were found on the surface of the southernmost ridge. Two items were also recovered from locations adjacent to the old roadbed, but the rest did not appear to have an association with that feature. Nothing else was found in any other portion of the surface reconnaissance area.

The locations of all middens, isolated surface materials, artificial depressions and the old park road were mapped with reference to construction grid stakes laid out in the project area by DNR's project consultant. Diagnostic items were then collected from the middens and bagged separately for each location. Additional shovel tests were done adjacent to some of the middens and depressions to check for subsurface materials. No additional cultural materials were found in these shovel tests, and no evidence of disturbance of natural soil stratigraphy was

Figure 22. Brighton Beach - Surface Features



noted. A shovel test adjacent to one of the depressions did not show any berming or disturbance around its periphery. One test was dug into the top of a midden, showing that it consisted of a layer of slag on top of an "A" horizon identical to that observed in the rest of the project area.

A comprehensive list of the recovered materials has not yet been compiled, but an overview of the assemblage will provide an indication of the range of items and the time period they appear to represent. Probably the most common items were shards of light green glass from round-bottom bottles, which were commonly used after about 1880 for storage of soda water and other carbonated beverages. These bottles were made to be used with what is known as a "Hutchinson stopper", a wire loop attached to a rubber gasket, which was pushed down into the bottle to release its contents. (Several bottle tops with portions of these stoppers still in the necks were also retrieved from the surface middens.) Because of their rounded bases, the bottles had to be stored on their sides, which kept liquid in constant contact with the gasket to maintain an air-tight seal. The Hutchinson stopper was in fairly common use until the introduction of the "crown-cork" in the 1920s (Munsey 1970:104-105).

Recovered portions of other types of beverage bottles include a number of bases embossed "Jacob Ries Co. Shakopee", a manufacturer in operation under that name from 1880 until about 1910, and eventually to become the Rock Spring Bottling Company (Feldhaus 1986:99). A variety of typical unembossed wine and spirit bottles were also found, the majority of which show evidence of having been hand-finished, which dates them prior to the wide-spread use of fully automatic bottle-making machines in the 1920s. Only two bottle bases were found that bear pontil marks dating them to the pre-1880 period.

Several examples of embossed bottles from the patent medicine genre were also recovered; these include about half of a small blue bottle labeled "DeWitt's Colic & Cholera Cure", a nostrum produced from 1886 until the 1920s (Fike 1987:97). The ubiquitous Lydia Pinkham is also represented by portions of two bottles, one of which includes a partial embossed description that appears to read "Vegetable Compound". The shoulder and neck portion of another dark blue bottle has "Take next dose at ↑" embossed on a flange just below the neck. This may have had some sort of movable collar around the neck which could be turned so the arrow pointed to the appropriate hour. Materials other than bottle fragments were less common; these include some small fragments of deep blue transfer ware, part of a light blue hand-painted mustache cup, shards from brown and tan glazed crockery, several porcelain fragments apparently from a bisque doll, a blue enamel cooking pot, and the top portion of a small hurricane lamp chimney. The only items of hardware found in the area were a black glass door knob and one half of a heavily rusted door latch of the "Norfolk" type, commonly used in the latter half of the 19th century.

Information about the possible origin of this material was solicited from City personnel, none of whom were familiar with it or had any explanation for its presence. A suggestion was made that it was material simply dumped in this location from elsewhere. Although possible, it did not initially seem that this was a likely explanation, since the middens are located on the crest of a ridge. Trash is much more commonly thrown into a low spot of some sort, and there is a suitable gully within a few feet of the middens. Their presence on the height of the ridge seemed to suggest that they were disposal points chosen because of their proximity to a building.

Information about public ownership and use of the property was requested via

Mr. William Majewski, a City Planner who is coordinating the harbor development with DNR. Unfortunately, he related that the City does not have documentation of the history of this park readily available, and attempts to find individuals who had much knowledge about it were unsuccessful. The archives of the St. Louis County Historical Society were then consulted. The results of this research did not provide any definitive explanation for why the observed materials were present, but it did allow for elimination of some possibilities.

During this phase of research, maps, plats, newspaper clippings, monographs and other miscellaneous materials were reviewed for evidence of a late 19th century occupation in the project area. The process of building a chronological record of property ownership and use was complicated by changes in nomenclature over time. The present London Road/TH #61/North Shore Drive is also represented as Highway #1 or Congdon Boulevard on some maps, and the TH #61 alignment shown on a mid-1930s map corresponds to what is now the Brighton Beach park road. The park area itself was platted as "Lester Park 4th Division" as of 1890, but is not shown with any structures on an 1893 plat, and appears as park land under various names on later maps. Written references to areas under the jurisdiction of the City Park System are also inconsistent in describing the names and locations of parks along the lakeshore at the northeast end of the city.

The most useful items found during the archival research were a series of documents relating to the Duluth City Park System, which apparently was something of a model for municipal recreational development in the early part of this century. An article published in "Parks & Recreation" Magazine (Vol. VI, No. 4, March-April 1923) extols the virtues of the City's extensive park system, and refers to "Brighton Beach Park, on the shore of the lake, at the easterly end of the city....". Another reference is found in an anonymous item dated August 24, 1926 that contains a list of city parks. This refers to "Brighton Beach" as being a 48 acre park east of 62nd Avenue East on the lakeshore. Although there are no longer any numbered streets east of the Lester, the street closest to the west bank of the river is 60th Avenue, which would put this park area in the same location as the current Brighton Beach. Another name for that location is introduced in a 1927 monograph on the Duluth Park System, which notes "The existing parks offer other opportunities for development, particularly North Shore Park (east of the Lester River) and Congdon Boulevard." Both of these are contradicted by a newspaper article published on March 16, 1930, which provides a summary of the history of the Park System. It does not include "Brighton Beach" or "North Shore" Park in the list, but does mention "Kitchi Gammi Park, [acquired] 1890-1922, along Lake Superior from the Lester River to the city limits". This is consistent with a mid-1930s map, which shows the land between the railroad and the lake east of the Lester as "Kitchi Gammi Park". However, a 1924 plat of the City shows the same area as "Edgeshore Park Division", with the small parcels on the lakeward side of Congdon Boulevard platted as Outlots "A" and "E". (The USGS Duluth and Lakewood Quadrangles, printed in 1953 and photorevised in 1969, do show the area as "Kitchi Gammi Park".)

The overall impression gained from the materials reviewed is that the property now known as Brighton Beach was not the focus of commercial or residential development at any time during the history of the City of Duluth. Its appearance on several maps under various park names suggests that it served, informally at least, as a common recreational area even before it was officially part of the City Park System. The contradictory references from the 1920s and 1930s are probably a reflection of local usage, which frequently includes the appearance over time of multiple terms for a single location - especially common areas such as parks.

The only permanent structure in the vicinity that appears on any of the maps reviewed at the Historical Society Archives is the East Lester Railroad Station, which was in existence in 1890 and is shown as a brick structure on an 1893 plat, but does not appear on a 1904 map of Minnesota railroads. The station is shown adjacent to the railroad tracks on the 1890 map, and assuming that the tracks are still in the same location, that would place the building some distance north of the current park boundaries (probably under what is now northbound TH #61) and completely out of DNR's project area.

Management Recommendations

The precise origin of the surface features located during field survey of this project area has not been determined, but the weight of the accumulated evidence indicates that they do not represent any sort of intact archaeological deposit that contains any further research potential. If there had been one or more structures in this location that have been demolished or otherwise removed, one would expect to find construction materials - nails, roofing, window glass, various items of hardware - somewhere in the vicinity. As mentioned above, the only two items of this type recovered from the surface middens were a doorknob and part of a door latch.

Given the apparent long-term use of this area as park land, a possible explanation for the presence of this assemblage of materials that suggests itself. The artificial depressions on the ridge may mark the former locations of outhouses built for the use of park visitors. They are set back some distance from both the road and the lakeshore, and would have been quite inconspicuous before the brush was cleared off the ridge. Structures of this type are normally not particularly substantial, and can be constructed without the need for any sort of permanent foundations. It would also be possible to remove or demolish them without leaving much evidence of their presence, and they would not be likely to appear on any but the most detailed maps of the park area. The trash heaps scattered on the surface may be materials dredged from these latrines, mixed with slag that was used either as a settling or covering material in the latrine pits or as surfacing for pathways. They might also represent a trash dumping area used by park visitors as a matter of tradition during that time period. Many of the items found in the area reflect the types of things that picnicking park visitors might be expected to have with them: mineral water; beer, wine and other spirits; homemade items in canning jars; plates, cups, medicine bottles. The outhouses or the area around those structures would have been convenient disposal points for these items, especially if there were heavy brush cover over most of the ridge at that time. The appearance of isolated materials scattered about the ridge might reflect displacement by more recent park visitors.

This hypothesis is consistent with the time span represented by most of the materials found in the area, the unbroken condition of many of the items, and the lack of evidence of permanent structures in the area. The time range represented by the majority of the bottles also corresponds to the written reference to Kitchi Gammi Park and its acquisition by the City between 1890 and 1922. If, after 1922, the entire Brighton Beach area was being developed as a more formal park area, existing facilities might have been moved or replaced. If this explanation is correct, the recovered items may be considered a representative sample of common bottles and household items from that period, but do not hold any other significant historic value. The fieldwork already done at Brighton Beach essentially exhausted its research potential. Although what remains of the middens and the depressions will be affected by the proposed construction of the harbor entry road and parking area, there did not seem to be sufficient reason to suggest consideration of

alternatives that would avoid them. It was recommended that the project proceed as currently planned with no additional review.

Elephant Lake (SHPO Ref. #88-1665)

Location

Southeast end of the lake, about 8 miles north-northeast of Orr, MN. The property is within the boundaries of Superior National Forest, but is owned by the State of Minnesota (see Figure 23).

Funding/Construction Status

It was anticipated that funding for this project would derive wholly or in part from a Coast Guard Boating Safety Program grant. Construction took place in the summer of 1988.

Physiographic Province/Geomorphic Region

Border Lakes Area (Wright, 1972); Tower-Ely Glacial Drift & Bedrock Complex (Minnesota Soil Atlas Project, International Falls Sheet, 1981).

Scope of Project

Construction of new Public Water Access facilities on property owned by DNR-Division of Forestry, within the boundaries of Superior National Forest. Design elements included a 10-unit parking area, access road, back-down area and concrete plank ramp. Steeply sloped portions of the project area were to be recontoured for the parking area.

Description of Project Area

The project area is on the north side of the lake outlet, Elephant Creek, which flows into the Vermilion River about 5 miles to the east. At least half of the project area has a slope of 30% or greater, bordered to the north (away from the lake) by a level terrace about 15' above the lake level. There are numerous bedrock exposures throughout the project area, which is mostly spruce-tamarack forest.

Records Review

Previous surveys: The only formal cultural resource survey in the vicinity of Elephant Lake was a survey of timber sale compartments south and east of the lake, done by Superior National Forest in 1986.

Known sites: USFS surveys in the Superior National Forest have resulted in identification of a number of cultural resources close to Elephant Lake:

#66-18-068 S. 23, sawmill
#66-18-069, S. 25, historic Indian camp
#66-18-067, S. 15, historic Indian camp
#66-18-120, S. 14, prehistoric habitation
#66-18-149, S. 22, homestead
#66-18-267, S. 31, logging camp
#66-18-268, S. 32, logging camp
#66-18-269, S. 15, prehistoric habitation

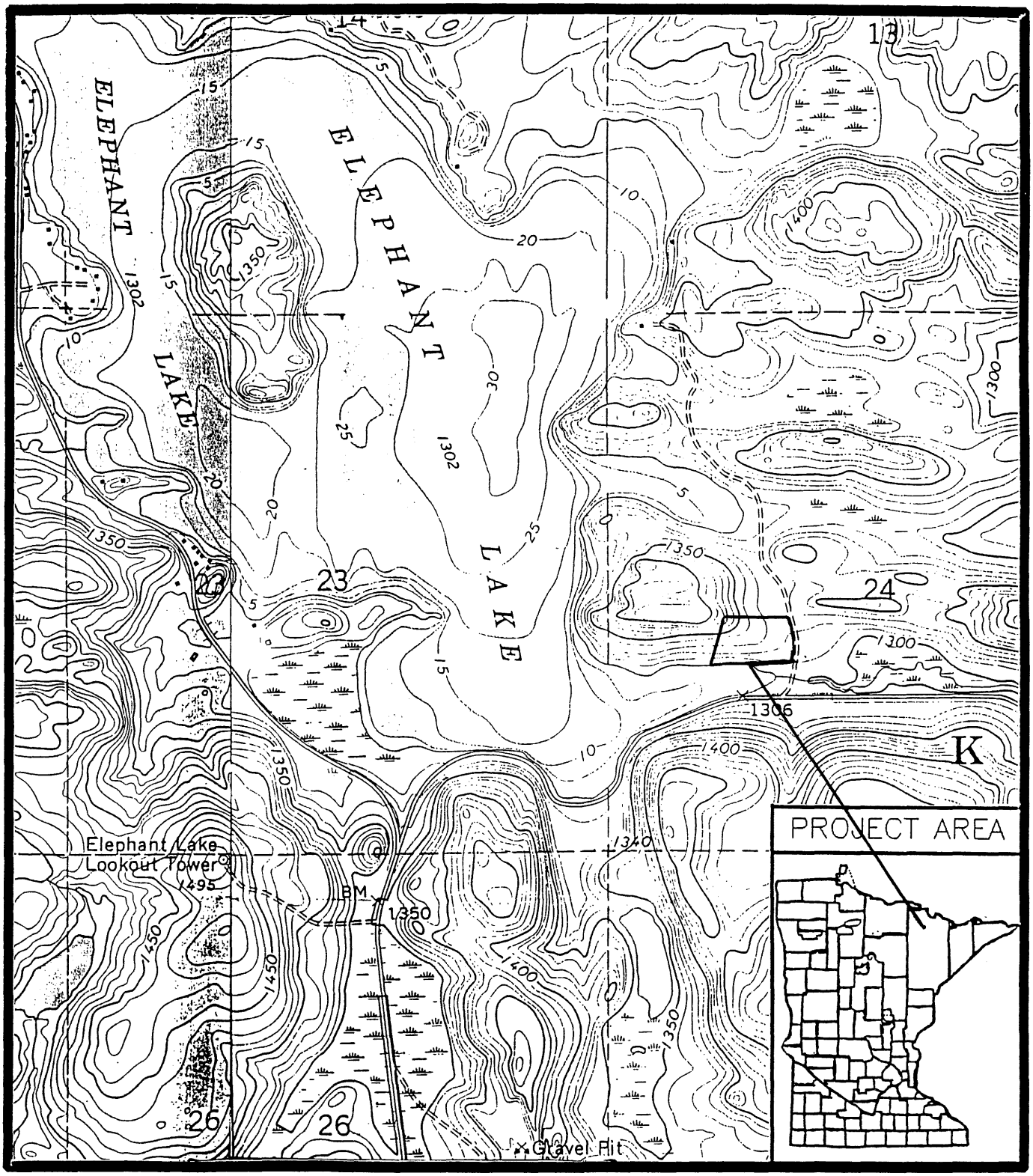
In addition to these sites, the MHS county files note an unnumbered prehistoric habitation site in Sec. 14. None of these sites is within DNR's project area, and none would be affected by access construction.

Field Review

Methods: Surface examination of rock exposures and shoreline, shovel tests in level areas with no rock exposure.

Results: Most of the project area has a pronounced slope, but there are a few narrow, level benches at various heights above the lake. These benches were examined

Figure 23. Elephant Lake Project Area



USGS Orr NE 1968 & Elephant Lake 1967 Quadrangles, 7.5 minute series enlarged x 1.42; scale approximately 1:17,000

for cultural materials on surface and in shovel tests dug in areas where bedrock is not exposed on the surface. In every shovel test, rock was encountered below no more than 15 cm of grayish-black clay loams, mottled gray clay and glacial drift. No cultural materials were found anywhere on the property.

Management Recommendations
It appeared that the proposed development would not affect any significant prehistoric or historic resources. A recommendation was made that construction proceed as planned with no additional review.

St. Louis River/Rice's Point (SHPO Ref. #89-0602)

Location
"Reclaimed land" beneath an approach to the Blatnik Bridge (T.H. 535\53) between Duluth and Superior, WI, on the western side of Duluth Harbor (see Figure 24).

Funding/Construction Status
This project may involve funding partly reimbursable from the Federal Aid in Sportfishing Restoration Fund administered by the U.S. Fish & Wildlife Service. Construction is scheduled for the spring of 1989.

Physiographic Province/Geomorphic Region
Glacial Lake Duluth Area (Wright, 1972); Nemadji-Duluth Lacustrine Plain (Minnesota Soil Atlas Project, Duluth Sheet, 1972).

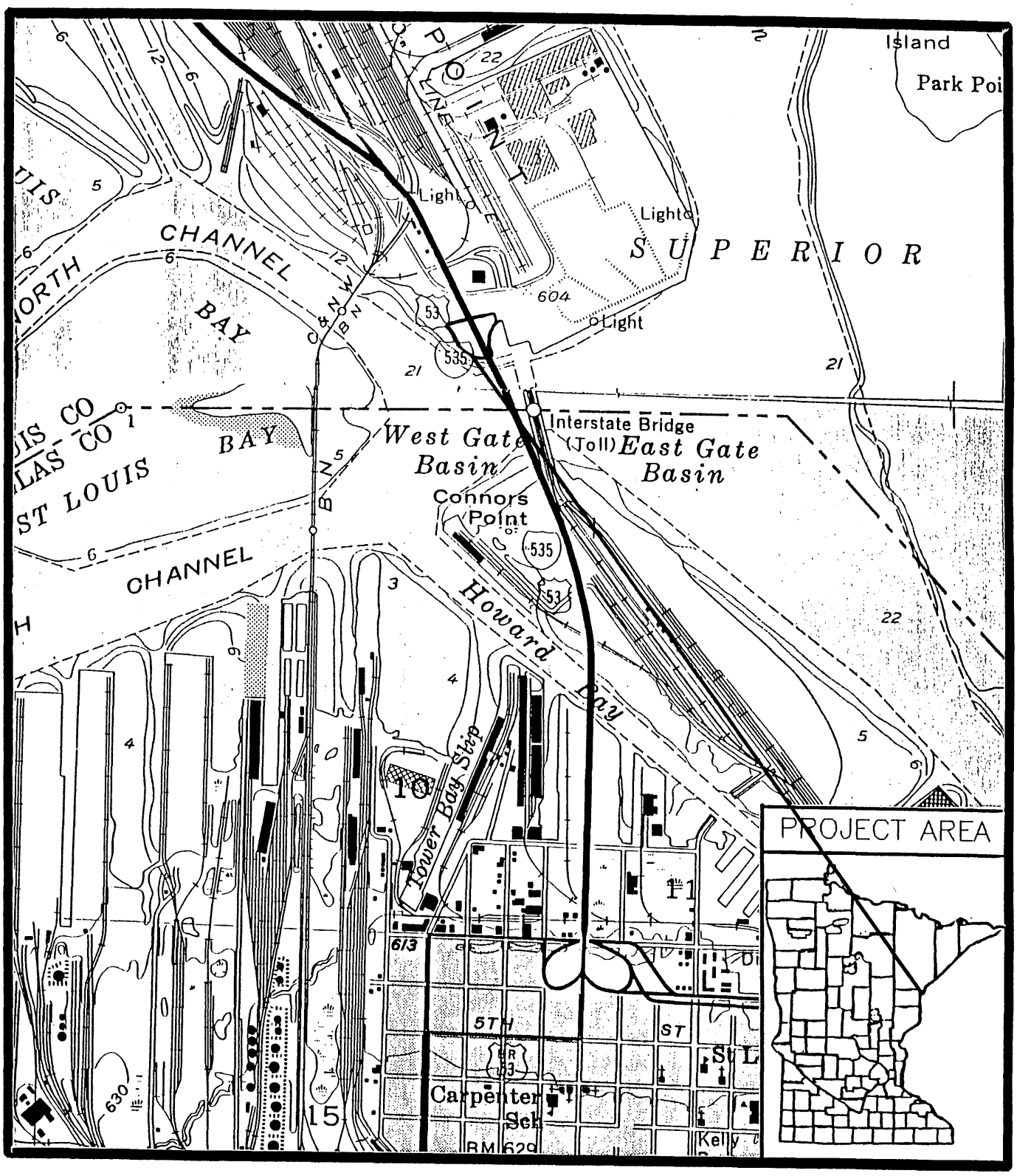
Scope of Project
Rehabilitation and expansion of existing Public Water Access facility. The existing parking lot will be expanded in size to add 37 parking spaces, an additional double ramp and permanent dock will be installed, and the entire parking area will be covered with bituminous surfacing.

Description of Project Area
The project area is entirely within a fill section in Duluth Harbor. Because this is within the T.H. 535/53 right-of-way, DNR obtained a special-use permit from MnDOT in 1983 for construction of an access when the Blatnik Bridge was built.

Field Review
The Trunk Highway Archaeologist reviewed DNR's permit request prior to construction of the existing access facilities, and confirmed that the entire project area is artificial land. It was concluded that the work would not affect any significant historic or prehistoric resources, and no further review was recommended.

Management Recommendations
Plans for the proposed expansion provided by DNR show that the additional work will also be entirely within the reclaimed area. It therefore should not affect any significant prehistoric or historic resources. A recommendation was made that the project proceed with additional review.

Figure 24. St. Louis River/Rice's Point Project Area



USGS Duluth 1953 & Superior 1953 Quadrangles, 7.5 minute series enlarged x 1.42; scale approximately 1:17,000

REGION III - CENTRAL

Benton County

Little Rock Lake (SHPO Ref. #88-0864)

Location

North and south banks of Little Rock Creek at the outlet of Little Rock Lake, about 10 miles north of St. Cloud, MN (see Figure 25).

Funding/Construction Status

This project may involve funding partially reimbursable from the Aid in Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service. Construction is tentatively scheduled for the summer of 1989.

Physiographic Province/Geomorphic Region

Brainerd-Automba Drumlin Area (Wright, 1972); Crow Wing Outwash Plain (Minnesota Soil Atlas Project, St. Cloud Sheet, 1979).

Scope of Project

Development of new Public Water Access facilities. Current construction plans include a 24-unit parking area, concrete plank ramp and 250' of new entrance road. Work will include recontouring of a substantial portion of the State property on the north bank of Little Rock Creek. A shorefishing area may also be developed on the south side of the creek, although no plans for this work have yet been drawn.

Description of Project Area

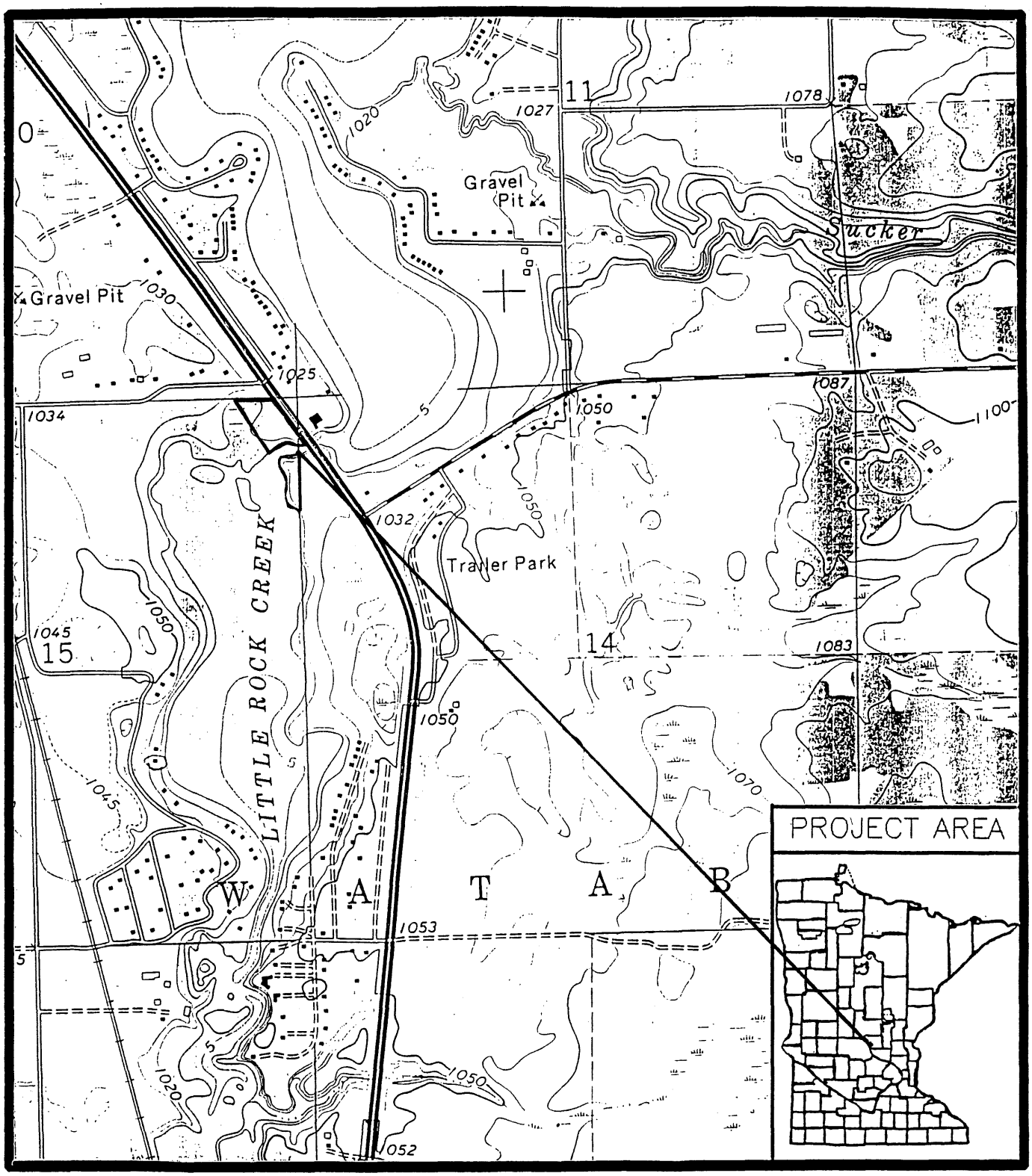
DNR's property consists of two parcels: 6.5 acres on the north side of Little Rock Creek, adjacent to TH #10, and 2.5 acres on the south side of the creek, bounded on the west by the creek and on the east partly by TH #10 right-of-way and partly by private property. The northern part of the property was previously a farmstead; concrete foundations from several structures are still visible, although the buildings themselves were demolished before the State purchased the property. The remainder of the northern parcel and all of the southern parcel were either pasture or cultivated land before purchase by the State. The private property on the south side is pine plantation.

Both the northern and southern portions of the property have been in use recently as shorefishing access points; on both sides of the creek there are user-created dirt entry roads and parking areas. Other disturbance to the property has been caused by installation and maintenance of buried telephone cable and an NSP gas pipeline which run along the highway right-of-way. Installation of the pipeline was discovered in-progress by the Program Archaeologist during the summer of 1988. Disturbance to the area was most evident from excavation of the pipeline trench, but heavy machinery traffic also caused disturbance of the very sandy soils on DNR's parcel north of the creek. On the south side, the length of the western backslope of the highway ditch was graded off by NSP (this area is mostly on private property but does include a small part of DNR's parcel). DNR was not notified of the planned work adjacent to its property, and the Trunk Highway Archaeologist indicated that MnDOT did not submit NSP's application for work in the right-of-way for cultural resource review.

Records Review

Previous surveys: no evidence was found of any formal cultural resource surveys in

Figure 25. Little Rock Lake Project Area



USGS Little Rock Lake Quadrangle, 1974, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

the vicinity of the project area. The current alignment of TH #10 was constructed in the 1960s, before the Trunk Highway Survey was in operation.

Known sites: unnumbered habitation area and 54 mounds along the south-southeastern side of Little Rock Lake; mounds excavated in 1937 by John Allman of St. Cloud; no other known sites within a 1-mile radius of the project area. (SAO has received a request for authentication of these mounds from the current landowner, who is contemplating subdivision of the property. Field examination of the mound group may be done in 1989.)

Field Review

Methods: in the northern parcel, examination of cutbank along creek and surface exposures; grid of shovel tests over proposed construction area. On the south side of the creek, the area disturbed by NSP's pipeline installation was examined for surface materials. Part of this surface reconnaissance area is on DNR's property, part is within the TH #10 right-of-way, and part is on private property.

Results: prehistoric cultural materials were recovered from 15 of 21 shovel tests on the north side of the creek; a few artifacts were also found on surface exposures where heavy machinery had disturbed the ground. In addition, a thin but continuous scatter of cultural materials was observed south of the creek along the area of pipeline disturbance (see Figure 26). These two areas have been recorded as separate sites: Little Rock Lake North (21BN8) and Little Rock Lake South (21BN9).

Within the proposed construction area, artifact depths in shovel tests were variable, ranging from the upper 10 cm to approximately 80 cm below the present surface (see Figure 27). Horizontal distribution is consistent, with only one positive shovel test not adjacent to other positive test locations. Soil stratigraphy was variable, mainly in regard to the depth of the black sandy loam "A" horizon, which ranged from 38 to 115 cm in depth. In some shovel tests, this stratum was covered by 10 to 30 cm of recent fill. The source of this material is not certain, but it may have been deposited as a result of highway construction or pipeline installation. Most of the recovered cultural materials were found within the very dark sandy loam horizon or just at its interface with a lighter sandy loam stratum. Evidence of rodent activity was noted in a few shovel tests, but was difficult to discern because of the dark color of the soils.

Management Recommendations

Reconnaissance survey of this property resulted in identification of a prehistoric habitation area, designated **21BN8**, on the north side of Little Rock Creek, within the area proposed for development. Artifacts recovered during survey do not include any diagnostic materials except a few very small ceramic sherds which are grit-tempered and appear to have cord-roughened surfaces. These artifacts indicate a temporal placement within the Woodland period, but do not suggest any more specific cultural affiliation. The majority of recovered materials are waste flakes, predominantly quartz, although a small percentage of the debitage is thermally altered Tongue River Silica. Virtually no organic material was recovered, and no features were encountered in shovel tests. The present assemblage is typical of the types of materials recovered from Woodland habitation sites in Central Minnesota. The cultural deposit extends to a maximum depth of 80 cm below the surface, but might represent a single occupation stratum from which artifacts have been vertically displaced by freeze-thaw cycles and rodent activity, which is usually common in such very sandy soils.

Figure 26. 21BN8 & 21BN9 - Site Areas

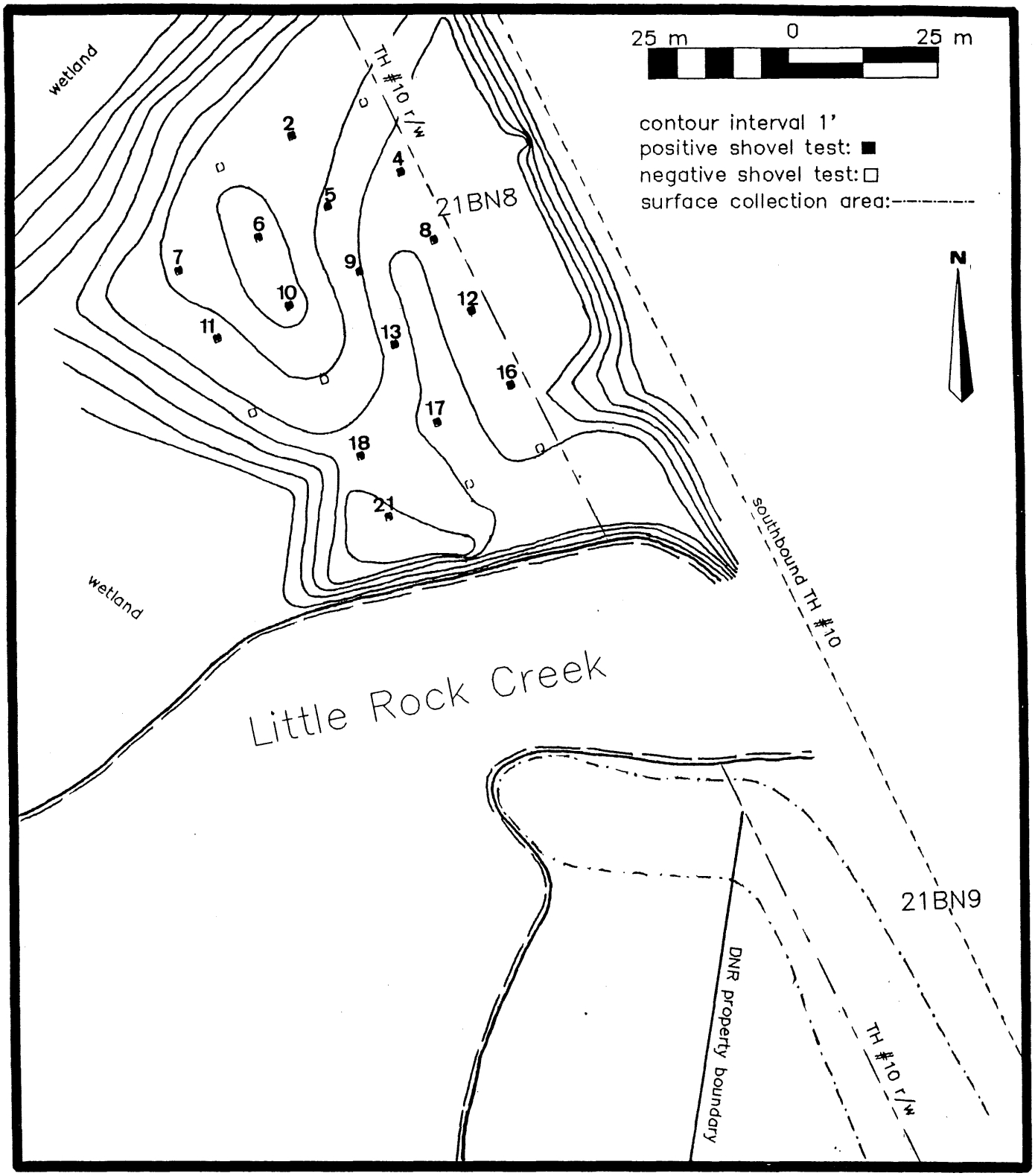


Figure 27. 21BN8 & 21BN9 - Artifacts Recovered

21BN8 (Little Rock Lake North)

ST 2, 10-20 cm: 1 shatter fragment, quartz
30-40 cm: 1 secondary flake, quartz
50-60 cm: 1 shatter fragment, quartz
ST 4, 20-30 cm: 1 shatter fragment, quartz
ST 5, 20-30 cm: 1 grit body sherd, cr
60-70 cm: 1 primary flake, Tongue River Silica
ST 6, 30-40 cm: 1 secondary flake, Lake Superior Agate
1 shatter fragment, chert
2 tertiary flakes: siltstone, Tongue River Silica
1 ceramic crumb
ST 7, 60-70 cm: 2 shatter fragments, quartz
1 clamshell fragment
ST 8, 20-30 cm: 3 tertiary flakes, quartz
ST 9, 50-60 cm: 1 secondary flake, Tongue River Silica
ST 10, 0-10 cm: 1 secondary flake, Tongue River Silica
10-20 cm: 1 shatter fragment, quartz
20-30 cm: 2 secondary flakes: quartz, siltstone
1 shatter fragment, chert
30-40 cm: 1 shatter fragment, quartz
1 secondary flake, Tongue River Silica
40-50 cm: 3 shatter fragments, quartz
50-60 cm: 1 secondary flake, Tongue River Silica
1 shatter fragment, quartz
1 tertiary flake, siltstone
60-70 cm: 1 secondary flake, jasper taconite
1 bone fragment, burned
70-80 cm: 1 secondary flake, quartz
1 shatter fragment, quartz
ST 11, 0-10 cm: 1 shatter fragment, quartz
10-20 cm: 2 secondary flakes, Tongue River Silica
30-40 cm: 3 secondary flakes: 1 quartz, 2 Tongue River Silica
40-50 cm: 2 secondary flakes: chert, Tongue River Silica
60-70 cm: 1 secondary flake, Tongue River Silica
ST 12, 0-10 cm: 1 grit sherd, cr
10-20 cm: 1 secondary flake, chalcedony
ST 13, 30-40 cm: 2 ceramic crumbs
ST 16, 0-10 cm: 1 shatter fragment, quartz
10-20 cm: 1 ceramic crumb
ST 17, 0-10 cm: 1 shatter fragment, quartz
ST 18, 20-30 cm: 1 secondary flake, quartz
ST 21, 50-60 cm: 1 grit body sherd, cr

21BN9 (Little Rock Lake South)

Surface: 1 sidescraper, chert
1 biface, argillite
21 shatter fragments, quartz
5 primary flakes: 2 quartz, 1 chert, 1 flint, 1 Swan River Chert
21 tertiary flakes: 16 quartz, 3 Tongue River Silica, 1 Swan River Chert, 1 Hixton Quartzite
3 retouch flakes, quartz
1 fire-cracked rock fragment

Preliminary survey of this project area did not yield sufficient evidence to make a reasoned judgment about the site's probable significance to the study of Central Minnesota prehistory. It is likely that development of the proposed public access facility would adversely affect the site because it will include leveling of existing contours within the site area. Since DNR does not presently have any plans for development of the southern portion of their property, no work needs to be done at the site on the south side of the creek (21BN9) at this time.

Further work at 21BN8 is necessary to clearly define the nature and research value of the cultural deposit before a decision can be made about appropriate management strategies. It has been recommended that site evaluation be conducted before development proceeds. This work would consist of additional shovel testing as necessary to precisely define the boundaries of the site area, and excavation of formal test units within the site area to obtain a larger sample of cultural materials, investigate the extent of disturbance to the deposit, and define the site's cultural stratigraphy. The work would probably involve excavation of between 6 and 12 square meters, and would take place in the spring or early summer of 1989. Because construction of a new entry to the proposed access facility may encroach on the TH #10 right-of-way, DNR may be applying to MnDOT for a special-use permit. The Trunk Highway Archaeologist has been notified of the results of this survey and DNR's possible need to obtain a permit for construction in the right-of-way. Any work deemed necessary through the Trunk Highway Survey would be coordinated to the extent possible with the work to be done on DNR's property.

Crow Wing County

Round Lake (SHPO Ref. #88-0863)

Location

South shore of the lake, about 2 miles north of Garrison, MN (see Figure 28).

Funding/Construction Status

This project involved no Federal funding or permitting. Construction took place in the fall of 1988.

Physiographic Province/Geomorphic Region

Brainerd-Automba Drumlin Area, Sugar Hills-Mille Lacs Moraine Area adjoins to west (Wright, 1972); Automba Drumlin Area, Crow Wing Outwash Plain adjoins immediately west of project area (Minnesota Soil Atlas Project, Duluth Sheet, 1975).

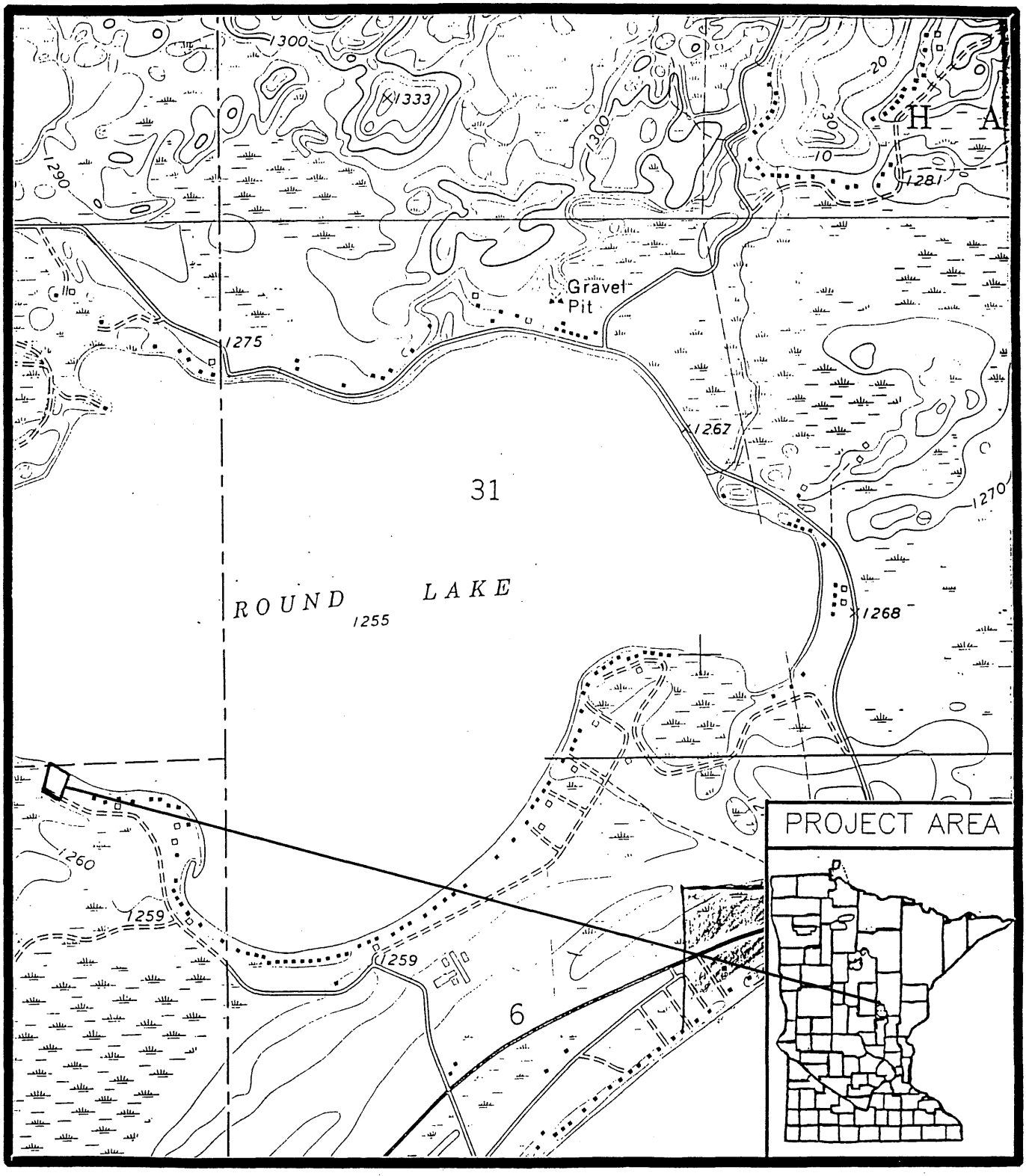
Scope of Project

Development of new Public Water Access facilities. Facilities include an 8-unit parking area and concrete plank ramp, built by the Regional Maintenance Crew under the supervision of the Area Manager. Development is confined to the western side of the property in order to preserve a vegetative buffer between the State property and adjacent private land. Because the project area is very level and the proposed development was to be very small, no design work was done by DNR's Bureau of Engineering.

Description of Project Area

DNR's property is a level terrace about 800' east of the outlet of Round Lake, a small creek that flows southwest through wetlands into Borden Lake. The parcel is bordered to the west and south by low meadow and to the east by residential lots. When purchased by the State, the property was a summer residence; a concrete garage

Figure 28. Round Lake Project Area



USGS Garrison Quadrangle, 1973, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

slab, septic mound, gravel parking area and driveway were still in place at the time of survey. The former location of a mobile home was marked by a shallow rectangular depression partially lined with concrete block.

Records Review
Previous surveys: there have been a number of surveys in the vicinity of Round Lake, all of which have concentrated on sites along the shore of Mille Lacs Lake. No evidence was found that there have ever been any formal cultural resource surveys of Round Lake itself.

Known sites: a number of prehistoric habitation and burial sites are known to exist on the northern shore of Mille Lacs Lake. The only record of a site on Round Lake is in Brower's field notes for May 28, 1900 (Vol. 13), in which he states: "Explored mound group at the bay of Round Lake, on Sec. 1 T. 44, R. 28. There are eleven or more round mounds in the group on the lake's terrace." The mound group referred to by Brower has never been relocated; the current extensive residential development of the south shore of the lake has probably resulted in destruction of the mounds.

Field Review
Methods: surface reconnaissance along small ice ridge at shoreline; grid of shovel tests over entire development area.

Results: the ice ridge along the lakeshore in this location is very low (c. 1'), and consists entirely of unsorted sand and gravel. Examination of the entire ridge exposure did not yield any prehistoric cultural materials. Soil profiles in shovel tests throughout the project area were uniformly shallow silty loams over clay silt with substantial proportions of pebbly till. No cultural materials were found in any shovel test.

Management Recommendations
It appeared that the proposed development would not affect any significant prehistoric or historic resources. A recommendation was made that construction proceed as planned with no additional review.

Whipple Lake (SHPO Ref. #89-0490)

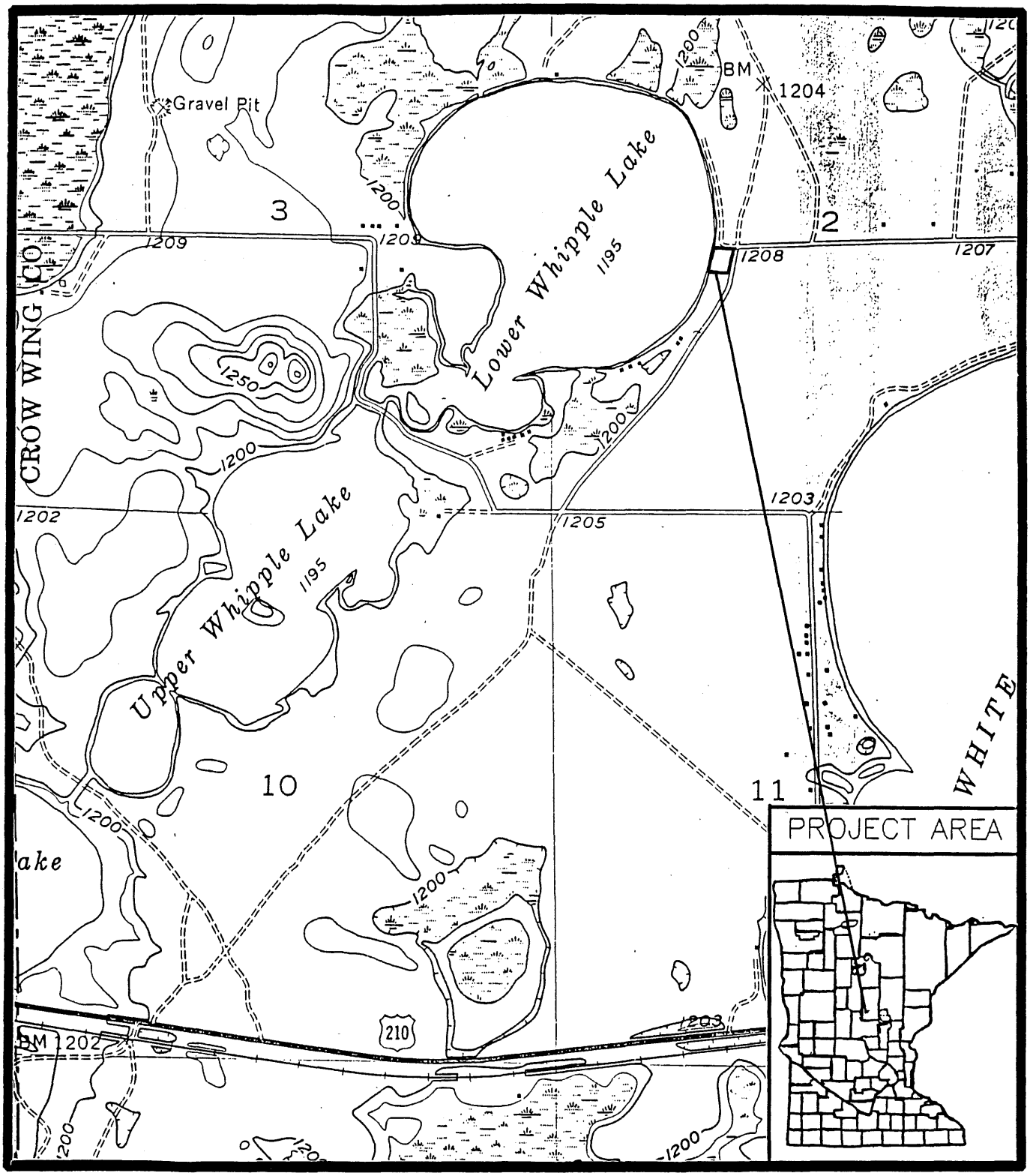
Location
Upland ridge on the east shore of the lake, within the City of Baxter, MN (see Figure 29).

Funding/Construction Status
This project involved no Federal funding or permitting. Construction took place in the fall of 1988.

Physiographic Province/Geomorphic Region
Brainerd-Automba Drumlin Area (Wright, 1972); Crow Wing Outwash Plain (Minnesota Soil Atlas Project, Brainerd Sheet, 1969).

Scope of Project
Development of new Public Water Access to Whipple Lake. This project was done under a co-operative agreement between DNR and Crow Wing County. Facilities include a 94'-by-140' parking area, short entry road and concrete plank ramp. All work was done by the Regional Maintenance crew under the supervision of the Area Manager. No detailed plans were prepared by DNR's Bureau of Engineering.

Figure 29. Whipple Lake Project Area



USGS Baxter Quadrangle, 1954, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

Description of Project Area
The project area is owned by Crow Wing County, and is located immediately south of a county park development that includes a parking lot, swimming beach, picnic area and several buildings. The property was not developed prior to access construction, but apparently was cleared in the past. Vegetative cover at the time of survey consisted mainly of scrub oak, dogwood, small elm and poison ivy. Most of the construction area is fairly level, bordered along the lakeshore by a steeper (c. 14%) slope that drops about 12' to the water level.

Records Review
Previous surveys: the only formal cultural resource surveys in the vicinity have been several small-scale surveys of proposed turn lanes along TH #210, about 1.5 miles south. This work was done by the Trunk Highway Survey, and results of all field investigations were negative.

Known sites: there are no recorded historic or prehistoric resources within one mile of the project area. A number of prehistoric habitation and burial areas have been defined on the Crow Wing and Gull Rivers and a number of lakes several miles to the west and southwest.

Field Review
Methods: shovel testing of entire construction area. There was no ground surface visibility in the project area except for scattered exposures along the bankslope above the water. These areas were inspected for cultural materials.

Results: soils in the project area were uniformly very sandy loams over medium to fine-grained sand. No cultural materials were found on surface or in any shovel test.

Management Recommendations
It appeared that the proposed project would not affect any significant historic or prehistoric resources. It was recommended that development proceed as planned with no additional review.

Pine County

Sturgeon Lake (SHPO Ref. #89-0492)

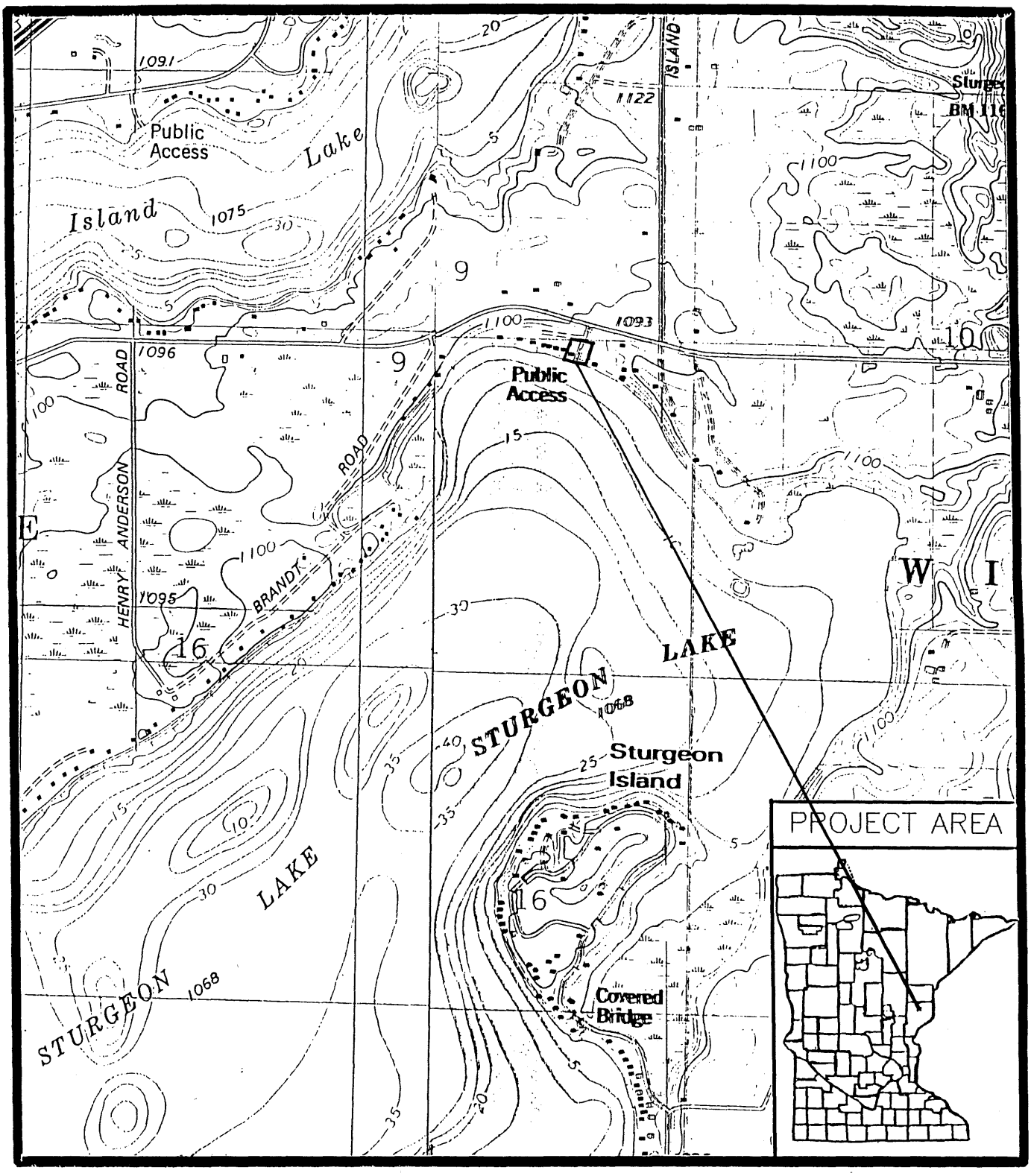
Location
North shore of the lake, about 4.5 miles northeast of the City of Sturgeon Lake, MN (see Figure 30).

Funding/Construction Status
Development costs may include reimbursement from the U.S. Coast Guard Boating Safety Fund. Construction is scheduled for the spring of 1989.

Physiographic Province/Geomorphic Region
Barnum Clay-Till Area, adjacent to Brainerd-Automba Drumlin Area (Wright, 1972); Nickerson Moraine with Willow River Outwash Plain to south and Thompsen-Cloquet Moraine to west (Minnesota Soil Atlas Project, Duluth Sheet, 1977).

Scope of Project
Rehabilitation/expansion of existing Public Water Access facility on the north shore of Sturgeon Lake. In 1986, the State purchased an adjacent parcel into which it will

Figure 30. Sturgeon Lake Project Area



USGS Moose Lake 1981 & Hanging Horn Lake 1981 Quadrangles, 7.5 minute series enlarged x 1.42; scale approximately 1:17,000

expand the existing parking area.

Description of Project Area
Low area along the water's edge, bordered to the north by a steep slope to an upland ridge. The property is 1' to 1.5' above the normal lake elevation. Existing access facilities include a gravel parking lot and concrete plank ramp. The newly purchased property was the site of a summer cabin built on concrete slab. The structure has been demolished, but the slab and an asphalt driveway were still in place at the time of survey.

Records Review
Previous surveys: no evidence was found of any formal cultural resource surveys in the vicinity of the project area.

Known sites: a review of state site files indicated that the only recorded site in the vicinity of the project area is 21PN18, two unauthenticated burial mounds located about 2 miles southwest of DNR's property.

Field Review
Methods: surface reconnaissance over open areas; shovel tests around edges of existing parking lot and in accessible portions of expansion area.

Results: no cultural materials were found on surface or in any shovel test. Soils on the northeast and east sides of the property were very mucky organics and saturated coarse sand. On the west side of the parcel, a thin layer of recent loamy fill overlies coarse beach sediments.

Management Recommendations
It appeared that the proposed construction would not affect any significant historic or prehistoric resources. It was recommended that work proceed as planned with no additional review.

Stearns County

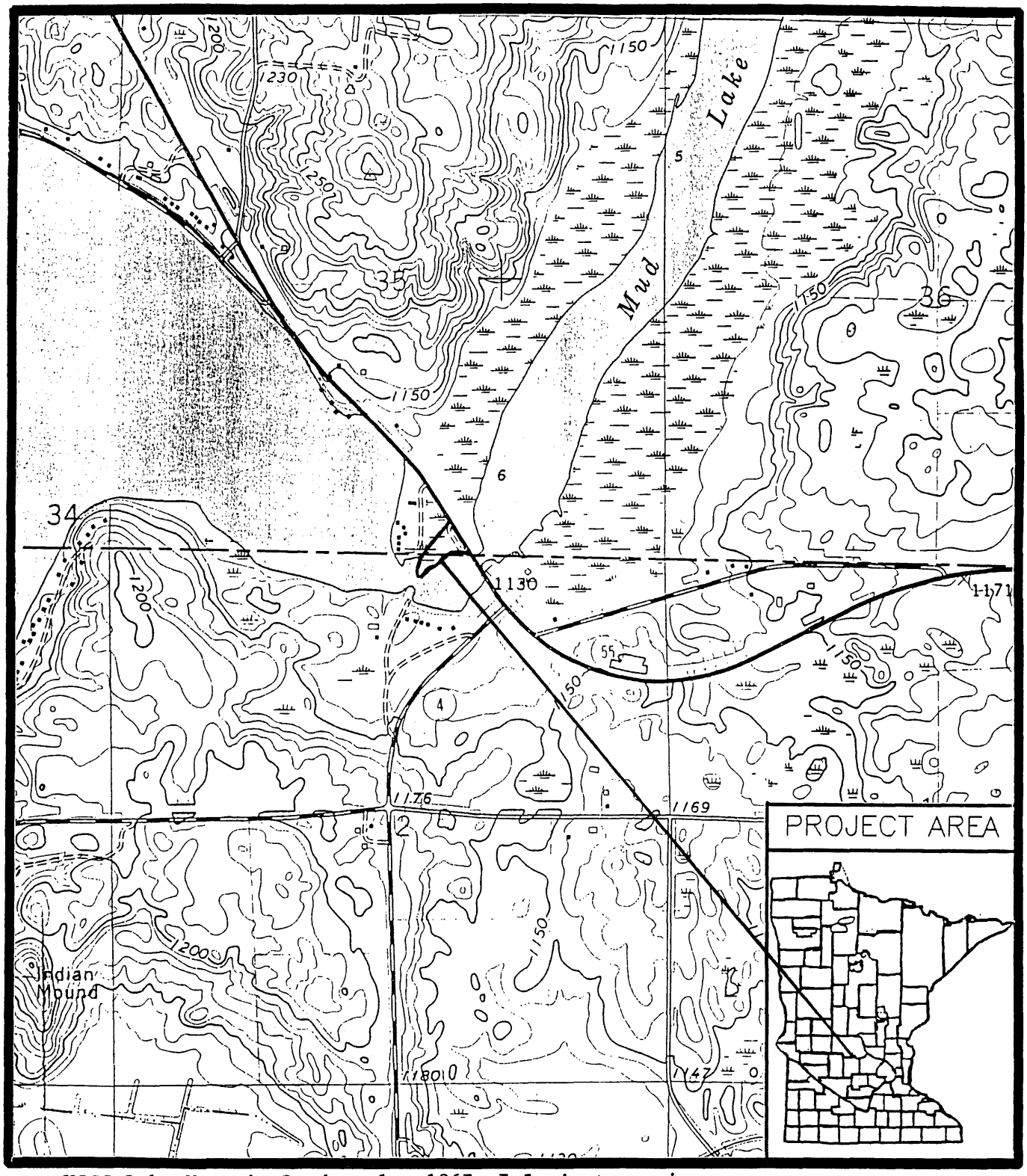
Lake Koronis (SHPO Ref. #88-1913)

Location
Southeast side of the lake, just west of the outlet to Mud Lake, about 5 miles southeast of the City of Paynesville, MN (see Figure 31). (Most of the project area lies within Stearns County; the northern boundary of Meeker County runs across the very southern tip of the property.)

Funding/Construction Status
This project was done under the terms of a cooperative agreement between DNR and the Minnesota Department of Transportation. Construction work was to be done by MnDOT as part of their project to replace the bridge over the North Fork of the Crow River, adjacent to DNR's property. It was anticipated that work would be completed by the Fall of 1988.

Physiographic Province/Geomorphic Region
Alexandria Moraine Area (Wright, 1972); Alexandria Moraine Complex (Minnesota Soil Atlas Project, St. Cloud Sheet, 1975).

Figure 31. Lake Koronis Project Area



USGS Lake Koronis Quadrangle, 1967, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

Scope of Project
Rehabilitation of existing Public Water Access facilities. Preliminary plans called for re-surfacing of the parking area, removal of a concrete-block restroom building and replacement of the launch ramp.

Description of Project Area
Existing access facilities within the project area consisted of a gravel-surfaced parking area, concrete-block restroom building and concrete ramp. The parcel is bordered on the northwest and west by wetlands and to the east by the TH #55 grade.

Records Review
Previous surveys: The most recent formal cultural resource survey in the area was a review of MnDOT's proposed TH #55 bridge replacement project, conducted by the Trunk Highway Survey in 1985. The results of that survey indicated that the project study area overlaps with the area of 21ME6, a habitation site in the southwest quadrant of the bridge crossing. A previously recorded mound group, 21SN3, was identified as being located about 500' to the northwest of the northern end of the bridge replacement corridor (Peterson 1986:215-217).

Known sites: There are two known prehistoric habitation and burial sites in the vicinity of the project area: 21SN3 and 21MK6, as noted above; several other mound and habitation sites are known to exist about 1 mile to the southwest, at the lake outlet. None of the sites are in proximity to the proposed construction area.

Field Review
Methods: Information about the project area was obtained from Trunk Highway Survey personnel, who indicated that the very edge of the access property, adjacent to the highway grade, had been briefly tested during the 1985 bridge replacement review. The shovel tests done in the area indicated that the parcel consisted of fill placed over former lakebed or wetland. Confirmation of this was also received from a local resident.

A brief field visit was made to the project area, during which the perimeter of the development area was examined. This confirmed that all existing facilities are on a fill section that lies about 2' higher than the surrounding wetlands. No additional field review was conducted.

Management Recommendations
It appeared that the proposed development would not affect any significant prehistoric or historic resources. A recommendation was made that construction proceed as planned with no additional review.

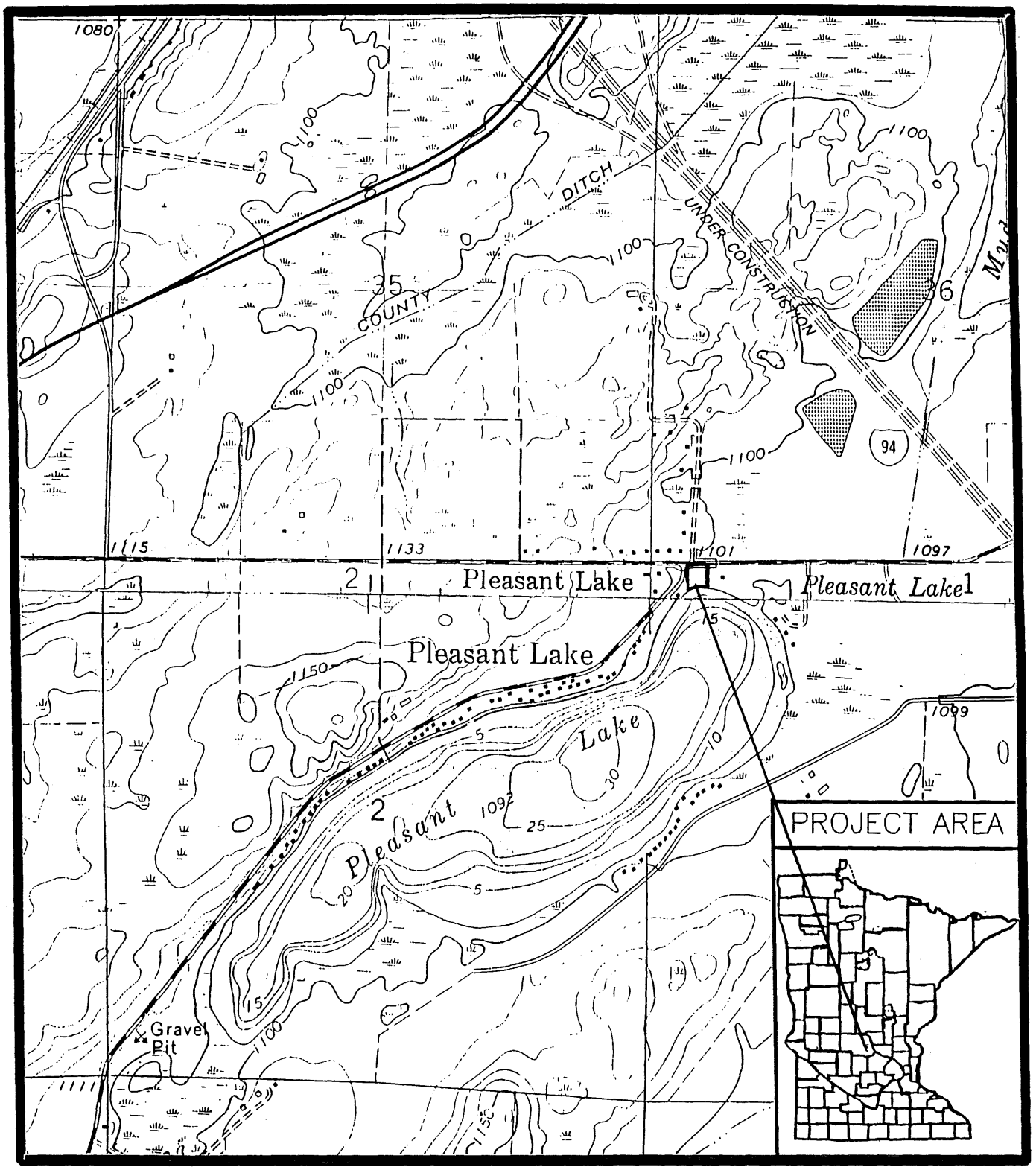
Pleasant Lake (SHPO Ref. #88-1914)

Location
North shore of the lake, within the City of Pleasant Lake, MN (see Figure 32).

Funding/Construction Status
Funding for this project was to derive from the Minnesota apportionment of the Wallop-Breaux Trust Fund. Construction was scheduled for the fall of 1988.

Physiographic Province/Geomorphic Region
Western St. Croix Moraine (Wright, 1972); St. Croix Moraine Complex, Mississippi Valley Outwash to east and west (Minnesota Soil Atlas Project, St. Cloud Sheet, 1979).

Figure 32. Pleasant Lake Project Area



USGS St. Joseph 1965 & Rockville 1967 Quadrangles, 7.5 minute series enlarged x 1.42; scale approximately 1:17,000

Scope of Project
Development of new public water access facilities. Construction elements included a 10-unit parking area, concrete plank ramp and entry driveway off County Road #6. Because the property is very low, most of the work involved placement of granular fill over filter fabric.

Description of Project Area
Located on the north shore of Pleasant Lake, adjacent to County Road #6 on the east edge of the City of Pleasant Lake, MN. The property is a low, grassy parcel between private residences to the east and a restaurant parking lot to the west. The county road forms the northern property line; the area just north of this road is marsh. A private fee access to the lake had previously been in operation on the property. A small gravel road provided ingress from the restaurant parking lot to the shoreline, but this road has been closed off with wooden posts along the property line. DNR purchased the land in 1986.

Records Review
Previous surveys: No evidence was found that there have been any formal cultural resource surveys in the vicinity of the project area. The closest known surveys were conducted along the I-94 corridor between 1968 and 1971.

Known sites: There are no recorded historic or prehistoric sites within a 1-mile radius of the project area. The nearest known site is 21SN12, a mound group on the Sauk River just west of Rockville, about 4 miles southwest of DNR's property.

Field Review
Methods: surface reconnaissance along shoreline and other areas with surface visibility; grid of shovel tests over construction area.

Results: Surface visibility was moderate in good in scattered areas throughout the property. There were numerous rodent burrows, and the vegetation was very sparse in many spots. These areas were checked for surface materials. Two low inactive ice ridge remnants close to the water line were also examined. In surface exposures and in shovel tests, soils were loamy sands and clean coarse sand and beach sediments. A few shovel tests in the northern part of the property showed rather mucky organic soils that appeared to have formed under marshy conditions. No cultural materials were found on surface or in shovel tests.

Management Recommendations
It appeared that the proposed development would not affect any significant historic or prehistoric resources. A recommendation was made that construction proceed as planned with no additional review.

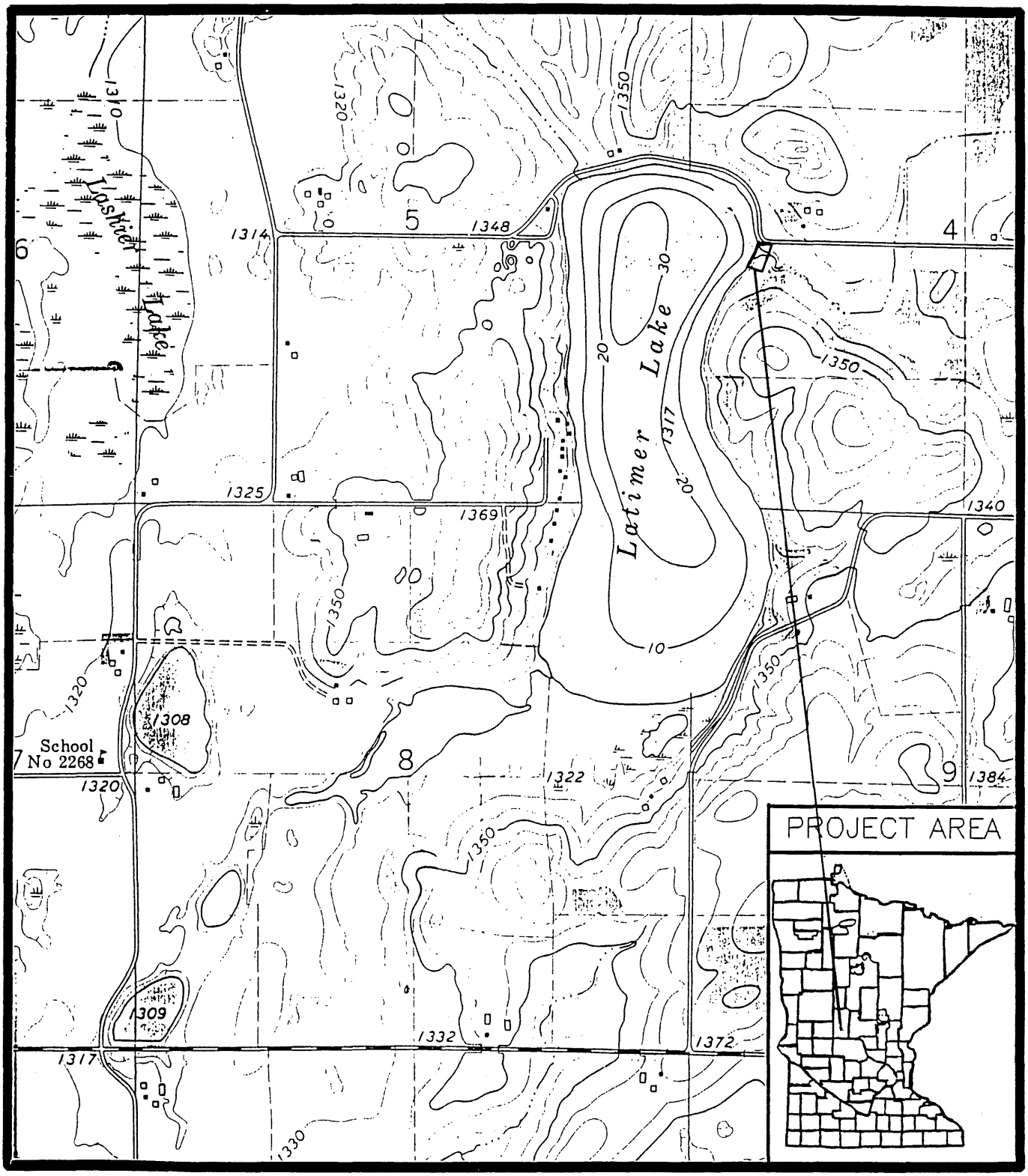
Todd County

Latimer Lake (21TO8) (SHPO Ref. #89-0805)

Location
Northeast corner of the lake, about 3.5 miles southeast of the City of Long Prairie, MN (see Figure 33).

Funding/Construction Status
It is anticipated that this project will not involve any Federal permitting or funding. Construction is scheduled for the summer of 1989.

Figure 33. Latimer Lake Project Area



USGS Long Prairie Quadrangle, 1966, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

Physiographic Province/Geomorphic Region
Wadena Drumlin Area (Wright, 1972); Todd Drumlin Area, Osakis Till Plain immediately west of lake (Minnesota Soil Atlas Project, St. Cloud Sheet, 1975).

Scope of Project
Development of new Public Water Access facility on Latimer Lake. Proposed work includes construction of a 100' by 150' parking area and installation of a concrete plank ramp. Work will be done by the Regional Maintenance Crew under the supervision of the Area Manager. No detailed plans have been drawn by the Bureau of Engineering.

Description of Project Area
Former agricultural land (pasture) in the northeast of Latimer Lake. DNR's property is bounded by township roads on the north and east and by a private residence on the south. The property is bisected by a small creek (dry during the summer of 1988) that drains wetlands to the east. A beachridge approximately 5 feet wide runs along the lakeshore. The crest of this ridge was 5 to 6 feet above the water level at the time of survey, but DNR personnel indicated that the lake was about 2 feet lower in 1988 than in the previous year. The remainder of the parcel is level except for the southeastern one-third, where the terrain begins to slope up to a high knoll across the township road. The property is currently covered with tall grasses, forbs and several species of prairie wildflowers.

Records Review
Previous surveys: the only formal cultural resource survey known to have been done anywhere in this area is Brew's negative survey (1981) of the proposed Long Prairie Wastewater Treatment Plant, about 10 miles to the west of the project area. A small parcel on the west shore of Mill Lake, about 12 miles northeast, was also surveyed in the summer of 1988 by the Water Access Program Archaeologist, with negative results.

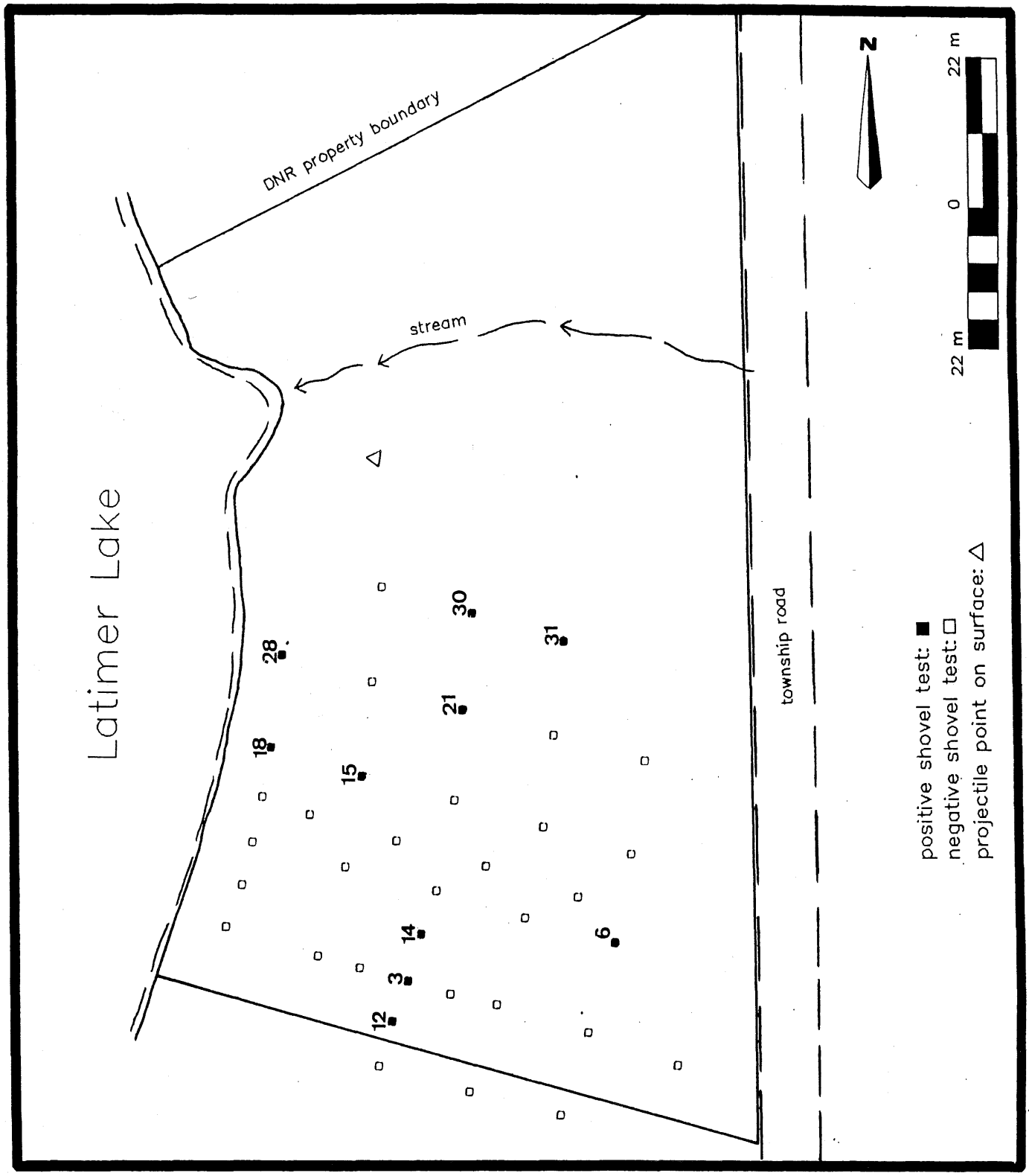
Known sites: a review of state site files indicated that there are no known historic or prehistoric sites in the vicinity of Latimer Lake.

Field Review
Methods: surface reconnaissance along cutbank at lakeshore and edges of dry creekbed; grid of shovel tests over project area; additional shovel tests in some portions of project area.

Results: surface reconnaissance resulted in the recovery of a corner-notched projectile point made of white quartz from the surface of the creekbed to the north of DNR's proposed construction area. Additional cultural materials were recovered from 10 of 37 shovel tests (see Figure 34). The subsurface deposit was not consistent in either horizontal or vertical distribution, and the overall artifact density is low, averaging just under 2 artifacts per 10 cm level in positive tests.

This assemblage, which has been recorded as **21TO8**, appears to reflect a short-term Woodland Period occupation. The recovered sherds are in very poor condition and cannot be given a taxonomic classification. The projectile point is 24 mm long, 17 mm wide just above the notches and 5 mm thick at maximum. It is somewhat asymmetrical, with broad notches and a straight base. Its form suggests a Middle Woodland temporal assignment, although it is at the low end of the typical size range for points of that time period.

Figure 34. 21TO8 - Site Area



Artifacts Recovered

Surface: corner-notched projectile point, quartz
ST 3, 10-20 cm: 5 ceramic crumbs
30-40 cm: 1 utilized triangular blade, chalcedony
ST 6, 20-25 cm: 1 shatter fragment, quartz
ST 12, 10-20 cm: 1 secondary flake, gray chert
ST 14, 10-20 cm: 2 primary flakes: quartz, Tongue River Silica
ST 15, 10-20 cm: 2 primary flakes: Knife River Flint, thermally altered chert
ST 18, 30-40 cm: 2 tertiary flakes: quartz, Swan River Chert
ST 21, 10-20 cm: 1 shatter fragment, quartz
ST 28, 0-10 cm: 1 shatter fragment, quartzite
30-40 cm: 2 tertiary flakes: oolitic chert, quartz
40-50 cm: 1 tertiary flake, Tongue River Silica
1 shatter fragment, quartz
ST 30, 0-10 cm: 1 tertiary flake, chert
ST 31, 10-20 cm: 5 bone fragments, 1 burned
20-30 cm: 1 tertiary flake, quartzite
charcoal fragments

Management Recommendations

The erratic nature of the subsurface deposit at this site may be part reflect lake level fluctuations that have moved artifacts from their original points of deposition. This is suggested by the presence of what appears to be an old beachridge, observed in shovel tests along the southern edge of the property, at an elevation about 1 meter above the current lake level. The ridge formation was noticeable due to a consistent layer of very coarse material, ranging from gravel to large water-worn cobbles, that appeared at depths of 25 to 29 cm below the surface in contiguous shovel tests. Continuation of the rock at consistent depths among shovel test locations was confirmed by soil probes. Most of the locations in which the rock layer was identified lie along a line corresponding to the increase in upward slope moving south-southeast towards DNR's property line. Variations in stratigraphy on either side of this ridge are very slight, but in places seem to reflect lakebottom deposition (fine-grained gleyed materials) on the lower side as contrasted to slightly coarser, less mottled silty loams and silty clay soils at higher elevations. A post-occupation increase in lake level such as that suggested by this formation may have created the artifact distribution observed during survey. About half of the recovered artifacts came from the lower, more level portion of the property below the beachridge, and may have been deposited by downslope soil movement and wave action. The highest artifact concentrations were in Shovel Tests #3, 12 and 14, all of which were along the beachridge. The materials recovered from these tests may have been deposited here during formation of the ridge by water and ice action.

It appears that a more detailed definition of this site's nature and current condition would require a considerable amount of research, given the low artifact densities and unpredictable distribution of cultural materials both vertically and horizontally. Definition of a continuous, discrete "site area" within the property boundaries based on shovel test results is not possible. Although some small quantities of organic materials were recovered, they do not seem to suggest much potential for location of intact features.

DNR's Area Manager has been notified of the presence of the site within the proposed construction area and provided with a map of positive shovel test locations. Access development was originally scheduled for late fall of 1988, but was postponed until sometime in the spring or summer of 1989. The Area Manager indicated that initial construction plans called for stripping of about 6" of topsoil off the parking lot area before granular fill is put in place. Ramp installation would require a cut c. 12' wide through the beachridge. Survey results do not define a "safe" area in which development could proceed with no risk of damage to the site. The Program Archaeologist therefore requested that alternative

construction methods that would reduce impact to the site, such as filling over the existing surface, be considered. If such alternatives do not appear to be feasible, limited excavation should be done before construction in an attempt to retrieve information that might clarify the nature of the site. If, however, the extent of impact to the site can be limited to the ramp cut area of the beachridge, it will be recommended that construction proceed as planned, with the stipulation that work be monitored by the Program Archaeologist.

Mill Lake (SHPO Ref. #89-0523)

Location

West shore of the lake, about 10 miles east-northeast of the City of Long Prairie, MN (see Figure 35).

Funding/Construction Status

This project involved no Federal funding or permitting. Construction took place in the fall of 1988.

Physiographic Province/Geomorphic Region

Western St. Croix Moraine (Wright, 1972); St. Croix Moraine Complex, Todd Drumlin Complex adjoins to west (Minnesota Soil Atlas Project, Brainerd Sheet, 1969).

Scope of Project

Development of new Public Water Access facilities. Plans call for a 10-unit parking area (total size c. 95' by 200') and concrete plank ramp. An existing gravel road will be upgraded by addition of fill to provide ingress to the parking lot from CSAH #120. Work will be done by DNR's Regional maintenance crew under the supervision of the Area Manager. No detailed plans have been drawn by the Bureau of Engineering.

Description of Project Area

Former agricultural land on the west shore of Mill Lake. The property is bordered on the west by CSAH #120, on the north by private property and on the south by cultivated fields. This parcel was previously planted in corn, and was last cultivated as recently as 1986. Weedy vegetation covered most of the tilled area, but there were scattered areas of surface visibility. An area about 50 meters wide along the lakeshore was apparently pasture, and at the time of survey was covered with thick grasses and young trees. The property is mostly level, with a gradual slope down to a steep cutbank about 4' high, bordering the lakeshore. This cutbank was partially overgrown with brush and poison ivy, but there were some exposures with good surface visibility.

Records Review

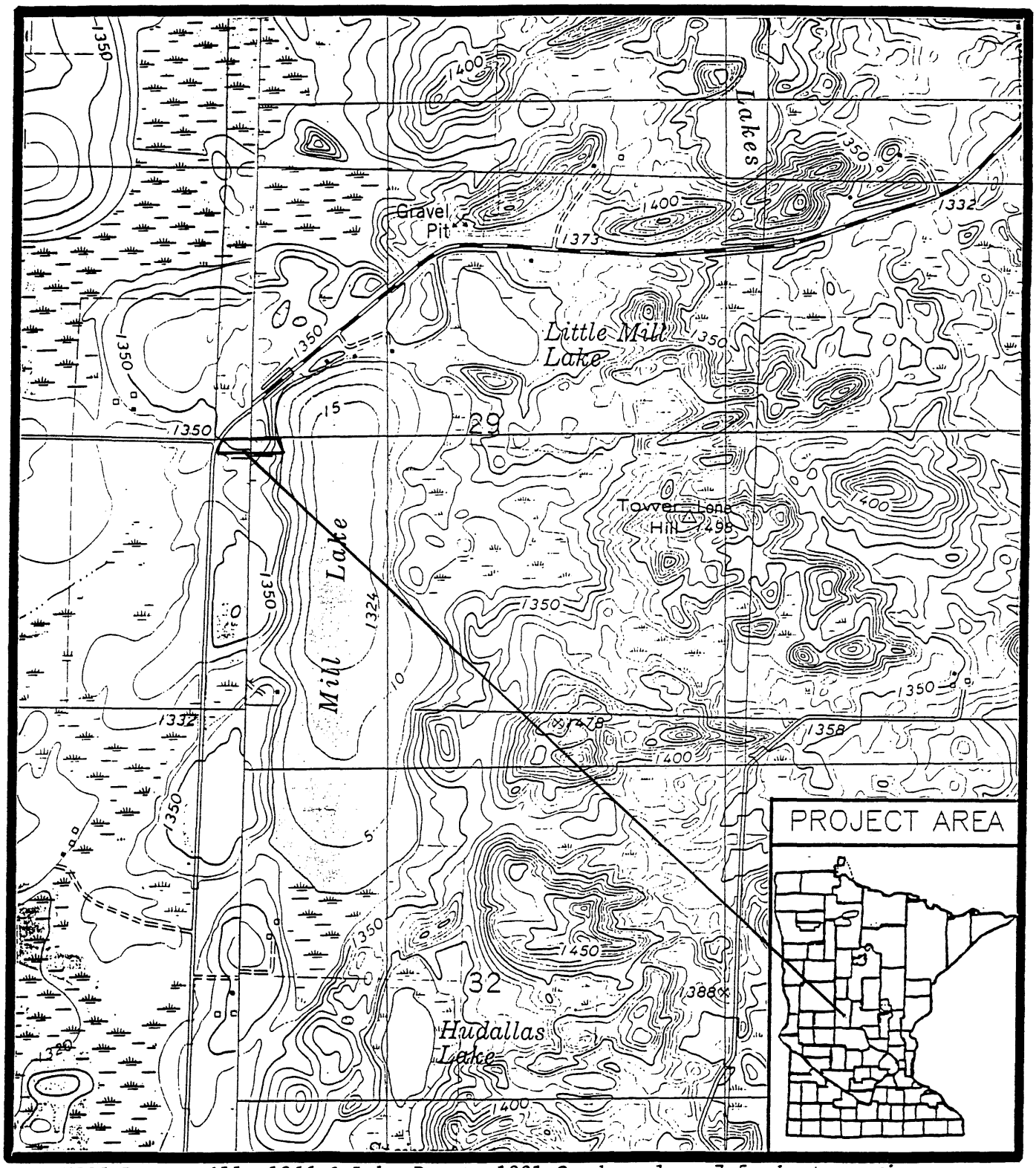
Previous surveys: no evidence was found that there have ever been any formal cultural resource surveys in the vicinity of Mill Lake. The closest survey appears to have been a Phase I survey of proposed wastewater treatment facilities about 10 miles west-southwest of Mill Lake, which had negative results (Brew 1981).

Known sites: a review of state site files indicated that there are no known historic or prehistoric sites within a 1-mile radius of the project area. The closest known sites are on the shore of Lake Osakis, about 15 miles to the southwest.

Field Review

Methods: surface reconnaissance in exposures along cutbank, road and in unvegetated

Figure 35. Mill Lake Project Area



USGS Browerville 1966 & Lake Beauty 1981 Quadrangles, 7.5 minute series enlarged x 1.42; scale approximately 1:17,000

portions of fallow field; grid of shovel tests over construction area.

Results: surface visibility was highly variable in the project area. Some areas were completely clear of vegetation, and old plow furrows were readily apparent. In these areas, considerable amounts of glacial till were visible on the surface. In shovel tests, soils appeared to be sandy silt loams with high proportions of gravelly till. The old plow zone appeared to extend to roughly 25 cm in shovel tests in the fallow field. In the grassy area, no evidence of extensive disturbance of natural soil stratigraphy was noted. No cultural materials were found on surface or in any shovel test.

Management Recommendations
It appeared that the proposed project would not affect any significant historic or prehistoric resources. It was recommended that development proceed as planned with no additional review.

REGION IV - SOUTHWEST

Kandiyohi County

Calhoun Lake (SHPO Ref. #88-1884)

Location
Southwest corner of the lake, about 8 miles southeast of the City of New London, MN (see Figure 36).

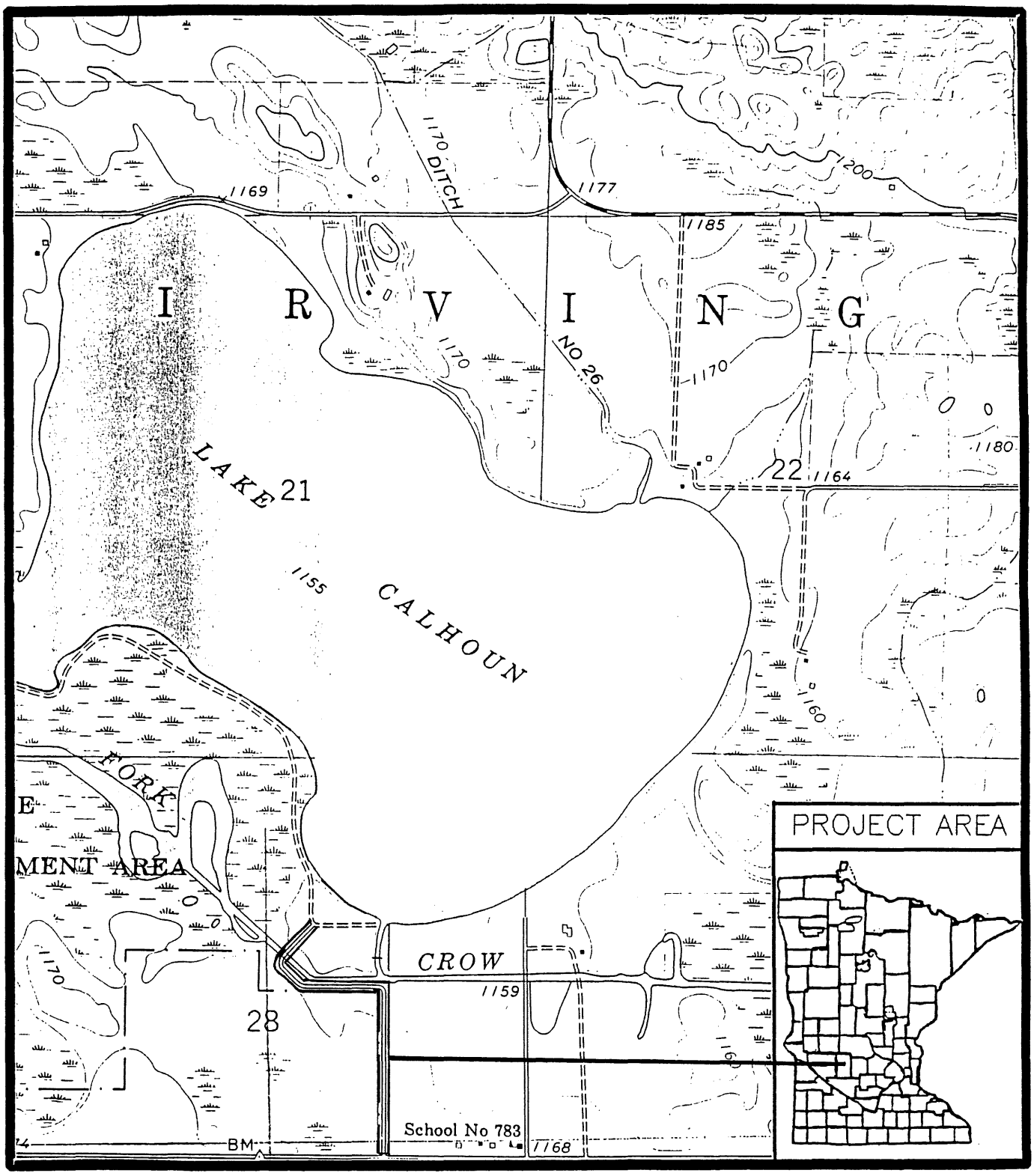
Funding/Permit Status
Development costs for this project were reimbursable from the Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service. Construction was completed during the summer of 1988.

Physiographic Province/Geomorphic Region
Alexandria Moraine Area (Wright, 1972); Alexandria Moraine Complex (Minnesota Soil Atlas Project, St. Cloud Sheet, 1975).

Scope of Project
Rehabilitation of existing entry road and bridge over a channelized portion of the Crow River. The project involved upgrading of about 0.5 mile of existing gravel entry road between County Road 98 and the access parking lot, and installation of a new bridge over the channelized Middle Fork of the Crow River. Road rehabilitation required placement of an additional 0.5 to 2.5 feet of fill over the existing road surface, installation of new culverts in two locations and placement of fill along the existing ditch slopes.

Description of Project Area
Several years ago, DNR constructed a gravel-surfaced parking lot and launch area on the lakeshore (no cultural resource review of this project was done). The current project involved work only along the existing road alignment, in order to improve drainage and surfacing. The road alignment is bordered in some portions by cultivated fields on both sides and for part of its length by the channelized Middle Fork of the Crow River.

Figure 36. Calhoun Lake Project Area



USGS Hawick Quadrangle, 1967, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

Records Review
Previous surveys: 1986 Trunk Highway Survey review of bridge replacement project on TH #23 south of New London (Peterson & Yourd 1987:183-185); MnSAS fieldcheck of known sites around Green and Calhoun Lakes, 1978. No evidence was found that the MnSAS crew surveyed the cultivated fields adjacent to the existing access road or any part of the Crow River channel.

Known sites: There are several prehistoric and proto-historic habitation and burial sites recorded in the vicinity of Calhoun Lake. 21KH1 is a multicomponent habitation/burial site on the east shore of Calhoun Lake, about .75 mile northeast of the project area; 21KH8 is the Green Lake mound group, located about 1.5 miles to the west-southwest of Calhoun Lake, and 21KH66 is a lithic scatter located during the Statewide Survey about .125 mile to the east, near an existing Public Access.

Field Review
Methods: Brief visual examination of existing bridge and road alignment. Plans received from DNR Engineering indicate that all work will be within the limits of existing construction, so no formal testing of the project area was done.

Management Recommendations
It appeared that the proposed development would not affect any significant prehistoric or historic resources. A recommendation was made that construction proceed as planned with no additional review.

Point Lake (SHPO Ref. #88-0864)

Location
East shore of the lake, about 2 miles north of the City of Willmar, MN, adjacent to TH #71 (see Figure 37).

Funding/Construction Status
This project did not involve any Federal funding or permitting. Construction took place in the fall of 1988.

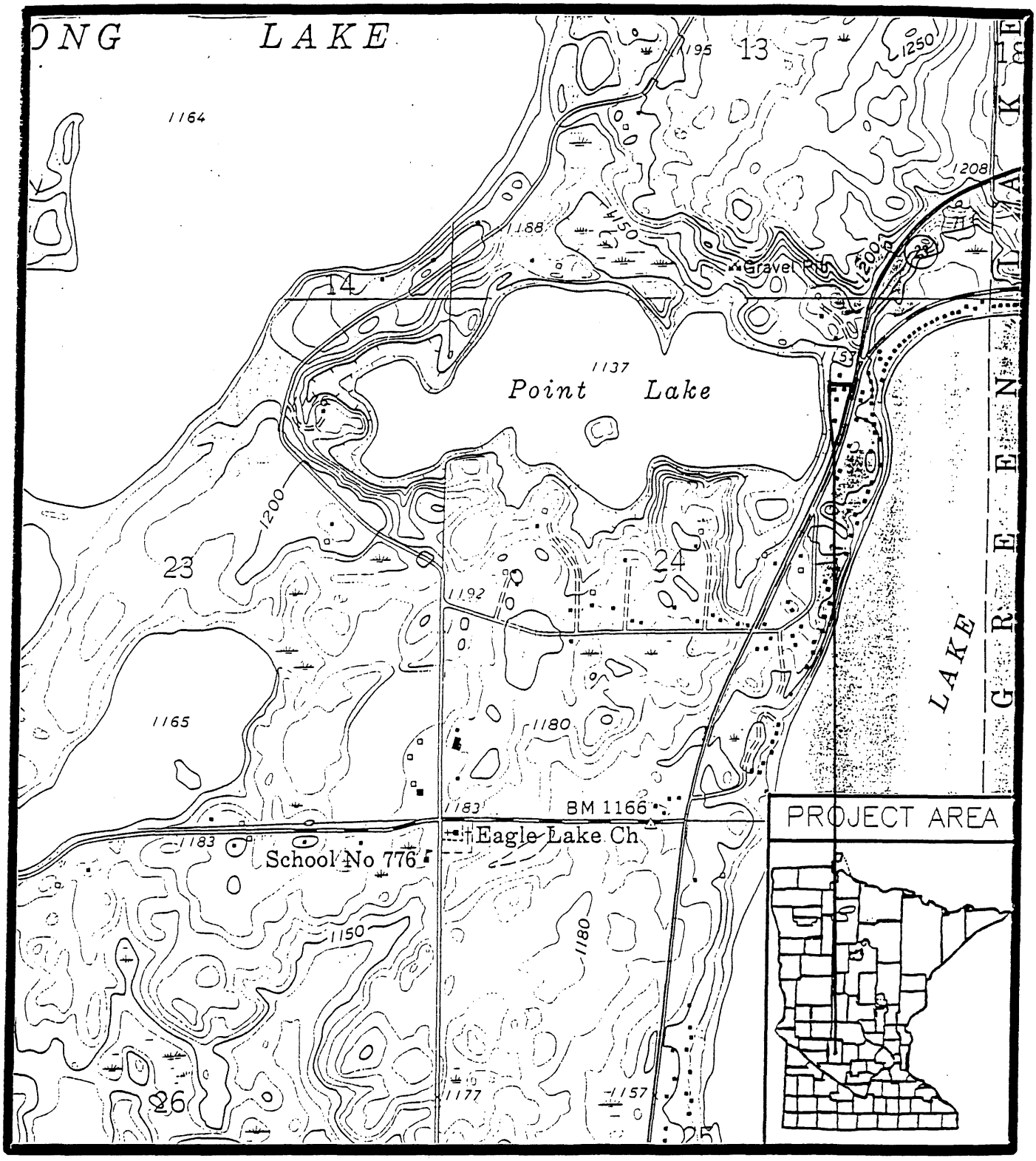
Physiographic Province/Geomorphic Region
Alexandria Moraine Area (Wright, 1972); Alexandria Moraine Complex with Belgrade-Glenwood Outwash Plain to north-northeast (Minnesota Soil Atlas Project, St. Cloud Sheet, 1975).

Scope of Project
Development of Public Water Access facility to Point Lake. The project area has been in use recently as a "casual" (i.e. undeveloped) boat launching point. DNR planned to construct a 10-unit gravel-surfaced parking area (total size c. 85' by 200') and install a concrete plank ramp. The work involved some recontouring, mostly at the southern end of the property.

Description of Project Area
The project area is a remnant of a ridge overlooking the east shore of Point Lake. It was purchased by MnDOT in 1968 as part of right-of-way needed for upgrading of TH #71, and was reconveyed to DNR in 1978. Prior to purchase by MnDOT, a mobile home park and automotive repair shop were located on this property and adjacent land that is now part of the southbound lanes of TH #71.

Several concrete slabs, septic vaults and wells from the mobile home park were still in place at the time of survey. The far eastern side of the property forms the

Figure 37. Point Lake Project Area



USGS Solomon Lake Quadrangle, 1958, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

highway ditch backslope, and heavy equipment tracks were visible along this slope and on the top of the ridge. The only portion of the property that appeared to be relatively undisturbed was the strip immediately adjacent to the lakeshore, at the crest of the cutbank. The bank itself is nearly vertical in places, and appears to have undergone considerable erosion in recent years. DNR personnel indicated that the water level in Point Lake rose at least 10' due to drainage alteration resulting from construction of the southbound highway lanes. A culvert was installed within the past 5 years to drain the Point Lake into Eagle Lake, on the other side of the highway, and return the water level to its previous elevation.

Records Review
Previous surveys: surveys of portions of TH #71 near Willmar were conducted in 1971, 1976 and 1980, by the Trunk Highway Survey (Nystuen 1972; Peterson 1977, 1981). This work resulted in identification of several prehistoric sites along the highway corridor, none of which is within 1 mile of the project area. No other formal cultural resource surveys have been done near Point Lake.

Known sites: the closest known sites to the project area are 21KH61 and KH62, which are both prehistoric habitation sites located 1.25 to 2 miles north of Point Lake, on the shores of Long and Ringo Lakes.

Field Review
Methods: surface reconnaissance along steep cutbank above water's edge (surface visibility c. 50%); grid of shovel tests over construction area.

Results: evidence of recent disturbance was noticeable in about half of the shovel tests dug in the proposed construction area. The "A" horizon was entirely missing in several tests; in others, soil strata were thoroughly mixed. Two septic vaults were noted, along with broken concrete slab and graveled patches that may have been driveways or parking spots for the mobile home park. No cultural materials were found on surface or in any shovel test.

Management Recommendations
It appeared that the proposed development would not affect any significant prehistoric or historic resources. A recommendation was made that construction proceed as planned with no additional review.

Martin County

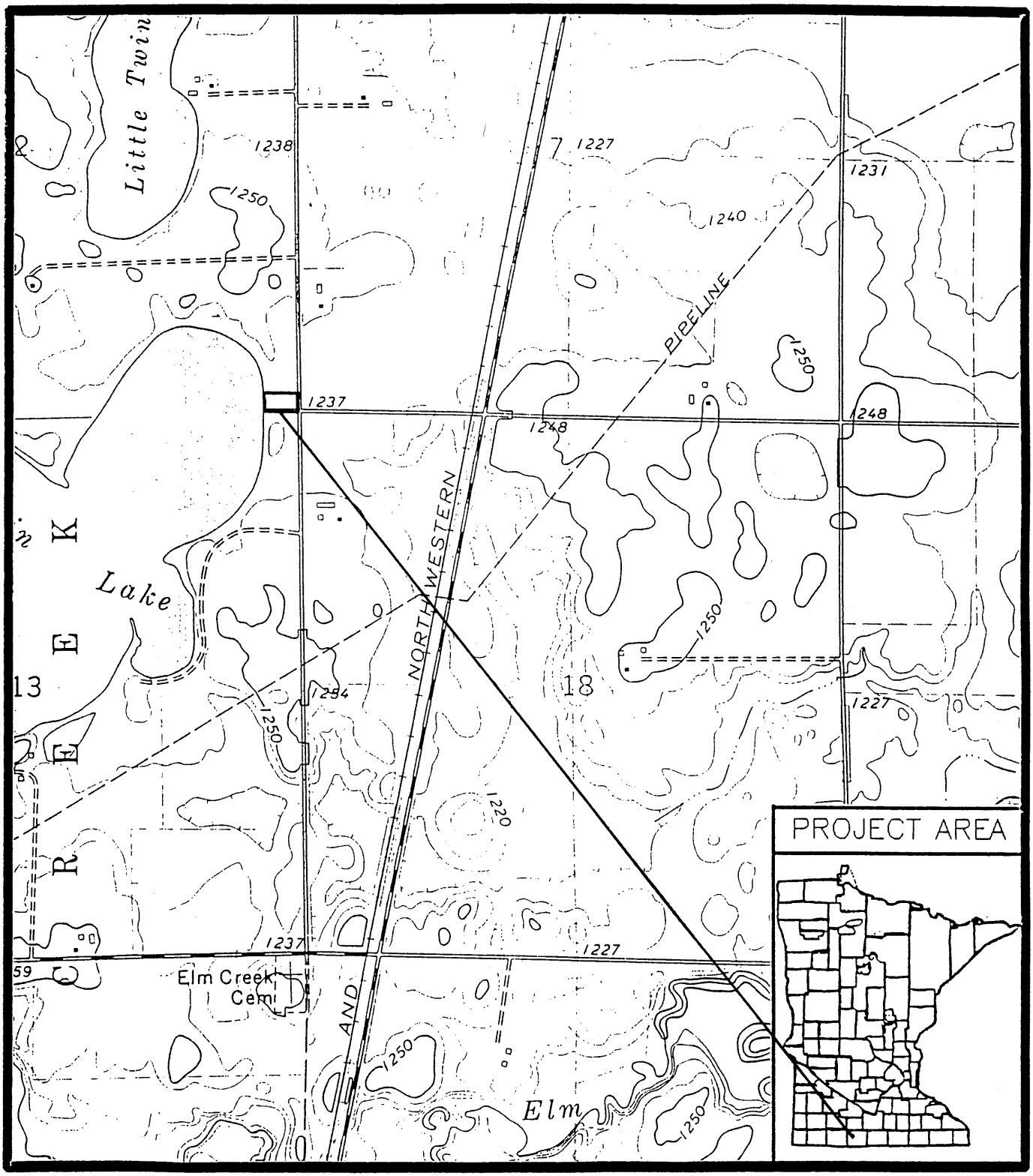
Big Twin Lake (SHPO Ref. #88-1336)

Location
East shore of the northern lobe of the lake, about 2.25 miles southeast of the City of Trimont, MN (see Figure 38).

Funding/Construction Status
Development costs for this project were reimbursable from the Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service. Construction took place in the summer of 1988.

Physiographic Province/Geomorphic Region
Blue Earth Till Plain (Wright, 1972); Blue Earth Till Plain (Minnesota Soil Atlas Project, New Ulm Sheet, 1981).

Figure 38. Big Twin Lake Project Area



USGS Sherburn Quadrangle, 1970, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

Scope of Project
Rehabilitation and expansion of existing Public Water Access facilities. Design plans called for the existing ramp to be moved from the southern to the northern side of the property, and a new gravel 15-unit parking area to be constructed adjacent to the existing entry road. Because the entire property is low, averaging about 2' higher than the normal lake level, the new lot was to be built on fill.

Description of Project Area
The project area is bounded on the east by County Road 40 and on the north and south by agricultural fields. It lies in a swale between two low ridges. Facilities prior to rehabilitation included an entry road built on fill along the southern edge of the property, a gravel parking lot, grassed overflow parking area and concrete plank ramp. Maintenance of the access is done by the local Conservation Club, which in 1986 placed several hundred cubic yards of fill in the parking lot and overflow area because of drainage problems.

Records Review
Previous surveys: The only research known to have been done in the area is the excavation done at Fox Lake in the 1970s by G. Joseph Hudak. There have apparently been no cultural resource surveys done anywhere near Big Twin Lake.

Known sites: A review of state site files indicated that there are no recorded prehistoric or historic sites within 1 mile of the project area. The closest known sites are on Fox Lake, about 5 miles southeast of Big Twin Lake.

Field Review
Methods: surface reconnaissance along low cutbank at water's edge; grid of shovel tests over new parking area, except in area covered by fill.

Results: Because the lake level was rather low at the time of survey, there was very good visibility along the c. 2' high cutbank. The rest of the property was covered with grass. Along the shoreline, soils are silty to sandy loams over coarse clay and cobble to boulder-sized till. In the eastern part of the property, which has been receiving run-off from the adjacent fields, soils are silty clay loams over silty to fine sandy clay loams and clay with coarser glacial deposits. No cultural materials were found on surface or in shovel tests.

Management Recommendations
It appeared that the proposed access rehabilitation would not affect any significant historic or prehistoric resources. It was recommended that construction proceed as planned with no additional review.

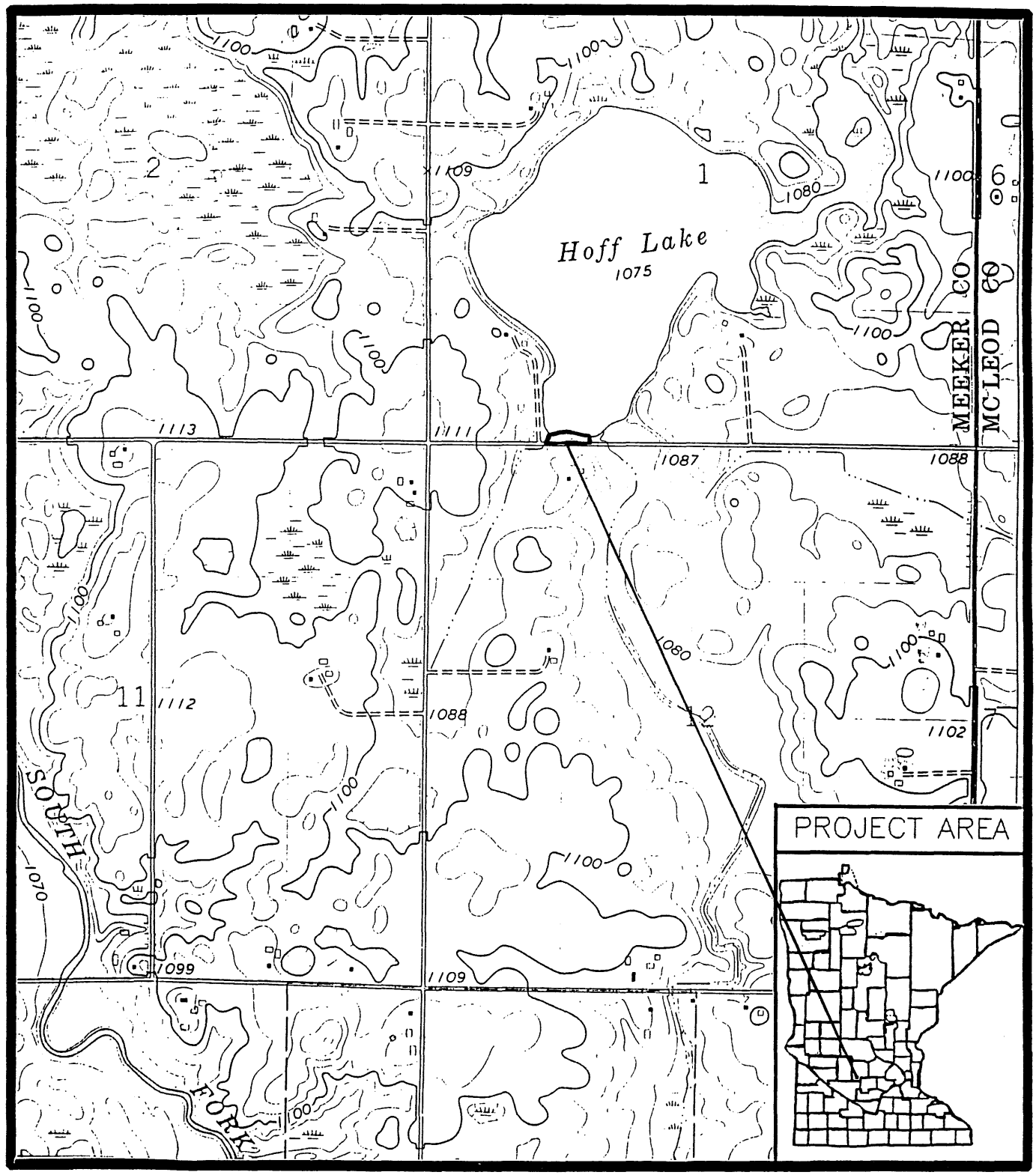
Meeker County

Hoff Lake (SHPO Ref. #89-0560)

Location
South shore of the lake, about 10 miles west-northwest of Hutchinson, MN (see Figure 39).

Funding/Construction Status
This project did not involve any Federal funding or permitting. Construction took place in the fall of 1988.

Figure 39. Hoff Lake Project Area



USGS Cedar Mills Quadrangle, 1967, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

Physiographic Province/Geomorphic Region
Owatonna Moraine Area (Wright, 1972); Waconia-Waseca Moraine (Minnesota Soil Atlas Project, New Ulm Sheet, 1981).

Scope of Project
Rehabilitation/expansion of existing unimproved access. Project plans called for construction of a gravel parking area about 50' wide and 150' long, and installation of a concrete plank ramp. Work was to be done by the Regional Maintenance crew under the supervision of the Area Manager.

Description of Project Area
The property is a narrow strip of land, bordered on the south by County Road 94; a portion of the road right-of-way will be used for development. An existing dirt turn-off formerly used for lake access is located just west of a rock dam at the mouth of the lake outlet. The property to the west of the existing turn-off was a narrow ridge covered with grass. This area was leveled and covered with gravel to create a parking lot and a ramp was installed at the existing launching point. It appeared that this ridge is all that remained of a level lakeshore terrace mostly destroyed by construction of the adjacent county road grade and ditch.

Records Review
Previous surveys: a review of state survey files revealed no evidence that there have ever been any formal cultural resource surveys near the project area.

Known sites: there are no recorded prehistoric or historic sites within a 1-mile radius of the project area.

Field Review
Methods: surface reconnaissance along shoreline and dirt turn-off road; transect of shovel tests across top of ridge.

Results: because of the low lake level at the time of survey, there was a sandy flat about 10 meters wide along the lakeshore. This area and the existing launching area were examined for surface materials. Shovel tests were then dug across the proposed parking lot area. Soils in the shovel tests were uniform silty clay loams over clay and till; what may be an old plow zone was noted in the upper c. 25 cm of the shovel tests. No cultural materials were found on surface or in any shovel test.

Management Recommendations
It appeared that the proposed development would not affect any significant prehistoric or historic resources. A recommendation was made that construction proceed as planned with no additional review.

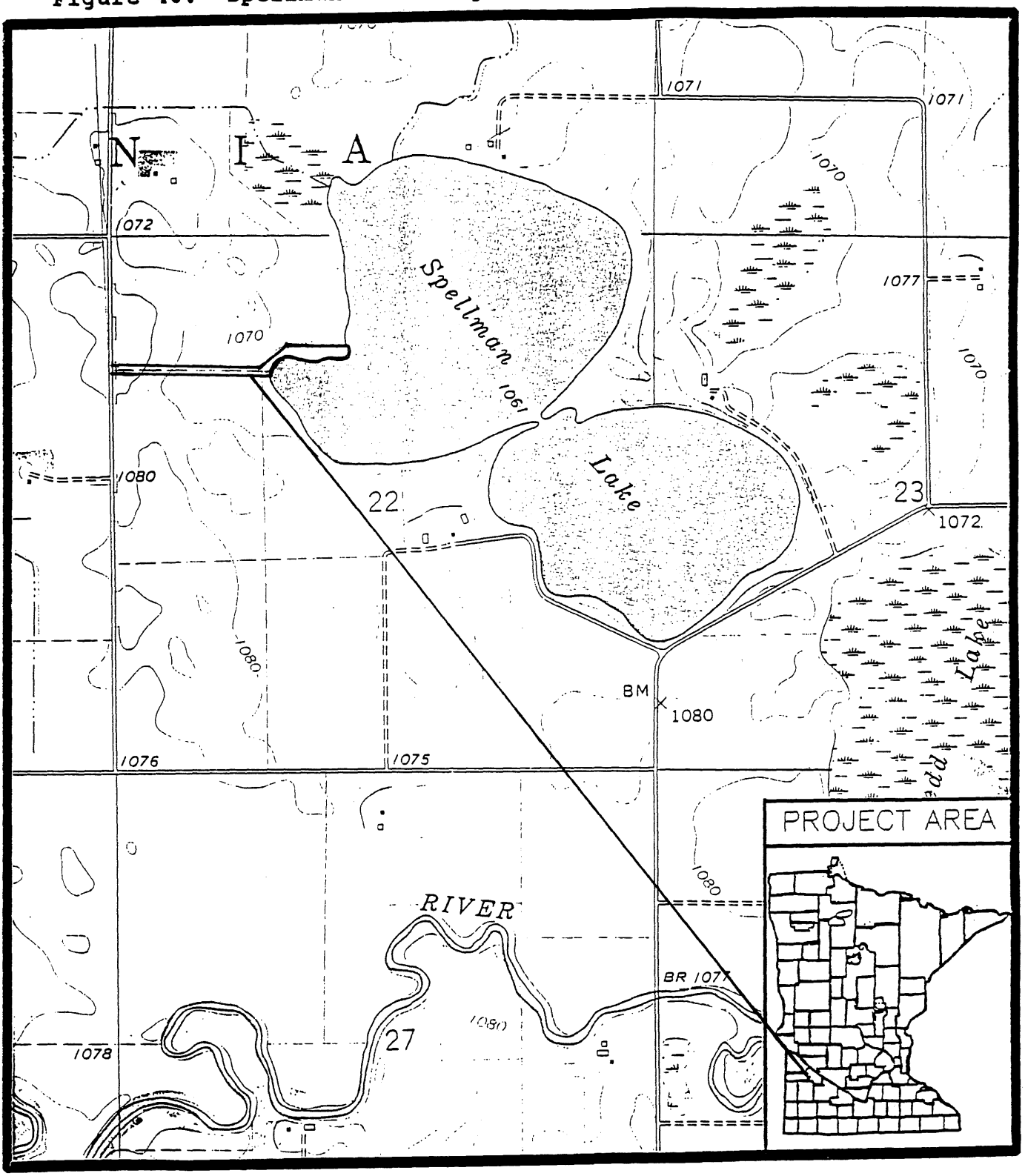
Yellow Medicine County

Spellman Lake (SHPO Ref. #89-0893)

Location
West side of the upper portion of the lake, about 3 miles northeast of Normania, MN (see Figure 40).

Funding/Construction Status
It was anticipated that this project would not involve any Federal funds or permits.

Figure 40. Spellman Lake Project Area



USGS Normania Quadrangle, 1967, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

Ramp installation was scheduled for late 1988; parking lot construction will be done in 1989.

Physiographic Province/Geomorphic Region
Blue Earth Till Plain (Wright, 1972); Blue Earth Till Plain (Minnesota Soil Atlas Project, New Ulm Sheet, 1981).

Scope of Project
Development of waterfowling access to Spellman Lake. Preliminary plans for this project show a parking lot approximately 84' by 145' in size and 2,300' of new entry road. Because this is a duck-hunting lake only, the ramp will be gravel instead of concrete.

Description of Project Area
DNR owns a rectangular parcel on the lakeshore and has an easement across a 33'-wide strip from this parcel to the township road west of the lake. The property is all agricultural land except for the steeper portion of the slope just above the lake, which is covered with grasses and a line of mature trees along the shoreline. The lake itself is very shallow; at the time of survey, it was completely dry. DNR plans to construct a channel at the north end of the lake through which the lake level will be maintained at approximately 1061' AMSL (SHPO Ref. #89-0011). Soils in the project area have been mapped as part of the Ves-Storden series: loams and clay loams developed in loamy glacial till.

Records Review
Previous surveys: a review of survey files indicates that there have been no formal cultural resource surveys within a 1-mile radius of DNR's property. The only work known to have been done around Spellman Lake is Wilford's 1948 research at 21YM1 and 21YM2.

Known sites: the Hoff Site (21YM2) is located on the western shore of the lower portion of Spellman Lake, about .35 mile southeast of DNR's property. This site was investigated by Lloyd Wilford in 1948. (Note: at the time Wilford worked at the site, Spellman Lake was known as Gullickson Lake, which is the name used in the site report.) According to Wilford, the site is "predominantly Woodland, with a minor Cambria component". The only other known site in the vicinity is the Gautefeld Site (21YM1), which is at the confluence of Spring Creek and the Yellow Medicine River, about 8 miles northeast of Spellman Lake. This site, which was also excavated by Wilford in 1948, is another a Woodland/Cambria habitation area. Consideration of its NRHP eligibility in 1974 resulted in a determination that it does not qualify for nomination to the Register.

Field Review
Methods: surface reconnaissance along new road alignment, northern property margins near parking lot location and along exposures at shoreline; grid of shovel tests in proposed parking lot area. The entry road alignment and private property to the north of DNR's land are agricultural fields. They had been recently plowed and rain had fallen just below survey was done, so surface visibility was very good.

Results: No cultural materials were observed anywhere along the entry road alignment or in the plowed fields adjacent to the development area. In shovel tests, soils were clay loams over dense silty clay with consistent stratigraphy. The only variation in shovel test profiles was a gradual increase in the thickness of the upper stratum as one moved to lower elevations, which may reflect downslope movement of topsoil from the agricultural fields on the higher ground. No cultural

materials were found in any shovel test.

Management Recommendations
It appeared that the proposed access development would not affect any significant historic or prehistoric resources. It was recommended that work proceed as planned with no additional review.

REGION V - SOUTHEAST

Freeborn County

Albert Lea Lake (SHPO Ref. #88-2582)

Location
South shore of the lake, about 3 miles east of the City of Albert Lea. MN (see Figure 41).

Funding/Construction Status
Development costs for this project were reimbursable from the Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service. Construction took place in the summer of 1988.

Physiographic Province/Geomorphic Region
Owatonna Moraine Area (Wright, 1972); Lonsdale-Lerdal Till Region, Emmons-Faribault Moraine & Cedar Valley Outwash adjoin (Minnesota Soil Atlas Project, St. Paul Sheet, 1973).

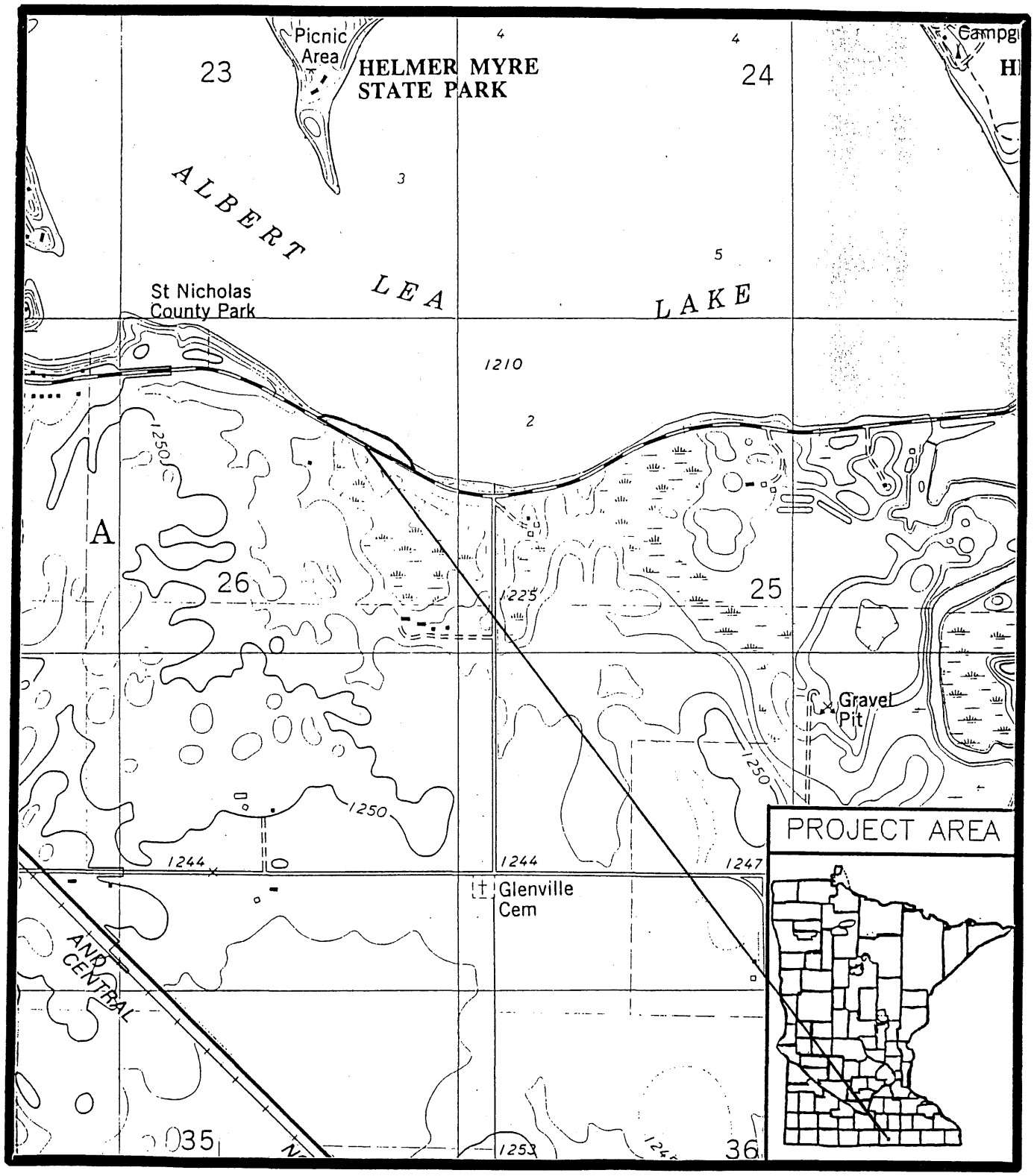
Scope of Project
Rehabilitation of former county access to Albert Lea Lake. Existing facilities included a bituminous-surfaced ramp, gravel parking area and two bituminous entry drives from County Road 19. Construction was to include raising the grade of the entry roads, expanding the size of the parking area and re-surfacing it, and installing a new concrete plank ramp.

Description of Project Area
The property is a narrow strip of land between the lake, which has a steep cutbank about 2 meters high at this point, and the grade of County Road 19, which is about 1 meter above the elevation of the project area. The lakeshore is lined by trees and brush; the remainder of the property beyond the limits of existing facilities had a sparse cover of grass.

Records Review
Previous surveys: The only formal cultural resource surveys known to have been done in the vicinity of the lake are Oothoudt's 1976 survey of Freeborn County and several surveys within the boundaries of Helmer Myre State Park, which is directly across the lake from DNR's property. None of these included examination of the project area.

Known sites: There are a number of known prehistoric burial and habitation sites on the shores of Albert Lea Lake. On the south shore, 21FE1, FE2, FE4, FE6 and FE11 are all single mounds or mound groups; 21FE18, FE19, FE20 and FE27 are habitation areas. None of these sites is less than 0.5 mile from the project area. Other habitation

Figure 41. Albert Lea Lake Project Area



USGS Glenville Quadrangle, 1982, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

areas and possible mounds are known to be present on the north shore of the lake, in Helmer Myre State Park. None of these sites have been formally tested.

Field Review
Methods: Surface reconnaissance along exposures in the cutbank above the lake; shovel tests around the perimeter of the existing parking lot and entry roads.

Results: There was moderately good surface visibility along some portions of the cutbank, where there had been recent slumpage. Soil profiles showed a consistent sandy silt loam topsoil with considerable amounts of pebble to cobble-sized till not far below the surface. This profile was also seen in shovel tests; the major variation in stratigraphy was the almost complete absence of the A horizon in some areas. This may be a result of grading prior to construction of the original county access. Shovel tests in the parking lot expansion area adjacent to the county road showed that the road grade fill section did extend beyond the right-of-way line onto DNR's property; underneath the fill, profiles were consistent with those observed in other locations.

Management Recommendations
It appeared that the proposed development would not affect any significant prehistoric or historic resources. A recommendation was made that construction proceed as planned with no additional review.

Rice County

French Lake (SHPO Ref. #88-1548)

Location
South shore of the lake, about 3 miles southeast of the City of Shieldsville, MN (see Figure 42).

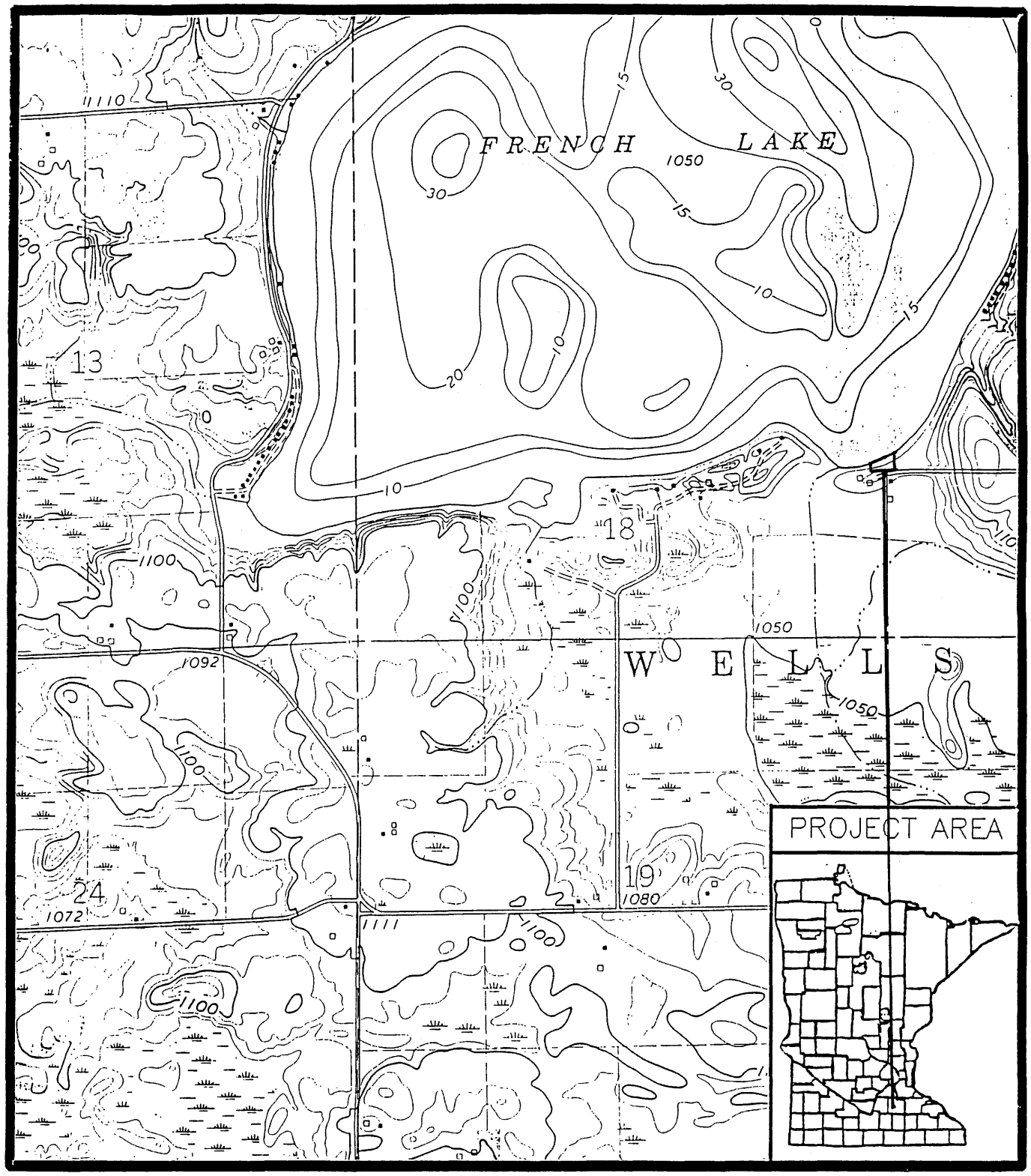
Funding/Construction Status
Development costs for this project were reimbursable from the Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service. Construction took place in the summer of 1988.

Physiographic Province/Geomorphic Region
Owatonna Moraine Area (Wright, 1972); Emmons-Faribault Moraine/Lonsdale-Lerdal Till Region (Minnesota Soil Atlas Project, St. Paul Sheet, 1973).

Scope of Project
Rehabilitation of existing water access facilities. Work included placement of additional fill material in the existing parking area to reduce the slope of the lot, and installation of a new concrete plank ramp.

Description of Project Area
The property is an existing Public Water Access, situated in a low area bounded to the west and east by higher terrain, and to the south by a township road and marshy area beyond. The old facilities consisted of a gravel parking lot that slopes down from the township road on the south side (elevation c. 1058') to the lakeshore (elevation c. 1050'), and a single concrete ramp. Narrow grassy strips along the eastern, western and northwestern edges of DNR's property were the only vegetated parts of the parcel.

Figure 42. French Lake Project Area



USGS Shieldsville Quadrangle, 1960, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

Records Review
Previous surveys: the MnSAS Rice County Survey (O'Connell & Wedding, 1985) surveyed sample units on the uplands overlooking the eastern shore of French Lake; no other formal cultural resource surveys are known to have been conducted in the vicinity.

Known sites: MnSAS recorded several sites just east of the project area: 21RC23, RC24 and RC25 are habitation areas in cultivated fields on the uplands overlooking the lake, 50 to 70 feet above the current lake level. 21RC25 is designated Woodland/Mississippian; 21RC23 and RC24 have no assigned cultural affiliation. No formal testing has been done at any of these sites.

Field Review
Methods: Surface reconnaissance along shoreline and unvegetated patches at edges of parking lot; shovel tests in corners of property. Soils were silty to sandy clay loams over coarse lakebed sediments. Some recent fill was noted overlying a shallow "A" horizon on the southeastern side of the property which probably is associated with township road construction.

Results: Shovel test results and the topography of the project area suggested that most of the property was graded off and then filled when the existing access was originally constructed. No cultural materials were found on surface or in shovel tests.

Management Recommendations
Almost all of the proposed access rehabilitation would affect areas within the limits of existing facilities; those areas not currently covered by gravel appeared to have been disturbed in the past by construction activities. No evidence of significant historic or prehistoric resources that would be affected by the proposed work was found during survey. It was recommended that the project proceed as planned with no additional review.

REGION VI - METRO

Anoka County

Coon Lake (SHPO Ref. #88-1551)

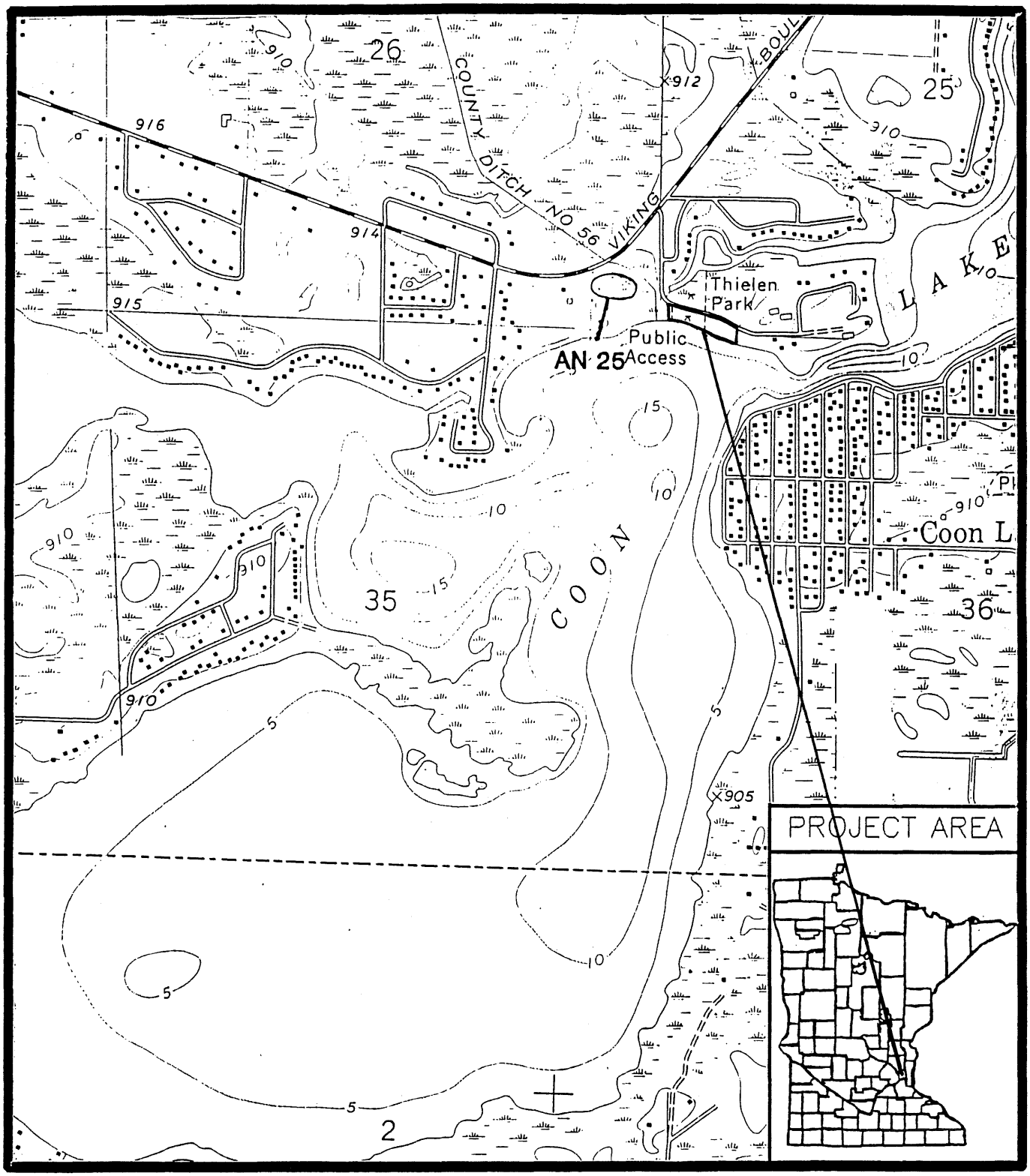
Location
North shore of the lake, about 12 miles northeast of the City of Anoka, MN (see Figure 43).

Funding/Construction Status
Development costs for this project were reimbursable from the Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service. Construction took place during the summer of 1988.

Physiographic Province/Geomorphic Region
Anoka Sand Plain Area (Wright, 1972); Anoka Sand Plain (Minnesota Soil Atlas Project, Twin Cities-Metro Area Sheet, 1975).

Scope of Project
Rehabilitation and expansion of existing access previously maintained by the City of East Bethel, which has agreed to allow DNR to build and maintain a new access. Work

Figure 43. Coon Lake Project Area



USGS Coon Lake Beach Quadrangle, 1974, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

included construction of two jetties, installation of two new concrete plank ramps and construction of a new parking area.

Description of Project Area
The project area location was formerly a city park which included public access facilities, consisting of a gravel entry road and turn-around loop and a single concrete plank ramp. There was a rectangular grassy area just east of the existing access (formerly a playground/picnic area) that DNR planned to use as a parking lot for the expanded access. The property is bounded on the north by a township road, on the east by a low, marshy area and on the west by a county drainage ditch. Most of the property is no more than 4 feet above than the lake level, which at the time of survey was about 2 feet below the "normal" high water level.

Records Review
Previous surveys: the MnSAS Anoka County Survey (1977) surveyed several sample units around Coon and other nearby lakes. Portions of CSAH 22, which is just north of the project area, have been surveyed in the past by the County-Municipal Highway Survey, with negative results. No other formal cultural resource surveys are known to have been done within 1 mile of the project area.

Known sites: MnSAS recorded one site and one find spot close to DNR's property in 1977: AN9013 is a lithic scatter on Coon Lake Point, about .25 mile southwest of the project area; 21AN25 is a Woodland habitation area on a small rise between Coon Lake and the Goose Lake basin. It is just northwest of the project area, across the county ditch.

Field Review
Methods: Surface reconnaissance along low cutbank at former shoreline; grid of shovel tests over proposed new parking area.

Results: Because of the recent drop in the lake level, the old shoreline bank is now separated from the waterline by a sandy flat about 4 meters wide. The length of this bank was examined twice; surface visibility was moderate to good. Shovel tests were dug in the grassy area west of the existing access. Soils were thin loamy sand over clean fine to medium-grained sand and saturated coarse sand. In most of the shovel tests, a thin (< 4 cm) peaty layer was noted just above the saturated layer. No cultural materials were found on surface or in any shovel test.

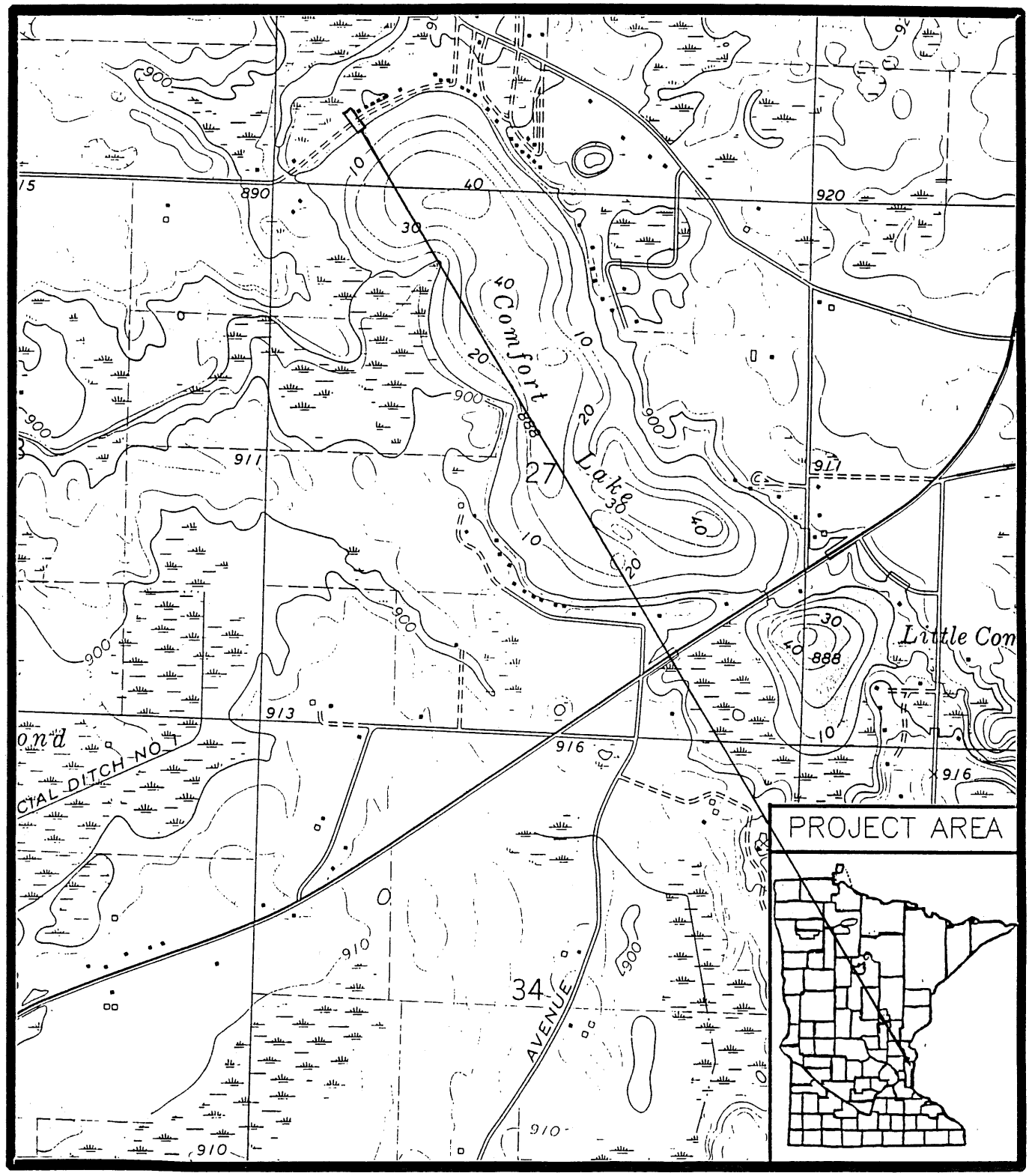
Management Recommendations
The known site just west of the project area appears to be confined to a ridge separated from DNR's property by lowland, a drainage ditch, and a township road. The planned access rehabilitation will not affect this site, and survey results indicated that there are no other significant prehistoric or historic resources on the property that might be affected by the work. A recommendation was made that construction proceed as planned with no additional review.

Chisago County

Comfort Lake (21CH55) (SHPO Ref. #89-0921)

Location
North shore of the lake, about 3 miles east-southeast of the City of Wyoming, MN (see Figure 44).

Figure 44. Comfort Lake Project Area



USGS Forest Lake Quadrangle, 1974, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

Funding/Construction Status
This project may involve funding partially reimbursable from the Federal Aid in Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service. Construction is scheduled for the spring of 1989; the wetland filling may require a Special Permit from the Corps of Engineers.

Physiographic Province/Geomorphic Region
Eastern St. Croix Moraine (Wright, 1972); McGrath Till Plain, Anoka Sand Plain adjoins to west (Minnesota Soil Atlas Project, Stillwater Sheet, 1981).

Scope of Project
Development of new public water access facilities. Construction plans call for a 10-unit parking area (dimensions 90' by 160') to be built on fill in the lower portion of DNR's property and installation of a concrete plank ramp. That work will require cutting through a beach ridge that is about 4 feet high; maximum cut dimensions will be 28 feet east-west and 40 feet north-south. An old township road that crosses the property parallel to the lakeshore will be bermed to restrict traffic, and a short driveway will be constructed from the adjacent township road to the parking area.

Description of Project Area
DNR's property includes wetlands and a beachridge at the western end of the developed subdivision lots along the north side of Comfort Lake. It is located about 800' east of the lake outlet (the Sunrise River). The northern two-thirds of the property is a very poorly drained area that has been cut off from the wetlands surrounding the river by the township road grade. To the south, the property slopes up rapidly to the crest of a beach ridge that is about 4' above the adjacent wetlands. This ridge was originally about 45' wide, but the lakeward half of it was cut away during construction of a lakeshore road which has now been vacated. The entire property is covered by thick brush with a few mature basswoods, oaks and elms along the ridge.

Records Review
Previous surveys: MnSAS Chisago County survey, 1978: the closest survey unit examined during that project was about 1 mile north-northwest of DNR's property; nothing was found in that location. In 1984, Clark Dobbs of the Institute for Minnesota Archaeology conducted a Phase I survey of a proposed township road alignment under contract with the Corps of Engineers. Because the proposed road construction would require substantial filling of wetlands adjacent to the Sunrise River, the township had applied for a Special Permit from the Corps. During SHPO review of this permit application, a brief on-site inspection of the project area yielded several prehistoric artifacts. The Corps therefore required formal survey before the project could proceed. No other formal cultural resource surveys are known to have been done in the vicinity of the project area.

Known sites: recorded sites and find spots in the vicinity of the project area include 21CH3, a single mound about 2 miles west along the Sunrise River; 21CH34, a Woodland habitation about 3.5 miles northwest; 21CHFS02, a single flake found a few miles northwest, near 21CH34; 21CHFS05, a flake and core found on the west side of the river about 0.5 mile away; and 21CHFS06, flakes and fire-cracked rock found west of DNR's property near the lake outlet.

During Dobbs' 1984 survey, a prehistoric habitation site (**21CH55**) was identified on the north shore of Comfort Lake, on the beach ridge east of the Sunrise River. Dobbs' fieldwork consisted of excavation of 13 40-cm square test

units along and adjacent to the beach ridge. Artifacts were recovered from 6 of these units, and included a cord-wrapped-stick-impressed body sherd, several other undecorated sherds, a triangular projectile point, a broken groundstone tool, and a small amount of debitage and possible fire-cracked rock. Because this area would not be affected by the proposed township road construction, Dobbs recommended that no further testing of the site be done at that time.

Field Review

Methods: surface reconnaissance along old road cut and exposures on sideslope of beach ridge along entire width of DNR's property; line of shovel tests from west to east at 5-meter intervals along the crest of the beachridge, starting about 10 meters west of the proposed ramp cut location. An effort was made to relocate the test units done in 1984 by Dobbs, but none could be found (see Figure 45).

After field survey was completed, it was noted that the base map used by Dobbs is of a scale that would make the lakeshore lots about 66 feet wide; on this map, his Test Units #9, 10 and 11 are within DNR's property. However, both the project map which accompanied the 1984 Corps permit application and the property map prepared by DNR show lots with 100 feet of lake frontage. If the wider lot size is correct, and Dobbs' 15-meter test interval is accurate, his test units were placed differently in relation to lot lines than shown on his map. (Locational data provided in Dobbs' report describes the placement of each test unit in relation to other test units and the edge of the road cut, but it does not reference lot line markers or other benchmarks relocatable in 1988.) If the 1984 test unit locations are re-plotted starting from the Unit #1 location at the western end of the site area, the easternmost test in the transect falls in Lot 13, just west of DNR's property, instead of along the eastern line of Lot 11, which forms the east boundary of the State property.

During survey, it was assumed that the map in Dobbs' report showed his test unit locations accurately in relation to lot lines. Therefore, the shovel tests done during the 1988 survey were thought to be among his 1984 Test Units #9, #10 and #11. However, given the probable incorrect mapping of the 1984 test units, it appears that none of those units were within DNR's property. The two closest test units to the western edge of the project area - which would have been 200 to 250 feet west of the proposed ramp cut location - were Dobbs' Units #10 and #11, both of which were sterile, and no testing has been done between those units and the shovel tests done in 1988.

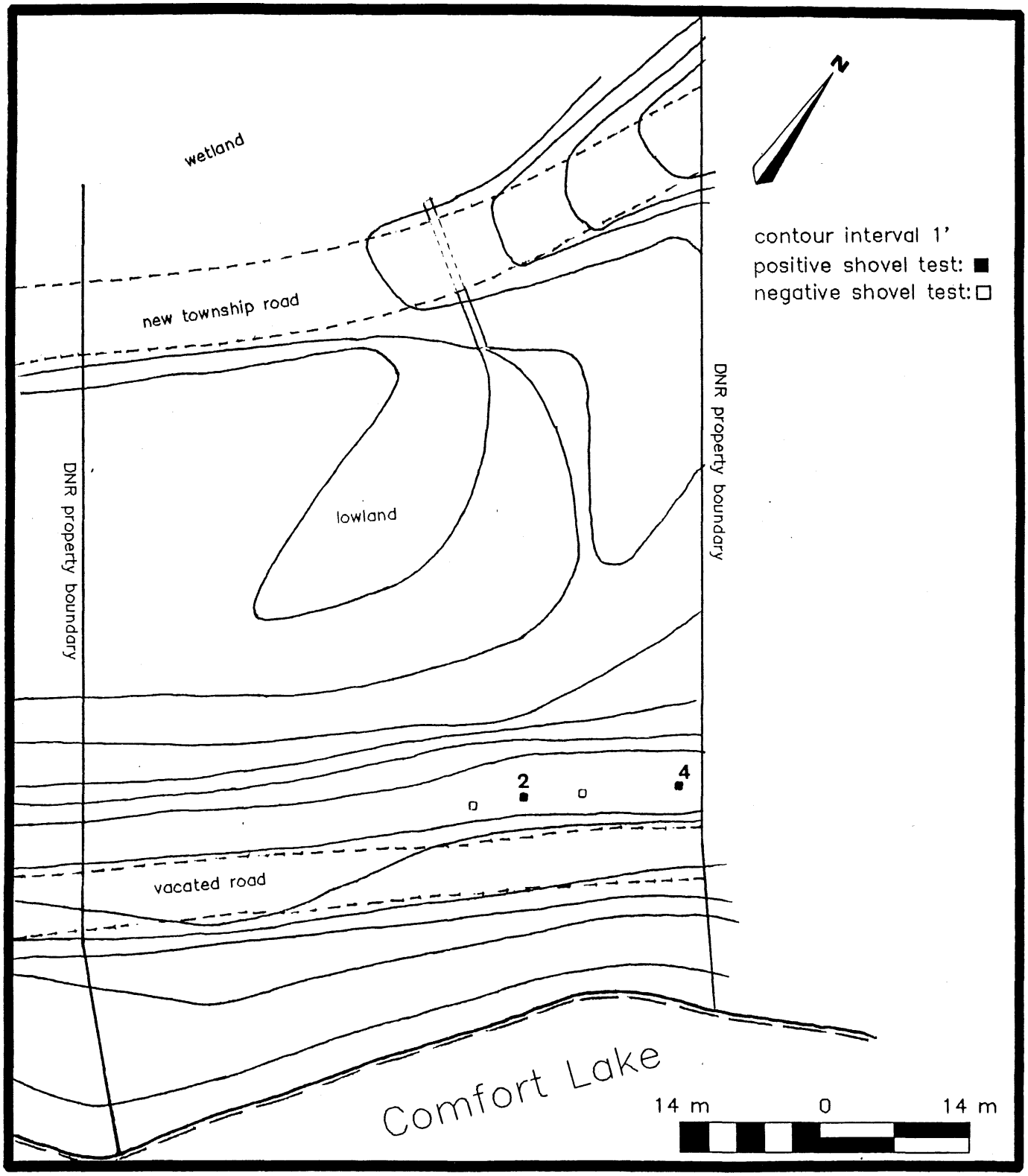
Results: no cultural materials were found on surface in any part of the property, although there were a number of exposures with good visibility along the lakeward side of the beach ridge. In the shovel tests, soil profiles were consistent with the stratigraphy described by Dobbs for most of his test units: sandy loam over sand and beach sediments at fairly shallow depths. (Note: the location at which the ST #4 in the 1988 transect fell was within the root tangle of a large clump of basswood within the proposed ramp cut area; this shovel test was skipped and ST #4 was dug 5 meters further to the east, close to the eastern property boundary).

Prehistoric artifacts were recovered from two of the four shovel tests done along the beachridge:

ST 2, 10-20 cm: 2 chert secondary flakes ST 4, 10-15 cm: 1 small grit-tempered body sherd, cr

These cultural materials may be assumed to represent an extension of 21CH55 further to the east than initially thought on the basis of the 1984 testing. However, the low density and erratic distribution of the recovered material suggested that this area is on the periphery of what was probably the main occupation area. Although no

Figure 45. 21CH55 - Site Area



evidence of disturbance was obvious in soil profiles, the area is known to have been disturbed in the past by a number of activities: road construction, trash-dumping, and general public use. There is a possibility that the artifacts were not in original deposition, but no evidence that clearly supports this view was found.

Management Recommendations

Testing of 21CH55 by the IMA in 1984 showed that this site consists of a deposit of cultural materials that is somewhat sparse but consistent in horizontal distribution from its western end near the Sunrise River to a point close to the western boundary of DNR's property. The artifact densities further east in the 1988 shovel tests were extremely low, and their horizontal distribution is intermittent. The higher artifact densities observed in the western part of the site probably represent the main portion of the site, with the materials found further east reflecting the "edge" of the occupation area. It is assumed that the lakeward portion of the beachridge that was destroyed by the road cut also contained artifactual materials. Including that area within the site boundaries results in a total site area about 14 meters wide and about 210 meters long, roughly half of which has been destroyed by the road cut.

Given the site's current disturbed condition and the sparse assemblage recovered from shovel tests, it does not appear that further intensive research in this part of the site area is warranted. The area of potential impact is largely taken up by the root mass of a large clump of basswood trees, which would make it very difficult to excavate a formal unit in that location. DNR is aware of the site's presence, and will restrict construction activities so that the only area within the site boundaries to be disturbed will be the ramp cut location. That will be reduced to the minimum necessary to create a usable launch area. The remainder of the beach ridge will be closed to equipment traffic, fill stockpiling, or any other construction activities. The Program Archaeologist will monitor removal of the basswoods and fill from the ramp cut area, and if any materials of archaeological interest are uncovered, work will be suspended until enough research has been done to determine the nature of the cultural deposit within the cut area. Appropriate steps will then be taken, including controlled excavation of the entire area, if warranted.

South Center Lake

(SHPO Ref. #88-1788)

Location

Northwestern side of the lake, adjacent to a new township road, about 1 mile south of the City of Lindstrom, MN (see Figure 46).

Funding/Construction Status

Development costs for this project were reimbursable from the Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service. Construction took place in the summer of 1988.

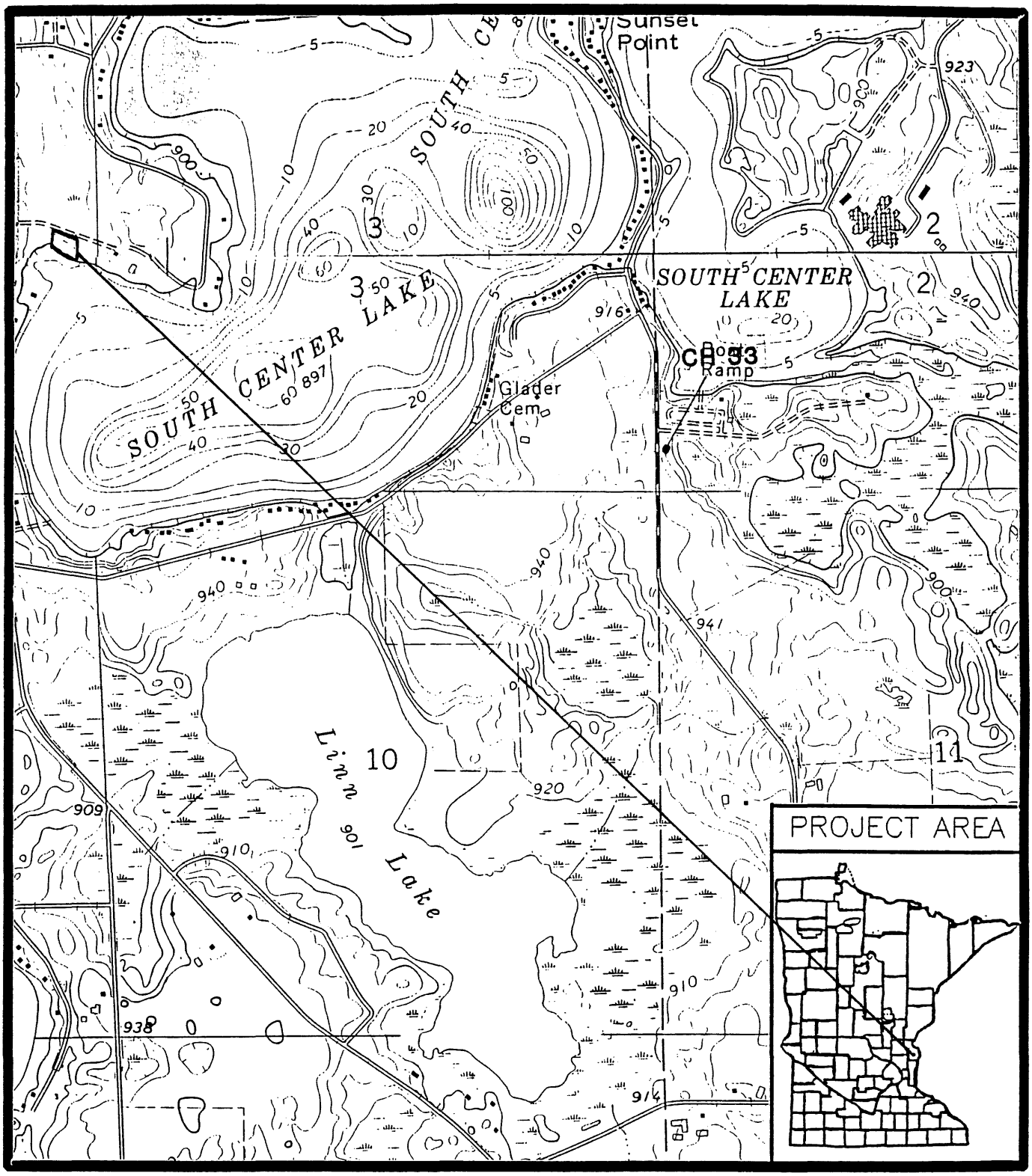
Physiographic Province/Geomorphic Region

Eastern St. Croix Moraine (Wright, 1972); McGrath Till Plain (Minnesota Soil Atlas Project, Stillwater Sheet, 1980).

Scope of Project

Development of a new Public Water Access to South Center Lake. Facilities were to include a 35-unit parking lot, double concrete plank ramps, dock and entry road. Construction required cutting of higher-lying portions of the project area and placement of fill along the lakeshore.

Figure 46. South Center Lake Project Area



USGS Lindstrom 1974 & Scandia 1974 Quadrangles, 7.5 minute series enlarged x 1.42; scale approximately 1:17,000

Description of Project Area

DNR's property is part of a new subdivision (formerly agricultural land) in which houses are currently under construction. The road that will provide ingress from CSAH #25 was also under construction at the time of survey; backslopes have recently been graded on both sides of the road corridor. A drainage ditch had been excavated (apparently as part of the road construction project) parallel to the eastern property boundary from the road corridor to the lakeshore. This ditch was exposed at the time of the first field visit, but had been covered over 2 weeks later. The ditch and surrounding area were bare of vegetation and considerable disruption of soil stratigraphy was apparent.

Elevation of the property varies from 897' at the water's edge to a narrow ridge at elevation 916'. The ridge is adjacent to the new road at the northern edge of the property. From there, the terrain slopes down at about at a 13% grade to an old fenceline. (Slopewash sediments from the higher elevations accumulated along this fenceline and leveled the slope in this area.) From the fenceline, the property slopes abruptly down to a narrow strip of level land along the water's edge. The lower one-third of the property was wooded and appeared to be subject to periodic inundation which restricted growth of an understory. The higher-lying portion was previously under cultivation, and at the time of survey was densely vegetated with grasses and saplings.

Records Review

Previous surveys: MnSAS surveyed several parcels around South Center and other nearby lakes in 1977, none of which was within 1 mile of DNR's property. In 1979, the County/Municipal Highway Survey reviewed the proposed resurfacing of CSAH #25 from County Road 85 north to the City of Lindstrom. This includes a portion of CSAH #25 that is just west of the project area; the results of that review were negative (Anfinson 1980:??).

Known sites: there are a number of single mounds and mound groups known to have been present around North and South Center Lakes, which are recorded as 21CH4 through 21CH10 (Winchell 1911:285-6). The only known habitation areas in the vicinity are several lithic scatters recorded by the Statewide Survey to the south of the project area. None of these known burial or habitation sites are within 1 mile of the project area.

Field Review

Methods: Surface reconnaissance of road backslope area along edge of DNR's property and in recently graded area along eastern side of parcel; shovel test transects along level portions of property. The portions of the property with pronounced slope - greater than about 12% - were not shovel tested.

Results: The graded areas were walked on two occasions at a 5-meter transect interval. Although the grading had been done shortly before the survey date, dry weather conditions made surface visibility poor to moderate. In the lower part of the parcel, at the lakeshore, soils were very mucky sandy clays over saturated sandy clay. Discontinuous accumulation of recent sediments was noted along the shovel test transects. Along the old fenceline, up to 20 cm of redeposited fine-grained sediments overlie sandy clay loam and coarse sandy clay. Along the ridgetop, erosion of topsoil, probably due to agricultural activities, was apparent in most shovel tests. A very thin A horizon (completely absent in some shovel tests) overlies sandy clay loam and dense sandy clay and glacial till. No cultural materials except for a few pieces of recent debris were found on surface or in any shovel test.

Management Recommendations
It appeared that the proposed project would not affect any significant historic or prehistoric resources. It was recommended that development proceed as planned with no additional review.

Scott County

Lower Prior Lake (SHPO Ref. #89-0559)

Location
North shore of the lake, adjacent to Sandy Point Park in the City of Prior Lake (see Figure 47).

Funding/Construction Status
This project may be funded in part from the U.S. Coast Guard Boating Safety Fund. Construction is scheduled for the spring of 1989.

Physiographic Province/Geomorphic Region
Owatonna Moraine Area (Wright, 1972); Prior Lake Moraine (Minnesota Soil Atlas Project, Twin Cities Sheet, 1974).

Scope of Project
Development of new Public Water Access facilities. Construction elements will include two parking areas with a total of 27 parking spaces, about 500' of road, turnaround loop and concrete plank ramp.

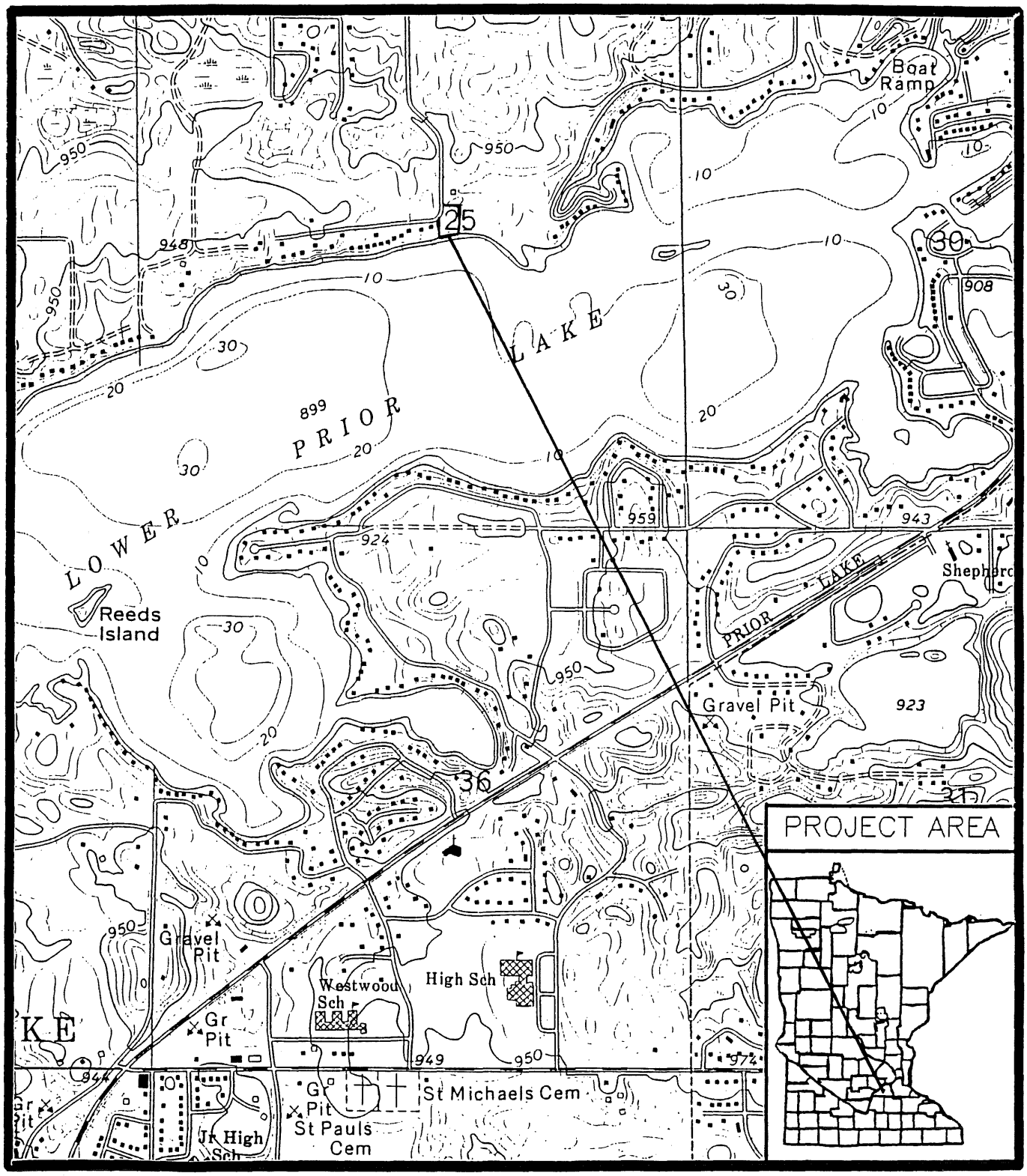
Description of Project Area
The project area on is the edge of a recently developed subdivision on the north shore of Lower Prior Lake. DNR owns two subdivision lots and a narrow parcel leading from those lots to the lakeshore. The area in which parking areas will be developed is rolling moraine topography which has been extensively altered by housing and road construction. An access road will lead from this part of the project area down a steep ravine to the water's edge, which is normally about 30' below the upland elevation. Construction of the ramp approach and turnaround will require backsloping along the eastern edge of the ravine.

Records Review
Previous surveys: 1984 survey of proposed sewer and water lines on the north and shore shores of Prior Lake for the City of Prior Lake by Cougar Consultants (Lothson 1984). Phase I reconnaissance survey of proposed sewer corridor located from 500' to approximately 5000' west of DNR's property was conducted. No evidence of cultural resources was found anywhere along this corridor. This is the only formal cultural resource survey known to have been done near the project area.

Known sites: there are no recorded prehistoric or historic sites within a 1-mile radius of the project area. The closest known site is a prehistoric habitation area on Upper Prior Lake, about 2 miles south of DNR's property, which was identified during the 1984 Cougar Consultants survey.

Field Review
Methods: surface examination of parking lot areas; surface reconnaissance along ravine slopes and in proposed ramp location; shovel test transect across backslope area along eastern edge of ravine.

Figure 47. Lower Prior Lake Project Area



USGS Prior Lake Quadrangle, 1974, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000.

Results: the majority of the proposed construction area has already been extensively disturbed by recent road and housing construction. The parking lots will both be located in borrow areas, where exposed surfaces show heavy clays with substantial proportions of glacial till. The entry road will follow an existing alignment. The only areas that appeared to warrant reconnaissance survey were the small level area at the lakeshore where the ramp will be installed, and the edge of the upland along the eastern side of the ravine. Project plans show that the top of the backslope on this side of the ravine will be about 50' east of the present edge of the ravine.

The lowland area had very good surface exposure and was examined for cultural materials at 5-meter transect intervals. A line of 15-meter interval shovel tests was dug parallel to the ravine in the backsloping area. These shovel tests showed that the area had been disturbed in the past, possibly by activities associated with the City Park that is adjacent to DNR's property. The A horizon is quite shallow, and recent debris including nails, metal scraps and fragments of lumber was recovered down to depths of 25 cm. No other cultural materials were found in shovel tests or on surface.

Management Recommendations

It appeared that the proposed development would not affect any significant prehistoric or historic resources. A recommendation was made that construction proceed as planned with no additional review.

IV. RIVER RECREATION PROGRAM DEVELOPMENT PROJECTS

REGION II - NORTHEAST

Koochiching County

Big Fork River Access #1 (SHPO Ref. #88-1659)

Location

Terrace on the south bank of the Big Fork River, located in the southwestern quadrant of a TH #6 bridge crossing about 15 miles south of Big Falls, MN (see Figure 48).

Funding/Construction Status

Development costs for this project were reimbursable from the Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service. The property is within the TH #6 right-of-way; construction was done during the summer of 1988 under a MnDOT Limited-Use Permit.

Physiographic Province/Geomorphic Region

Beltrami Arm of Lake Agassiz (Wright, 1972); Agassiz Lacustrine Plain, Big Fork Valley (Minnesota Soil Atlas Project, Hibbing Sheet, 1971).

Scope of Project

Rehabilitation of existing parking area and construction of walk-in canoe access to the Big Fork River. A graded and graveled parking area was constructed by MnDOT as part of a bridge replacement project conducted in 1977. DNR planned to resurface the existing parking area and construct a trail and timber steps leading to the river's edge.

Description of Project Area

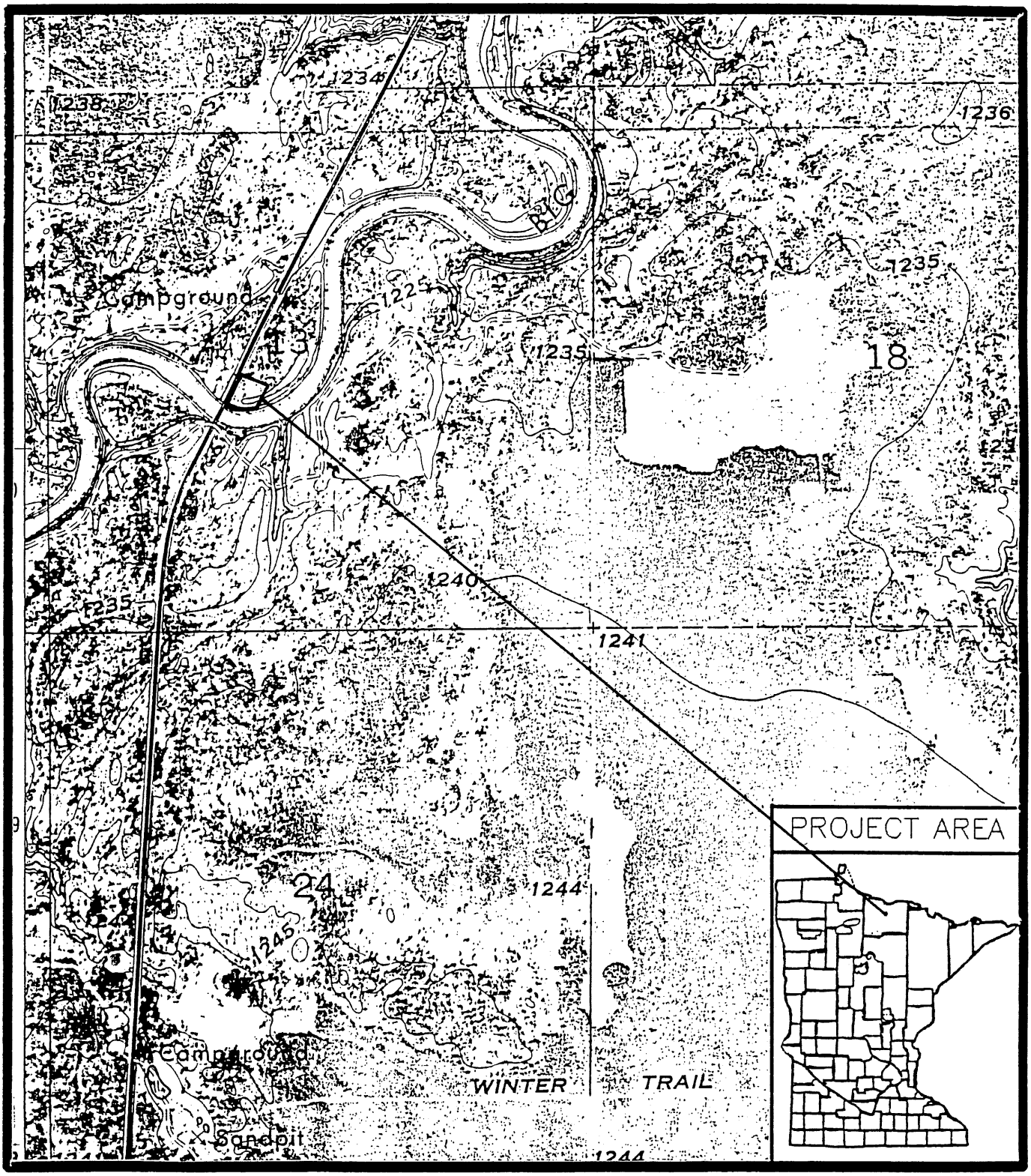
The project area is situated about 25′ above the current level of the Big Fork River on its south bank. MnDOT owns a 250′-wide right-of-way on this side of the highway, a portion of which was previously cleared, graded and graveled to create a parking area. The cleared area is surrounded by birch-aspen forest.

Records Review

Previous surveys: The only formal cultural resource survey in the area was a review of the TH #6 bridge replacement in 1977. The Trunk Highway Archaeologist was informed that all work would be confined to existing ditch limits, so no field survey was conducted. After the project was completed, the Trunk Highway Archaeologist discovered that the parking lot area had been graded off, and notified MnDOT that the area had not been surveyed because no information about that work had been provided beforehand.

Known sites: The closest known site is 21KC5, a reported mound that is at least 10 miles northeast of the project area. The mound was reported to Lloyd Wilford in the 1950s by the landowner, but its existence was never field-verified. A MnSAS crew attempted to relocate the mound in the 1970s, but could find no evidence of such a feature in the location recorded by Wilford.

Figure 48. Big Fork River #1 Project Area



USGS Wildwood Quadrangle, 1971, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

Field Review
Methods: Shovel tests around the perimeter of the existing parking lot and along the proposed trail to the river's edge.

Results: Only a small portion of the existing parking area was accessible for survey due to thick gravel deposits. Shovel tests were dug where possible around the outside edges of the cleared area. Soil profiles showed that most or all of the "A" horizon had been removed by the original parking lot construction. In the woods, a well-developed sandy silt loam soil was encountered in all shovel tests. The depth of the "A" horizon varied according to the slope of each test location, but in general the stratigraphy appeared consistent and undisturbed. No cultural materials were found in any shovel test.

Management Recommendations
It appeared that the proposed access rehabilitation would not affect any significant prehistoric or historic resources. It was recommended that the project proceed as planned with no additional review.

Big Fork River Access #2 (SHPO Ref. #88-1658)

Location
Low terrace and old levee remnant on the north bank of the Big Fork River, about 12 miles south of Big Falls, MN (see Figure 49).

Funding/Construction Status
Development costs for this project were reimbursable from the Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service. The property is within the TH #6 right-of-way; construction was done under during the summer of 1988 a MnDOT Limited-Use Permit.

Physiographic Province/Geomorphic Region
Beltrami Arm of Lake Agassiz (Wright, 1972); Agassiz Lacustrine Plain, Big Fork Valley (Minnesota Soil Atlas Project, Hibbing Sheet, 1971).

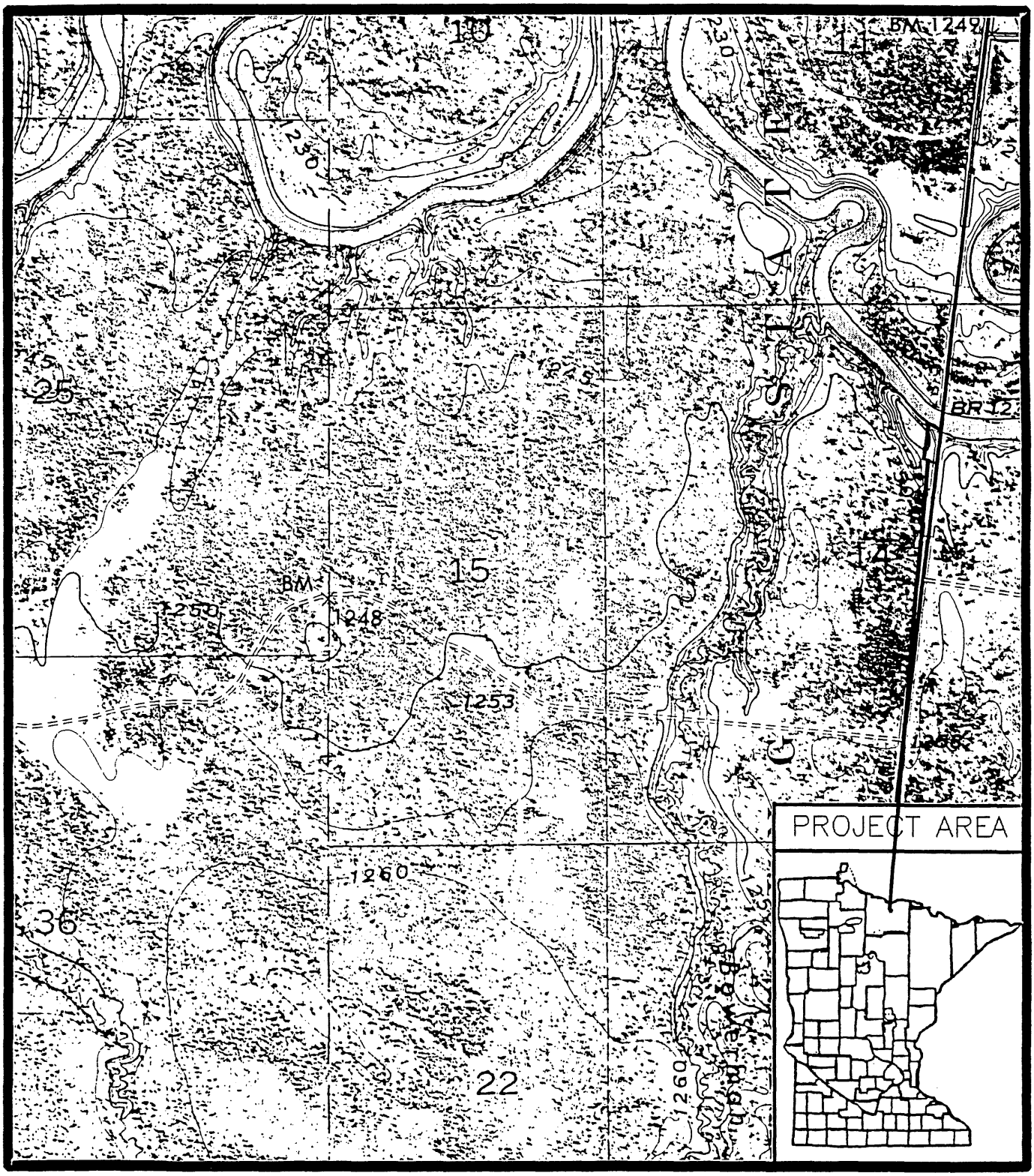
Scope of Project
Construction of a new access to the Big Fork River. Facilities were to include a small parking area and concrete plank ramp. An existing driveway from TH #6 across the highway ditch will be used as an entry road.

Description of Project Area
The project area is entirely within MnDOT's TH #6 right-of way, which is about 200' wide at this point. A portion of the right-of-way within about 100' of the road grade was cleared for TH #6 construction, and the remainder of the parcel is wooded. The topography of the parcel is rather irregular due to the presence of what appear to be several levee remnants, the largest of which parallels the bend of the river about 20 meters inland from the present channel.

Records Review
Previous surveys: The only formal cultural resource survey in the area was a review of the TH #6 bridge replacement in 1977. The Trunk Highway Archaeologist was informed that work would be confined to existing ditch limits, so no field survey was conducted.

Known sites: The closest known site is 21KC5, a reported mound that is about 5 miles northeast of the project area. The mound was reported to Lloyd Wilford in the

Figure 49. Big Fork River #2 Project Area



USGS Johnson Landing Quadrangle, 1971, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

1950s by the landowner, but was never confirmed in the field. A MnSAS crew attempted to relocate the mound in the 1970s, but could find no evidence of such a feature in the location recorded by Wilford.

Field Review
Methods: Shovel test transect along proposed entry road alignment; grid of shovel tests in proposed parking area.

Results: Soils in all shovel tests were very sandy loams over sandy clay and glacial till. Profiles were consistent throughout the project area, although the "A" horizon was somewhat deeper in the lower elevations than on the top of the largest levee remnant. The only evidence of recent disturbance was noted along the western edge, where MnDOT had done some clearing. No cultural materials were found in any shovel test.

Management Recommendations
It appeared that the proposed development would not affect any significant prehistoric or historic resources. A recommendation was made that construction proceed as planned with no additional review.

St. Louis County

Ash River (SHPO Ref. #88-2063)

Location
West bank of the river, about 30 miles east of the City of International Falls, MN (see Figure 50).

Funding/Construction Status
This project will be done under the terms of a U.S. Army Corps of Engineers Special Permit. Development costs were reimbursable from the Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service. Construction took place in the summer of 1988.

Physiographic Province/Geomorphic Region
Border Lakes Area (Wright, 1972); Tower-Ely Glacial Drift & Bedrock Complex (Minnesota Soil Atlas Project, International Falls Sheet, 1981).

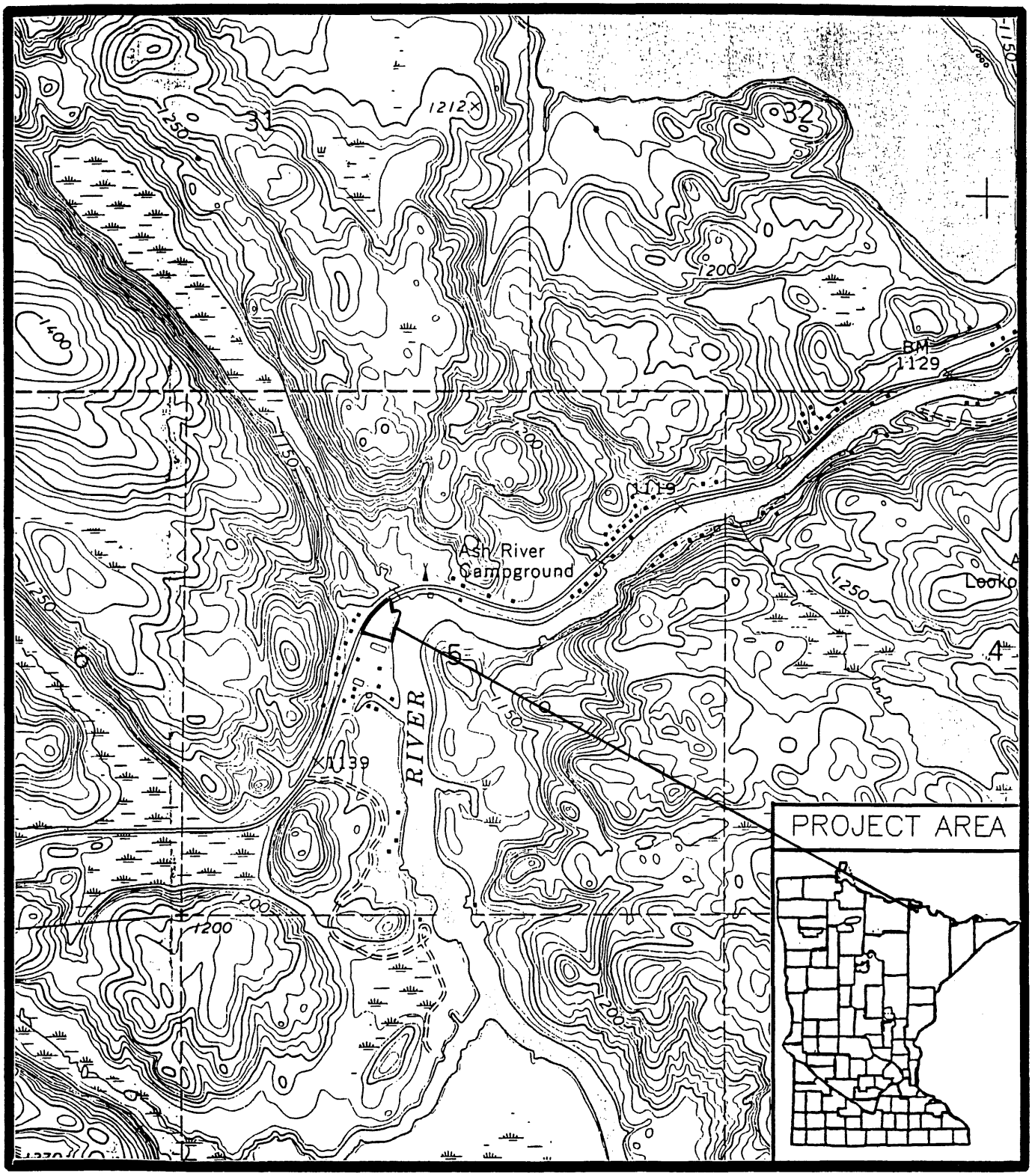
Scope of Project
Development of new Public Water Access facilities. Work included installation of a concrete plank ramp and construction of a 15-unit parking area.

Description of Project Area
The property was part of an adjacent marina operation, which used it as a storage area, until it was purchased by the State in 1984. It is bordered on the west by

CSAH #129 (the Ash River Trail), and on the north-northwest by a drainage channel which originates in a marsh about 1.5 miles northwest of the Ash River. At the time of survey, the entire property was covered with tall grass, with spruce trees along the riverbank and some brush along the county road. An old boat slip is located on the north edge of the property.

Records Review
Previous surveys: The only formal cultural resource surveys that have been done in

Figure 50. Ash River Project Area



USGS Ash River NE Quadrangle, 1968, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

the vicinity of this project area are the Voyageur's National Park surveys sponsored by NPS, and the 1987 survey of proposed re-alignments to CSAH #129, conducted by the County-Municipal Highway Archaeological Survey Program.

Known sites: There are several prehistoric sites located about 10 miles north of the project area in Voyageur's National Park, along the south shore of Lake Kabetogama. The survey of CSAH 129 located a logging camp, circa 1916-29, in a proposed re-alignment corridor about 6 miles south of DNR's property (R. Peterson, personal communication). No other cultural resources have been identified near the project area.

Field Review
Methods: Examination of exposed faces along the riverbank; grid of shovel tests over proposed construction area.

Results: No cultural materials were found on surface or in any shovel test. Soils throughout the project area were consistently silty clay loams over very dense silty clay. In most of the shovel tests, a thin layer of slightly coarser sediments, apparently deposited during a flood episode, was noted overlying finer-grained strata at depths between 15 and 30 cm below the surface. Shovel tests extended into a stratum of coarser sandy clay which appeared to be related to initial terrace formation. No major disturbance to soil stratigraphy was evident in the shovel tests.

Management Recommendations
It appeared that the proposed construction will not affect any significant historic or prehistoric resources. A recommendation was made that the project proceed with no additional review.

REGION III - CENTRAL

Pine County

Grindstone River (Brenner Sawmill) (SHPO Ref. #??-????)

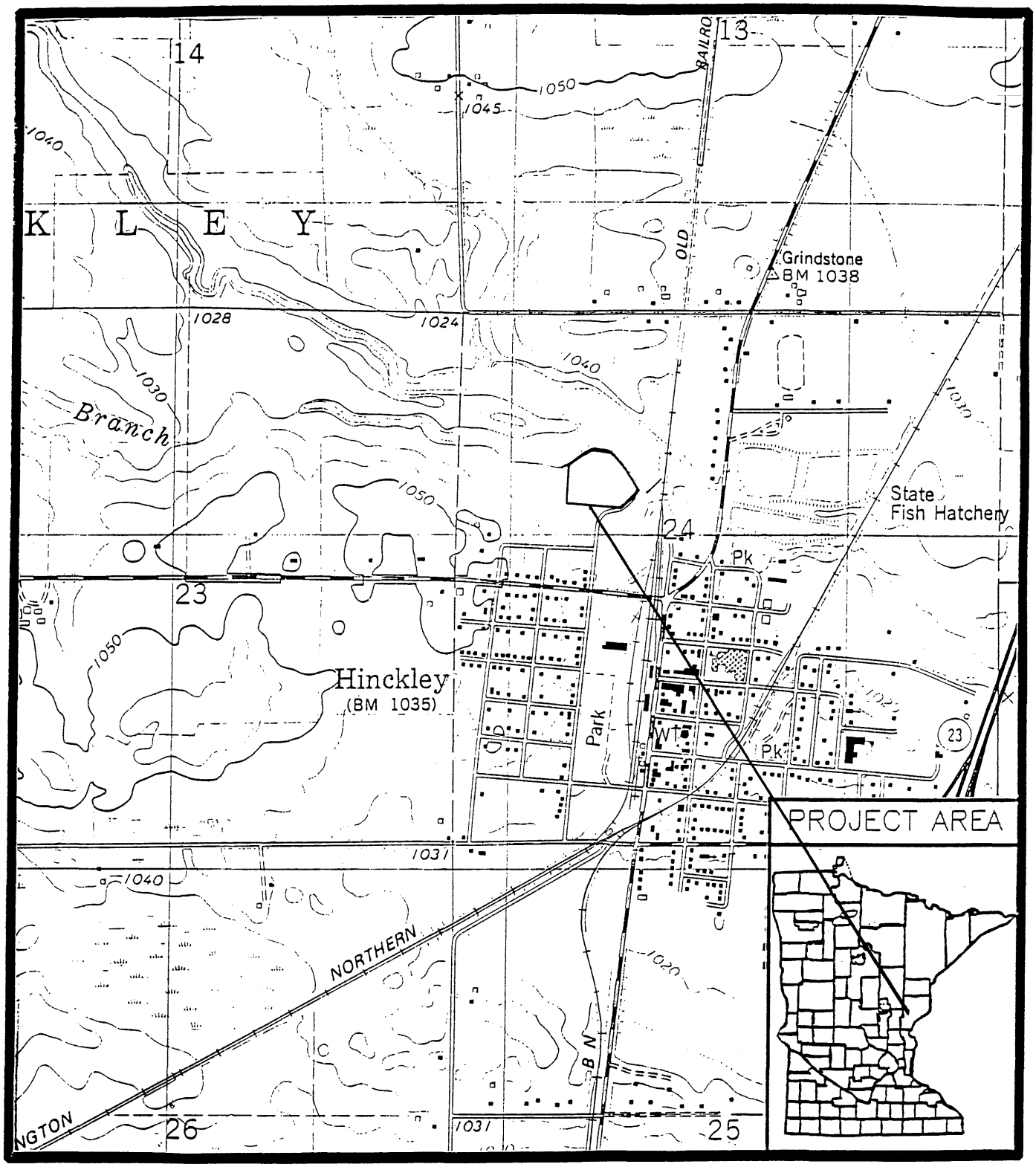
Location
South shore of the river, on the northern edge of the City of Hinckley, MN (see Figure 51).

Funding/Construction Status
It is anticipated that this project will not involve any Federal funding or permitting. Construction is tentatively scheduled for the summer of 1989.

Physiographic Province/Geomorphic Region
Brainerd-Automba Drumlin Area (Wright 1972); Hinckley Outwash Plain; McGrath Till Plain adjoins to west (Minnesota Soil Atlas Project, Duluth Sheet, 1977).

Scope of Project
The project initially proposed by DNR was to consist only of installation of a new fishing pier on the Grindstone River, just upstream from the Hinckley Dam on the northern edge of the City of Hinckley. The property is owned by DNR-Division of Fisheries, which has a large hatchery operation on the north side of the river. Fisheries granted permission for the Water Access Unit to install the pier, funding

Figure 51. Grindstone River Project Area



USGS Hinckley Quadrangle, 1982, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

for which was provided by the Hinckley Lion's Club through the Hinckley Conservation Club. The terms of the funding agreement specified that local sources would pay for the pier if DNR provided the labor and the pier was installed during the summer of 1988. During project planning, Regional personnel decided to expand the scope of the work to include construction of a parking lot and installation of a concrete plank ramp upstream from the pier location. All necessary work would be done by the Regional maintenance crew. The expanded construction plan would involve extensive clearing of brush and trees, leveling of the parking lot area and placement of fill over the leveled area.

Description of Project Area

The project area is located on a level terrace on the south bank of the Grindstone River, just downstream from the confluence of the north and south forks of the river. There is an existing city street on the eastern edge of the project area that allows access to the dam and a small parking lot. The remainder of the property is densely vegetated. Some mature pines are present, but most of the vegetation consists of vigorous stands of brush, nettle and sumac.

Records Review

Previous surveys: no evidence was found that there have been any formal cultural resource surveys in the vicinity of the project area.

Known sites: there are several prehistoric and historic sites on the north bank of the Grindstone River, and a number of historic properties within the City of Hinckley. The project area itself appears to be the former location of one or more 19th century sawmilling operations. A series of sawmills operated in Hinckley during the 1800s, starting in 1870 when the City was platted and the first dam was built across the Grindstone River. Over the next two decades, as the logging industry grew, mill operations expanded rapidly. The building that was standing at the time of the Great Hinckley Fire had been built around 1891 and was owned by the Brenner Lumber Company when it burned in 1894. Preliminary information obtained from the Hinckley Fire Museum and SHPO historic site files indicates that, at its height, the Brenner Sawmill covered an area of almost one square mile along the south shore of the Grindstone River, just upstream from the millpond dam. The mill was a major employer in Hinckley, having a work force of around 300 men, and produced close to 200,000 feet of lumber per day.)

Field Review

The Program Archaeologist was notified about the planned construction after the road alignment and proposed parking area had been staked in the field by DNR Regional personnel. During a preliminary field inspection of the area, a number of obviously artificial features which may be remnants of the mill and associated buildings were observed within and adjacent to the staked area. These included cellar depressions, low embankments and several segments of roadbed or railroad grade. Underbrush in the project area is extremely dense, and it was not possible to determined precisely what elements of the mill might be represented by the observed surface features.

A second field visit was made late in the fall, when much of the vegetation in the area was down. Visibility was improved to the extent that additional features could be detected, and the relative positioning of the features could be observed. The only cultural materials noted on the surface (with the exception of a small amount of recent trash) were a charred whitewear fragment, a piece of wire and a chuck of cast iron that appears to be from a stove. No subsurface testing was done as part of preliminary survey, but soil cores were done inside and adjacent to in some of the surface features. In a number of places, probes were obstructed by

solid objects within a few centimeters of the surface.

Management Recommendations

After the initial field visit by the Program Archaeologist, DNR personnel were informed that their proposed construction would undoubtedly affect some portions of the sawmill site, and they agreed not to perform any further work until additional review of the project has been completed. The fishing pier was installed in an alternative location, close to the existing parking area, and a short trail segment was hand-cleared to provide access from the parking lot to the pier.

Future research at the Brenner Sawmill site will be necessary to clearly define the extent of the archaeological deposit and evaluate its significance. The site is briefly described in a report sponsored by SHPO entitled "A Study to Find Out the Condition of Major Sawmill Sites in Northern Minnesota" (Kapler 1976), in which it is categorized as being in "fair" condition. However, cement and concrete block foundation remnants near the existing parking lot, which were noted in that report as being part of the mill, are actually the remains of a beachhouse that was constructed by the City sometime in the 1950s or 1960s. The researcher does note that heavy underbrush made it very difficult to locate any features that might be associated with Brenner's Mill. The report states that there has been no recent development in the area and that the site is significant in terms of locational and associational criteria for NRHP eligibility. From an archaeological perspective, the site might be considered to be in better than fair condition, since it appears to be essentially intact and left mostly undisturbed over the past 85 years. As Kapler notes in his report, many of the sawmill sites in Northern Minnesota now consist only of building foundations left when machinery was moved to a new location as nearby areas were depleted of timber. In the case of the Brenner Mill, however, operations were abruptly halted while the mill was at the height of production. This site should contain structural and mechanical elements that would not, therefore, be present in other locations.

There are two primary aspects to the potential significance of this site. It has undoubted importance on the local level, given the City's demonstrated concern for preservation and interpretation of the history of the town. (Jean Coffey of the Hinckley Fire Museum indicated that consideration has been given to the possibility of partial reconstruction or interpretation at this site sometime in the future.) Hinckley itself played a central role in the settlement and development of the surrounding area, being the division point for the Great Northern and Northern Pacific Railroads for many years, and the supply point for small settlements and logging camps in the surrounding area in the late 1800s. The Brenner Mill was of considerable importance to the economy of the area until 1894, and as a major sawmilling site, has significance also on a larger scale. Its association with the logging industry ties it to broad themes in the political, social and economic history of the state as a whole.

There are several extant photographs of the mill building prior to the fire, but they do not clearly show the precise location or orientation of buildings in relation to the millpond and dam (see front cover). Intensive field research would be necessary in order to define the probable area within which structural remnants and associated materials might be found and to determine the extent to which the site would be affected by DNR's proposed construction. Regional personnel are discussing the proposed construction with the City, and will attempt to determine their opinion about use of the mill site and define alternative arrangements. If an alternative construction plan that will obviously not affect the sawmill site can be defined, it is probable that no further field research will be conducted within the

scope of this program. However, if it appears necessary for construction to proceed as currently proposed, plans will be formulated for field survey directed towards definition of site boundaries, internal structure and potential NRHP eligibility.

REGION IV - SOUTHWEST

Yellow Medicine County

Minnesota River/Kinney Landing (SHPO Ref. #88-1912)

Location

South bank of the river, adjacent to TH #67 about 2 miles southeast of the City of Granite Falls, MN (see Figure 52).

Funding/Construction Status

Development costs for this project were reimbursable from the Sportfishing Restoration Fund administered by U.S. Fish & Wildlife Service. Construction was scheduled for the summer of 1988.

Physiographic Province/Geomorphic Region

Minnesota River Valley (Wright, 1972); Minnesota Valley Outwash; Blue Earth Till Plain adjoins to southwest (Minnesota Soil Atlas Project, New Ulm Sheet, 1981).

Scope of Project

Rehabilitation and expansion of an existing river access. Facilities before rehabilitation consisted of a gravel parking area and a concrete plank ramp. Construction plans called for resurfacing and expansion of the existing lot, as well as development of a new parking area further west, adjacent to TH #67.

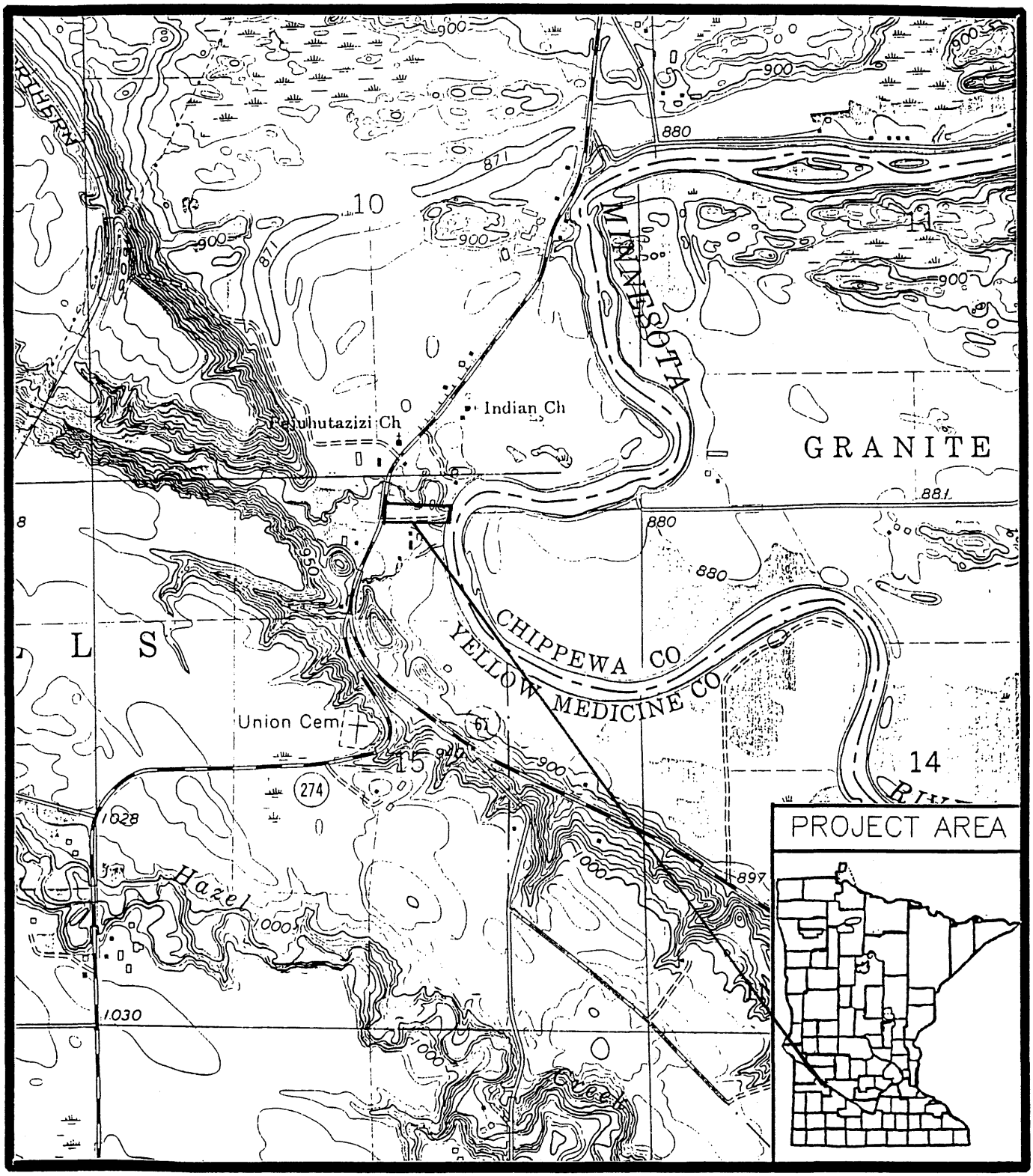
Description of Project Area

The project area is located on a floodplain terrace at the confluence of a small unnamed tributary stream and the Minnesota River. The property is a rectangular parcel that DNR has owned since the early 1960s. The eastern (riverward) portion of the property has been used since that time as a small parking area, bordered by the present stream channel to the north and channel meander scars on the southern and western sides. Further to the west is a level terrace remnant covered with tall grass. This part of the property was previously under cultivation. The stream channel is deeply incised along the northern edge of the project area - almost vertical cutbanks of up to 3 meters in height are present in several locations, and the stream is actively eroding the northern edge of the terrace remnant.

The original land survey of Yellow Medicine County shows that, in 1860, this parcel was about 800' west of the main channel of the Minnesota River. The stream is shown on that survey as flowing southeast from its present point of confluence with the river to a point about 0.25 mile downstream from the current junction. The present river channel appears to follow that old stream channel course for some distance downstream from DNR's property. A number of meander loops now present in the stream channel do not appear on the 1860 survey. It appears likely that westward migration of the river channel during the past 120 years resulted in capture of the old stream channel by the river and accelerated lateral migration of the stream to the west of the river.

DNR planned to rip-rap a segment of stream channel near the river in order to

Figure 52. Minnesota River/Kinney Landing Project Area



USGS Granite Falls Quadrangle, 1965, 7.5 minute series
enlarged x 1.42; scale approximately 1:17,000

control erosion and siltation near the launch ramp. An SCS soil scientist who was conducting an inspection of that proposed work was consulted for information about the hydrology of the property. He confirmed that the lower portion of the property is inundated almost every year, and that the entire parcel has been flooded on occasion. He also indicated that considerable stream channel migration has taken place in the past. This has been controlled to some extent by the TH #67 grade along the western edge of the property, but new channels still are cut during high water episodes.

Records Review

Previous surveys: Trunk Highway survey along proposed TH #212 alignment south of Granite Falls in 1971 (Nystuen 1972); intensive testing and excavation of sites in the corridor by the Science Museum of Minnesota under contract with MnDOT in 1975 (Hudak 1977); surveys of several short segments of TH #67 from 5 to 10 miles southeast of Granite Falls by the Trunk Highway Survey (Peterson 1978; Peterson & Yourd 1984). None of this work included any examination of DNR's property or immediately adjacent lands.

Known sites: There are a number of known burial and habitation sites in the vicinity of the project area, many of which were initially recorded in Winchell or by Wilford. 21YM10, YM11, YM13, YM14, and YM24 are all single mounds or mound groups located on the bluffs overlooking the river valley southeast of Granite Falls. 21YM4 is a Woodland/Cambria habitation site about 0.5 mile south of the project area; 21YM32 through YM35 are habitation sites 0.5 mile or more north of DNR's property, recorded during the TH #212 survey.

Field Review

Methods: surface examination of bank exposures along river and stream channel; shovel testing around perimeter of existing lot and in proposed parking lot expansion area.

Results: examination of cutbanks revealed no evidence of prehistoric cultural deposits, although visibility was moderate to good in most areas. Around the existing parking lot, soil stratigraphy appeared to reflect frequent inundation by Minnesota River floodwaters as well as disruption by stream channel migration. Either coarse streambed sediments or very dense sandy clay was encountered in all shovel tests around the existing parking area at depths ranging from c. 80 to 120 cm below the surface.

The western portion of the property, which is the proposed new parking lot location, exhibited a different soil profile. All shovel tests in this area showed a well developed silty clay loam soil. A plow zone was discernible to depths between 20 and 40 cm in this entire part of the property. The only variation in soil noted in this area was a slight increase in the coarseness of sediments in the shovel tests closest to the existing road, along the southern edge of the property.

Most of the shovel tests in this area yielded no materials other than a few very small fragments of bone, all within the plow zone. A quantity of larger bone fragments, including a tooth tentatively identified as *Cervus elaphus* (American Elk) was recovered from a shovel test in the northwest quadrant of the parking lot expansion area, roughly 10 to 35 cm below the surface, entirely within the plow zone. None of the bone was charred, and no other materials indicative of an association with prehistoric cultural activity were found in this shovel test.

In another shovel test in the southeastern corner of the new parking lot area,

three very small ceramic sherds were recovered between 20 and 30 cm below the surface. They appeared to have been entirely within the plow zone. (The largest of these sherds is about the size of a nickel.) All three are thin and shell-tempered, and two of them have cord-roughened exterior surfaces. No other materials indicative of prehistoric occupation of the area were found here or any other shovel test. After a 15-meter grid of tests was completed over the construction area, additional tests were dug around the shovel test from which the ceramics were recovered: one test each to the east, west and north at a distance of 5 meters, and one each to the east, west, north and south at a distance of 2.5 meters. No cultural materials or features were found in any of these tests.

Management Recommendations

Examination of the area near the existing parking lot indicated that there are no potentially significant cultural deposits in this part of DNR's property. Although a few prehistoric artifacts were recovered from a single shovel test in the area that will be filled to create a new parking lot, additional shovel tests in the rest of the construction area resulted in recovery of no other artifacts or features suggestive of an intact cultural deposit in this location.

Although the reason for the presence of the artifacts in this location cannot be clearly defined, the lack of other cultural material in the vicinity suggests that they are not in primary deposition. Because this part of the project area was under cultivation for some time prior to purchase by the State, it is possible that the artifacts were introduced from a different location by agricultural activities. The positive shovel test lies within a small but distinct swale that may be the remnant of a silted-in meander scar, which is consistent with the slight increase in the coarseness of the sediments in this lower area. This suggests that the recovered artifacts are remnants of a small occupation area otherwise destroyed by stream channel migration. The present topography of the project area does clearly reflects reworking by lateral migration, inundation and backwater mixing of sediments.

Construction plans called for all new facilities to be built at or above existing grades in order to alleviate chronic drainage problems at the site. Because of the flood potential in the area, most of the entry road and the parking area were to be built on granular fill over filter fabric. This will minimize subsurface disruption of the present terrain, although any addition evidence of prehistoric occupation not found during field review will be made inaccessible. However, the few artifacts found during preliminary survey do not seem to clearly indicate that there is an intact cultural deposit in this location. Overall, there did not seem to be sufficient evidence of a potentially significant resource in this location to warrant additional field research. It was therefore recommended that the proposed construction proceed with no additional review.

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APPENDIX II. SUMMARY OF FEDERAL AND STATE CULTURAL RESOURCE MANAGEMENT STATUTES AND REGULATIONS

FEDERAL STATUTES AND REGULATIONS

The National Historic Preservation Act of 1966 (P.L. 89-665)
- establishes Advisory Council on Historic Preservation
- prescribes procedures to be followed when Federal undertakings may affect cultural resources

The National Environmental Policy Act of 1969 (P.L. 91-190)
- incorporates consideration of cultural resources into overall environmental assessment process for Federal undertakings

The Archaeological and Historic Preservation Act of 1974 (P.L. 93-291)
- expands cultural resource management requirements to all Federally funded, licensed or permitted activities
- authorizes inclusion of costs of cultural resource management activities in overall project funding

Procedures for the Protection of Historic and Cultural Properties (36CFR60; 36CFR800)
- establish specific process to be followed for identification and evaluation of significant resources
- define criteria for determining significance of identified properties
- delineate procedures to be followed for nomination of properties to NRHP

Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines (Federal Register, 9/29/83)
- define historic preservation planning process as it is to be carried out by State Historic Preservation Office
- broadly delineate various phases of the resource identification and evaluation process
- establish minimum professional qualifications for personnel carrying out preservation activities

STATE STATUTES AND REGULATIONS

The Outdoor Recreation Act of 1975 (MN Statutes, Chapter 86A)
- establishes the state's interest in the preservation and proper utilization of 'cultural and historic resources' for recreational and educational purposes
- charges DNR, in cooperation with MHS and other agencies, with establishment and maintenance of a registry of all entities that comprise the Minnesota Outdoor Recreation System, including state historic sites, scientific and natural areas, and other facilities that include cultural resources

Minnesota Environmental Rights Act (MN Statutes, Chapter 116B)
- defines the state's interest in protecting historic resources
- allows individuals to sue for suspension of activities causing damage to resources covered under the Act

APPENDIX II, continued

The Field Archaeology Act of 1963 (MN Statutes, Chapter 138.31-138.42)

- defines state archaeological sites as publicly-owned land or water areas "where there are objects or other evidence of archaeological interest"
- requires state agency cooperation in protecting state archaeological sites
- establishes licensing requirements for archaeological research on state lands
- requires review of project information by MHS, SAO and MIAC
- charges MHS and SAO with the right and responsibility to enforce the provisions of the law and establish necessary regulations

The Historic Sites Act of 1965 (MN Statutes, Chapter 138.51-138.66)

- defines "state historic sites" as land or water areas containing historic or archaeological value
- lists properties on the State Registry of Historic Sites
- requires state agency cooperation in "the preservation of historic and archaeological sites"

The Private Cemeteries Act (MN Statutes, Chapter 307.08)

- establishes policy regarding treatment of human interments outside of platted cemeteries
- requires review of projects that have the potential to disturb human interments outside platted cemeteries
- charges SAO with the right and responsibility to enforce provisions of the law and establish necessary regulations in cooperation with MIAC

Policies and Procedures of the State Archaeologist's Office Regarding Implementation of Chapter 307.08

- establish procedures for identification and treatment of human interments not in platted cemeteries
- define preferred strategies for protecting unplatted interments or, when necessary, for mitigating unavoidable disturbance
- define responsibilities for determination of appropriate treatment

Archaeological Survey Standards for Minnesota (Council for Minnesota Archaeology, 1977)

- establish minimum standards for performing compliance-oriented field research
- provide guidelines for professionally-acceptable documentation of survey results

APPENDIX III. PROJECTS REVIEWED, 1985-88, BY DNR REGION

REGION I

Project Name	County	Results/Level of Investigation	Year(s)
Big Floyd Lake	Becker	negative - reconnaissance survey	1987
Long Lake	Becker	negative - reconnaissance survey	1987
Lake Sallie	Becker	21BK33 - reconnaissance survey	1986,87
Lake Melissa	Becker	negative - reconnaissance survey	1988
Grace Lake	Beltrami	negative - reconnaissance survey	1986
Campbell Lake	Beltrami	negative - reconnaissance survey	1987
Gilsted Lake	Beltrami	negative - USFS survey	1988
Cass Lake Rest Area	Cass	negative - MnDOT survey	1988
Lake Geneva/West	Douglas	negative - reconnaissance survey	1986
Lake Christina	Douglas/Grant	21DL46 - site evalution recommended	1988
Big Sand Lake	Hubbard	negative - reconnaissance survey	1987
Blue Lake	Hubbard	negative - reconnaissance survey	1986
Eagle Lake	Hubbard	negative - reconnaissance survey	1987
East Crooked Lake	Hubbard	negative - reconnaissance survey	1987
Lake Hattie	Hubbard	21HB21 - reconnaissance survey	1987
Island Lake	Hubbard	negative - reconnaissance survey	1987
Red River/Oslo	Marshall	negative - reconnaissance survey	1987
Franklin Lake	Otter Tail	negative - reconnaissance survey	1986
Lake Marion	Otter Tail	21OT97 - site evaluation	1987,88
Otter Tail/Riverside	Otter Tail	21OT99 - data recovery recommended	1988
Star Lake	Otter Tail	negative - reconnaissance survey	1988
Lake Leven	Pope	negative - reconnaissance survey	1987
Lake Minnewaska	Pope	negative - records review	1988

REGION II

Project Name	County	Results/Level of Investigation	Year(s)
Esquagamah Lake	Aitkin	negative - reconnaissance survey	1987
Hanging Kettle Lake	Aitkin	21AK-9001 - reconnaissance survey	1986
Mississippi/Ferry Crossing	Aitkin	negative - reconnaissance survey	1987
Deer Lake	Itasca	negative - reconnaissance survey	1987
Johnson Lake	Itasca	negative - reconnaissance survey	1987
Sucker Lake	Itasca	negative - reconnaissance survey	1986
Little Fork R./Highway 11	Koochiching	21KC2 - data recovery recommended	1986
Little Fork R./Lofgren	Koochiching	negative - reconnaissance survey	1986
Big Fork R./Big Falls	Koochiching	21KC9 - reconnaissance survey	1986
Big Fork River #1	Koochiching	negative - reconnaissance survey	1988
Big Fork River #2	Koochiching	negative - reconnaissance survey	1988
White Iron Lake	Lake	negative - reconnaissance survey	1986
Armstrong Lake	St. Louis	negative - reconnaissance survey	1986,87
Floodwood River	St. Louis	negative - reconnaissance survey	1987
Shagawa Lake	St. Louis	negative - reconnaissance survey	1986
Elephant Lake	St. Louis	negative - reconnaissance survey	1988
Brighton Beach	St. Louis	positive - reconnaissance survey	1988
Rice's Point	St. Louis	negative - MnDOT survey	1988
Ash River	St. Louis	negative - reconnaissance survey	1988

APPENDIX III, continued

REGION III

Project Name	County	Results/Level of Investigation	Year(s)
Snake River/Highway 65	Aitkin	negative - reconnaissance survey	1987
Little Rock Lake	Benton	21BN8,BN9 - site evaluation recommended	1988
Boy Lake	Cass	negative - reconnaissance survey	1986
Inguadona Lake	Cass	negative - reconnaissance survey	1986
Leech Lake/Sugar Point	Cass	21CA10 - site evaluation	1987
Long/Pickeral Lake	Cass	negative - reconnaissance survey	1987
Sanburn Lake	Cass	21CA161 - reconnaissance survey	1986
Mississippi R./Highway 6	Crow Wing	negative - reconnaissance survey	1986
Nokasippi River	Crow Wing	21CW65 - site evaluation	1986
Borden Lake	Crow Wing	21CW101 - site evaluation	1985,86
Pelican Lake/Halvorsen Bay	Crow Wing	negative - reconnaissance survey	1986
Round Lake	Crow Wing	negative - reconnaissance survey	1988
Whipple Lake	Crow Wing	negative - reconnaissance survey	1988
Snake River/Co. Rd. 11	Kanabec	negative - reconnaissance survey	1986
Sturgeon Lake	Pine	negative - reconnaissance survey	1988
Grindstone River/Hinckley	Pine	21PN56 - site evaluation recommended	1988
Snake River/Cross Lake	Pine	21PN57 - site evaluation recommended	1988
Big Fish Lake	Stearns	negative - reconnaissance survey	1986
Big Watab Lake	Stearns	negative - reconnaissance survey	1986
Pearl Lake	Stearns	negative - reconnaissance survey	1985
Lake Koronis	Stearns	negative - MnDOT survey	1988
Pleasant Lake	Stearns	negative - reconnaissance survey	1988
Latimer Lake	Todd	21T08 - reconnaissance survey	1988
Mill Lake	Todd	negative - reconnaissance survey	1988
Stocking Lake	Wadena	negative - reconnaissance survey	1987

REGION IV

Project Name	County	Results/Level of Investigation	Year(s)
Artichoke Lake	Big Stone	negative - reconnaissance survey	1986
LeSueur River	Blue Earth	negative - reconnaissance survey	1985
Loon Lake	Blue Earth	21BE71 - reconnaissance survey	1987
Madison Lake	Blue Earth	negative - reconnaissance survey	1987
Clear Lake	Brown	21BW20 - reconnaissance survey	1988
Minnesota/Fredrickson	Chippewa	negative - reconnaissance survey	1986
Point Lake	Kandiyohi	negative - reconnaissance survey	1988
Lake Calhoun	Kandiyohi	negative - records review	1988
Lake Hendricks	Lincoln	negative - reconnaissance survey	1987
Budd Lake	Martin	negative - reconnaissance survey	1986
Sisseton Lake	Martin	21MR23 - reconnaissance survey	1986
Big Twin Lake	Martin	negative - reconnaissance survey	1988
Stahlis Lake	McLeod	negative - reconnaissance survey	1986
Belle Lake	Meeker	negative - reconnaissance survey	1987
Little Mud Lake	Meeker	negative - reconnaissance survey	1987
Lake Manuella	Meeker	negative - reconnaissance survey	1987
Round Lake	Meeker	negative - reconnaissance survey	1987
Hoff Lake	Meeker	negative - reconnaissance survey	1988
Spellman Lake	Yellow Medicine	negative - reconnaissance survey	1988
Minnesota R./Kinney	Yellow Medicine	negative - reconnaissance survey	1988

APPENDIX III, continued

REGION V

Project Name	County	Results/Level of Investigation	Year(s)
Albert Lea Lake	Freeborn	negative - reconnaissance survey	1988
Circle Lake	Rice	negative - reconnaissance survey	1986
Fox Lake	Rice	negative - reconnaissance survey	1986
Horseshoe Lake	Rice	negative - reconnaissance survey	1987
Shields Lake	Rice	negative - reconnaissance survey	1986
French Lake	Rice	negative - reconnaissance survey	1988

REGION VI

Project Name	County	Results/Level of Investigation	Year(s)
Coon Lake	Anoka	negative - reconnaissance survey	1988
West Rush Lake	Chisago	negative - reconnaissance survey	1987
South Center Lake	Chisago	negative - reconnaissance survey	1988
Comfort Lake	Chisago	21CH55 - reconnaissance survey	1988
Christmas Lake	Hennepin	negative - reconnaissance survey	1986
Little Long Lake	Hennepin	negative - reconnaissance survey	1986
Minnetonka/Halstead's Bay	Hennepin	negative - reconnaissance survey	1985
Cedar Lake	Scott	negative - reconnaissance survey	1986
Thole Lake	Scott	negative - reconnaissance survey	1985
Lower Prior Lake	Scott	negative - reconnaissance survey	1988
Big Carnelian Lake	Washington	negative - records review	1987
Big Marine Lake	Washington	21WA46 - reconnaissance survey	1987
Bone Lake	Washington	21WA53 - site evaluation	1986
Clear Lake	Washington	negative - reconnaissance survey	1986
Buffalo Lake	Wright	negative - reconnaissance survey	1987
Cokato Lake	Wright	negative - reconnaissance survey	1986
French Lake	Wright	negative - reconnaissance survey	1986
Granite Lake	Wright	negative - reconnaissance survey	1986
Ramsey Lake	Wright	negative - reconnaissance survey	1985

APPENDIX IV. PROJECTS REVIEWED, 1985-88, BY COUNTY

County	Project Name	Results/Level of Investigation	Year(s)
Aitkin	Esquagamah Lake	negative - reconnaissance survey	1987
	Hanging Kettle Lake	21AK-9001 - reconnaissance survey	1986
	Mississippi/Ferry Crossing	negative - recpnnaissance survey	1987
	Snake River/Highway 65	negative - reconnaissance survey	1987
Anoka	Coon Lake	negative - reconnaissance survey	1988
Becker	Big Floyd Lake	negative - reconnaissance survey	1987
	Long Lake	negative - reconnaissance survey	1987
	Lake Sallie	21BK33 - reconnaissance survey	1986,87
	Lake Melissa	negative - reconnaissance survey	1988
Beltrami	Grace Lake	negative - reconnaissance survey	1986
	Campbell Lake	negative - reconnaissance survey	1987
	Gilsted Lake	negative - USFS survey	1988
Benton	Little Rock Lake	21BN8,9 - site evaluation recommended	1988
Big Stone	Artichoke Lake	negative - reconnaissance survey	1986
Blue Earth	LeSueur River	negative - reconnaissance survey	1985
	Loon Lake	21BE71 - reconnaissance survey	1987
	Madison Lake	negative - reconnaissance survey	1987
Brown	Clear Lake	21BW20 - reconnaissance survey	1988
Cass	Boy Lake	negative - reconnaissance survey	1986
	Inguadona Lake	negative - reconnaissance survey	1986
	Leech Lake/Sugar Point	21CA10 - site evaluation	1987
	Long/Pickeral Lake	negative - reconnaissance survey	1987
	Sanburn Lake	21CA161 - reconnaissance survey	1986
	Cass Lake Rest Area	negative - MnDOT survey	1988
Chippewa	Minnesota R./Fredrickson	negative - reconnaissance survey	1986
Chisago	West Rush Lake	negative - reconnaissance survey	1987
	South Center Lake	negative - reconnaissance survey	1988
	Comfort Lake	21CH55 - reconnaissance survey	1988
Crow Wing	Mississippi R./Highway 6	negative - reconnaissance survey	1986
	Nokasippi River	21CW65 - site evaluation	1986
	Borden Lake	21CW101- site evaluation	1985,86
	Pelican Lake/Halvorsen Bay	negative - reconnaissance survey	1986
	Round Lake	negative - reconnaissance survey	1988
	Whipple Lake	negative - reconnaissance survey	1988
Douglas	Lake Geneva/West	negative - reconnaissance survey	1986
	Lake Christina	21DL46 - site evaluation recommended	1988

APPENDIX IV, continued

County	Project Name	Results/Level of Investigation	Year(s)
Freeborn	Albert Lea Lake	negative - reconnaissance survey	1988
Hennepin	Christmas Lake	negative - reconnaissance survey	1986
	Little Long Lake	negative - reconnaissance survey	1986
	Minnetonka/Halstead's Bay	negative - reconnaissance survey	1985
Hubbard	Big Sand Lake	negative - reconnaissance survey	1987
	Blue Lake	negative - reconnaissance survey	1986
	Eagle Lake	negative - reconnaissance survey	1987
	East Crooked Lake	negative - reconnaissance survey	1987
	Lake Hattie	21HB21 - reconnaissance survey	1987
	Island Lake	negative - reconnaissance survey	1987
Itasca	Deer Lake	negative - reconnaissance survey	1987
	Johnson Lake	negative - reconnaissance survey	1987
	Sucker Lake	negative - reconnaissance survey	1986
Kanabec	Snake R./Co. Rd. 11	negative - reconnaissance survey	1986
Kandiyohi	Lake Calhoun	negative - records review	1988
	Point Lake	negative - reconnaissance survey	1988
Koochiching	Little Fork R./Highway 11	21KC2 - data recovery recommended	1986
	Little Fork R./Lofgren Park	negative - reconnaissance survey	1986
	Big Fork R./Big Falls	21KC9 - reconnaissance survey	1986
	Big Fork River #1	negative - reconnaissance survey	1988
	Big Fork River #2	negative - reconnaissance survey	1988
Lake	White Iron Lake	negative - reconnaissance survey	1986
Lincoln	Lake Hendricks	negative - reconnaissance survey	1987
Marshall	Red River/Oslo	negative - reconnaissance survey	1987
Martin	Budd Lake	negative - reconnaissance survey	1986
	Sisseton Lake	21MR23 - reconnaissance survey	1986
	Big Twin Lake	negative - reconnaissance survey	1988
McLeod	Stahlis Lake	negative - reconnaissance survey	1986
Meeker	Belle Lake	negative - reconnaissance survey	1987
	Little Mud Lake	negative - reconnaissance survey	1987
	Lake Manuella	negative - reconnaissance survey	1987
	Round Lake	negative - reconnaissance survey	1987
	Hoff Lake	negative - reconnaissance survey	1988
Otter Tail	Franklin Lake	negative - reconnaissance survey	1986
	Lake Marion	210T97 - data recovery recommended	1987,88
	OT/Riverside	210T99 - site evaluation	1988
	Star Lake	negative - reconnaissance survey	1988

APPENDIX IV, continued

County	Project Name	Results/Level of Investigation	Year(s)
Pine	Sturgeon Lake	negative - reconnaissance survey	1988
	Grindstone R./Hinckley	21PN56 - site evaluation recommended	1988
	Cross Lake/Snake River	21PN57 - site evaluation recommended	1988
Pope	Lake Leven	negative - reconnaissance survey	1987
	Lake Minnewaska	negative - records review	1988
Rice	Circle Lake	negative - reconnaissance survey	1986
	Fox Lake	negative - reconnaissance survey	1986
	Horseshoe Lake	negative - reconnaissance survey	1987
	Shields Lake	negative - reconnaissance survey	1986
	French Lake	negative - reconnaissance survey	1988
St. Louis	Armstrong Lake	negative - reconnaissance survey	1986,87
	Floodwood River	negative - reconnaissance survey	1987
	Shagawa Lake	negative - reconnaissance survey	1986
	Elephant Lake	negative - reconnaissance survey	1988
	Brighton Beach	positive - reconnaissance survey	1988
	Rice's Point	negative - MnDOT survey	1988
	Ash River	negative - reconnaissance survey	1988
Scott	Cedar Lake	negative - reconnaissance survey	1986
	Thole Lake	negative - reconnaissance survey	1985
	Lower Prior Lake	negative - reconnaissance survey	1988
Stearns	Big Fish Lake	negative - reconnaissance survey	1986
	Big Watab Lake	negative - reconnaissance survey	1986
	Pearl Lake	negative - reconnaissance survey	1985
	Lake Koronis	negative - records review	1988
	Pleasant Lake	negative - reconnaissance survey	1988
Todd	Latimer Lake	21T08 - reconnaissance survey	1988
	Mill Lake	negative - reconnaissance survey	1988
Wadena	Stocking Lake	negative - reconnaissance survey	1987
Washington	Big Carnelian Lake	negative - records review	1987
	Big Marine Lake	21WA46 - reconnaissance survey	1987
	Bone Lake	21WA53 - site evaluation	1986
	Clear Lake	negative - reconnaissance survey	1986
Wright	Buffalo Lake	negative - reconnaissance survey	1987
	Cokato Lake	negative - reconnaissance survey	1986
	French Lake	negative - reconnaissance survey	1986
	Granite Lake	negative - reconnaissance survey	1986
	Ramsey Lake	negative - reconnaissance survey	1985
Yellow Medicine	Minnesota R./Kinney	negative - reconnaissance survey	1988
	Spellman Lake	negative - reconnaissance survey	1988

APPENDIX V. PROJECT LOCATIONS, 1985-88

County	Project Name	Location	Year(s)
Aitkin	Esquagamah Lake	T. 49N-26W, Sec. 18; W 1/2, SW NW SW.	1987
	Hanging Kettle Lake	T. 46N-27W, Sec. 14; NW NW SW NE.	1986
	Mississippi/Ferry Crossing	T. 49N-24W, Sec. 9; NW NE NW SW & N 1/2, NW NW SW.	1987
	Snake River/Highway 65	T. 44N-23W, Sec. 32; E 1/2, NE SE SE.	1987
Anoka	Coon Lake	T. 33N-23W, Sec, 25; W 1/2, E 1/2, SW SW SW & E 1/2, W 1/2 SW SW SW.	1988
Becker	Big Floyd Lake	T. 139N-41W, Sec. 15; W 1/2, SE NW SW NW & E 1/2, SW NW SW NW.	1987
	Long Lake	T. 139N-41W, Sec. 29; SE NW SE SW & S 1/2, N 1/2, SE SE SW.	1987
	Lake Sallie	T. 138N-41W, Sec. 8; SE NW SW NE & NE SE SW NE.	1986,87
	Lake Melissa	T. 138N-41W, Sec. 21; S 1/2, NW SW NW SW.	1988
Beltrami	Grace Lake	T. 146N-32W, Sec. 32; SW SW SE SE.	1986
	Campbell Lake	T. 148N-34N, Sec. 24; center 1/3 S 1/2 NE NE SW & center 1/3 N 1/2 SE NE SW.	1987
	Gilsted Lake	T. 148N-30W, Sec. 6; SW NE SE.	1988
Benton	Little Rock Lake	T. 37N-31W, Sec. 15; NE NE NE NE.	1988
Big Stone	Artichoke Lake	T. 121N-44W, Sec. 1; S 1/2, SE SE NE.	1986
Blue Earth	LeSueur River	T. 107N-27W, Sec. 12; SE SE SE SE.	1985
	Loon Lake	T.107N-28W, Secs. 3; SW SW NE SW & Sec. 10; W 1/2, W 1/2, NW NE NW & W 1/2, W 1/2, SE NE NW.	1987
	Madison Lake	T. 108N-25W, Sec. 2; SW NE SE NW.	1987
Brown	Clear Lake	T. 109N-31W, Sec. 14; NW NE NE.	1988
Cass	Boy Lake	T. 142N-28W, Sec. 25; SE SE NE SE & NE NE SE SE.	1986
	Inguadona Lake	T. 140N-27W, Sec. 8; N 1/2, NE SE NW.	1986
	Leech Lake/Sugar Point	T.143N-29W; NW NE NE NE Sec. 36; S 1/2 SE SE SE Sec. 25.	1987
	Long/Pickeral Lake	T. 140N-29W, Sec. 33; S 1/2, SE SE SE.	1987
	Sanburn Lake	T. 139N-30W, Sec. 22; NE NW SE SE.	1986
Chippewa	Minnesota R./Fredrickson	T. 115N-39W, Sec. 13; NE NE SE SE NW.	1986
Chisago	West Rush Lake	T. 37N-22W, Sec. 16; NW NE NW SE & N 1/3, NW NW SE.	1987
	South Center Lake	T. 33N-20W, Sec. 4; SW SE SE NE.	1988
	Comfort Lake	T. 33N-21W, Sec. 27; SE NW SW SW & NW SE SW SW.	1988
Crow Wing	Mississippi R./Highway 6	T. 47N-29W, Sec. 24; NW NE SW NW.	1986
	Nokasippi River	T. 43N-32W, Sec. 27; E 1/2, NW NW SE.	1986
	Borden Lake	T. 44N-28W, Sec. 11; center, SW SE NE.	1985,86
	Pelican Lake/Halvorsen Bay	T. 136N-28W, Sec. 12; NW NW SE NW.	1986
	Round Lake	T. 44N-28W, Sec. 1; NW NE NW NE.	1988
	Whipple Lake	T. 133N-29W, Sec. 2; W 1/2, NW NE SW.	1988

APPENDIX V, continued

County	Project Name	Location	Year(s)
Douglas	Lake Geneva/West	T. 128N-37W, Sec. 9; SE SW NE NE.	1986
	Lake Christina	T. 130N-41W, Sec. 13; SE SE SE NE & T. 130N-40W, Sec. 18; S 1/2, SW SW NW & N 1/2, NW NW SW.	1988
Freeborn	Albert Lea Lake	T. 102N-21W, Sec. 26; SW NE NE.	1988
Hennepin	Christmas Lake	T. 117N-23W, Sec. 35; SE NE SW NE.	1986
	Little Long Lake	T. 117N-24W, Sec. 10; NW NW SW SW.	1986
	Minnetonka/Halstead's Bay	T. 117N-24W, Sec. 27; E 1/2, SE SE NW.	1985
Hubbard	Big Sand Lake	T. 141N-34W, Sec. 27; E 1/2, SW SW SE & Sec. 34; E 1/2, NW NW NE.	1987
	Blue Lake	T. 141N-34W, Sec. 20; NW NE NW NE.	1986
	Eagle Lake	T. 141N-35W, Sec. 22; N 1/2, S 1/2, SW NW.	1987
	East Crooked Lake	T. 141N-33W, Sec. 14; N 1/2, NE NW NW.	1987
	Lake Hattie	T. 144N-35W, Sec. 25; NW NW NE NE & NE NE NW NE.	1987
	Island Lake	T. 141N-35W, Sec. 5; NW SE SW NE.	1987
Itasca	Deer Lake	T. 56N-26W, Sec. 6; NE NE SE SW.	1987
	Johnson Lake	T. 57N-26W, Sec. 13; S 1/2, SE NE SW.	1987
	Sucker Lake	T. 57N-23W, Sec. 33; NW NE NW SE.	1986
Kandiyohi	Lake Calhoun	T. 121N-33W, Sec. 28; W 1/2, SE & SE SW NE & SE NW SW NE.	1988
	Point Lake	T. 120N-35W, Sec. 24; SE NE NW NE.	1988
Kanabec	Snake R./Co. Rd. 11	T. 38N-23W, Sec. 6; center, SW SW NW.	1986
Koochiching	Little Fork R./Highway 11	T. 70N-25W, Sec. 29; SE NW SE SW & SW NE SE SW.	1986
	Little Fork R./Lofgren Park	T. 68N-25W, Sec. 9; S 1/2, SW NE NW.	1986
	Big Fork R./Big Falls	T. 155N-25W,Sec. 35; N 1/2, NE SE SE & N 1/2, NW SE SE.	1986
	Big Fork River #1	T. 63N-27W, Sec. 14; NE NW SW NE & NE SW NW NE.	1988
	Big Fork River #2	T. 64N-27W, Sec. 13; E 1/2, NW NE SW.	1988
Lake	White Iron Lake	T. 63N-11W, Sec. 31; SW NE NE SW.	1986
Lincoln	Lake Hendricks	T. 112N-46W, Sec. 19; SW SW SW SW.	1987
Marshall	Red River/Oslo	T. 154N-50W, Sec. 6; NW NW NW NE.	1987
Martin	Budd Lake	T. 102N-30W, Sec. 17; SW SW NW SW.	1986
	Sisseton Lake	T. 102N-30W, Sec. 8; W 1/2, SE NW SW.	1986
	Big Twin Lake	T. 103N-33W, Sec. 12; S 1/2, SE SE SE SE.	1988
McLeod	Stahlis (Stahls) Lake	T. 117N-30W, Sec. 11; SW SW SW SW.	1986
Meeker	Belle Lake	T. 118N-30W, Sec. 35; NE NW SE SW.	1987
	Little Mud Lake	T. 121N-30W, Sec. 22; NW NE NW SE & NE NW NW SE.	1987
	Lake Manuella	T. 118N-30W, Sec. 3; N 1/2, SE NW SW.	1987
	Round Lake	T. 119N-31W, Sec. 36; NW NW NW NE.	1987
	Hoff Lake	T. 117N-31W, Sec. 1; SE SE SW SW & SW SW SE SW.	1988

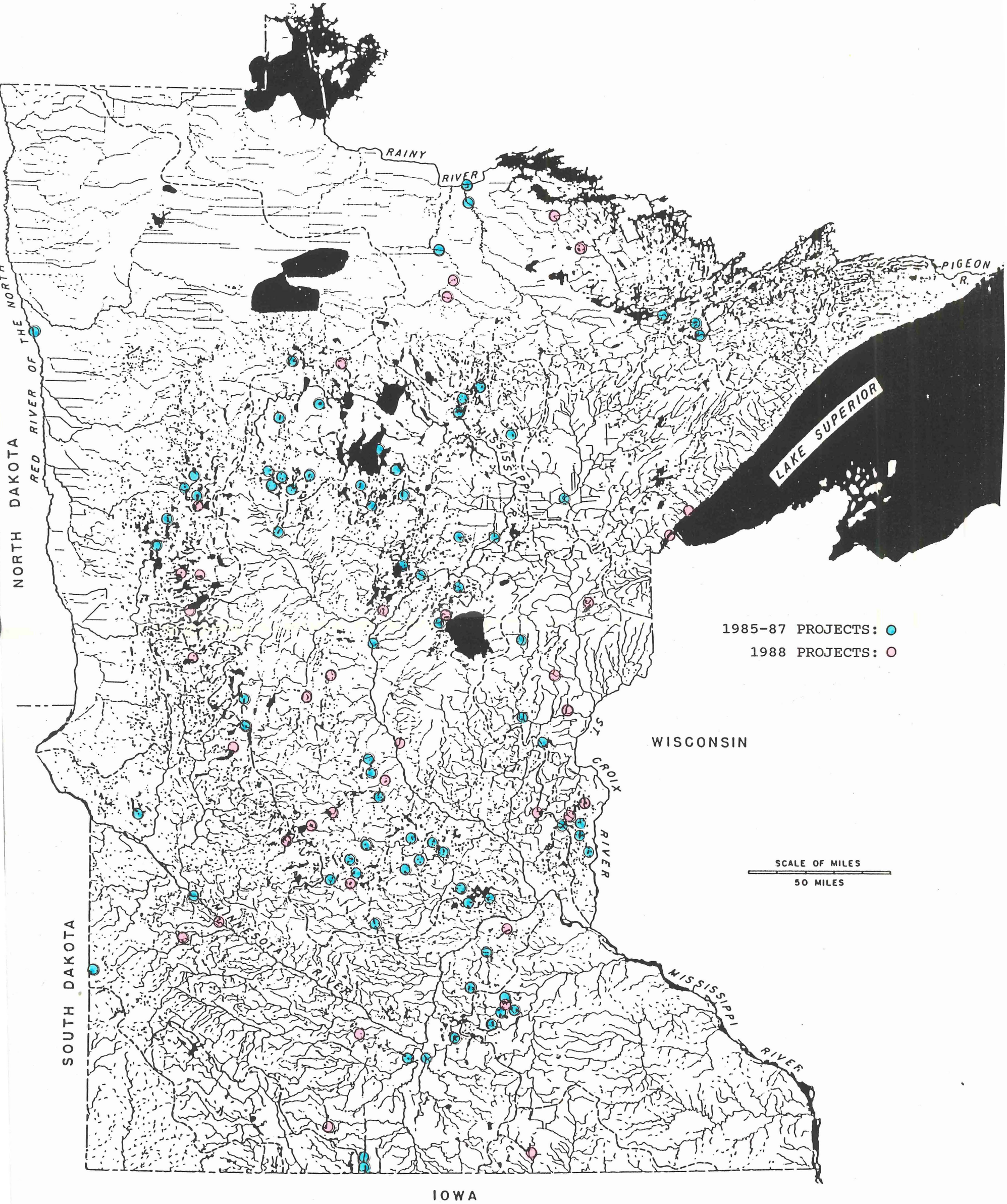
APPENDIX V, continued

County	Project Name	Location	Year(s)
Otter Tail	Franklin Lake	T. 137N-42W, Sec. 22; NW SW SE SW.	1986
	Lake Marion	T. 135N-39W, Sec. 7; N 1/2, NE NE SE.	1987
	Otter Tail Lake/Riverside	T. 133N-40W, Sec. 4; S 1/2, SW NE SW.	1988
	Star Lake	T. 135N-40W, Sec.6; SW NW SW SW & T. 135N-41W, Sec.1; NE SE SE.	1988
Pine	Grindstone R./Hinckley	T. 41N-21W, Sec. 24; NW SE.	1988
	Snake River/Cross Lake	T. 39N-21W, Sec. 27; N 1/2, SE SE NE	1988
	Sturgeon Lake	T. 45N-19W, Sec. 9; SW SW SE NE.	1988
Pope	Lake Leven	T.126N-37W, Sec. 13; SE SE NW NW & SW SW NE NW.	1987
	Lake Minnewaska	T. 125N-38W, Sec. 11; NE NW SE NE & NW NE SE NE.	1988
Rice	Circle Lake	T. 111N-21W, Sec. 16; S 1/2, SW NW NW.	1986
	Fox Lake	T. 111N-21W, Sec. 27; E 1/2, SE SW SE & Sec. 34; E 1/2, NE NW NE.	1986
	Horseshoe Lake	T. 109N-22W, Sec. 7; NE SW SW SW & NW SE SW SW.	1987
	Shields Lake	T. 111N-22W, Sec. 35; SW NE NW.	1986
	French Lake	T. 110N-21W, Sec. 17; W 1/2, N 1/2, SW NW SW.	1988
St. Louis	Armstrong Lake	T. 62N-14W, Sec. 15; SE SW NE SE & SE NE SE.	1986,87
	Floodwood River	T. 51N-20W, Sec. 6; SW SE NW SE & SE SW NW SE.	1987
	Shagawa Lake	T. 63N-12W, Sec. 27; SW SW NE NW & NW NW SE NW.	1986
	Elephant Lake	T. 66N-19W, Sec. 24; NE SE NW SW & N 1/2, SW NE SW.	1988
	Brighton Beach	T. 50N-13W, Sec. 4;	1988
	Rice's Point	T. 49N-14W, Sec. 3; N 1/2, SE SE SW & S 1/2, NE SE SW.	1988
	Ash River	T. 68N-19W, Sec. 5; SW NE NW & W 1/2, SE SE NW.	1988
Scott	Cedar Lake	T. 113N-22W, Sec. 18; E 1/2, SW NW SE.	1986
	Thole Lake	T. 115N-23W, Sec. 25; N 1/2, NW NE NW SE.	1985
	Lower Prior Lake	T. 115N-22W, Sec. 25; S 1/2, SW SW NE.	1988
Stearns	Big Fish Lake	T. 124N-30W, Sec. 20; E 1/2, NE SE SE.	1986
	Big Watab Lake	T. 124N-30W, Sec. 9; NW NW SE SE.	1986
	Pearl Lake	T. 122N-29W, Sec. 3; E 1/2, NW NW SE.	1985
	Lake Koronis	T. 122N-32W, Sec. 35; SE SW SW SE.	1988
	Pleasant Lake	T. 123N-29W, Sec. 1; N 1/2, NW NW NW.	1988
Todd	Latimer Lake	T. 128N-33W, Sec. 4; NE NW NW SW & NE NE NW SW.	1988
	Mill Lake	T. 130N-32W, Sec. 32; N 1/2, N 1/2, NW NW NW.	1988
Wadena	Stocking Lake	T. 138N-35W, Sec. 23; N 1/2, NE SE NE.	1987
Washington	Big Carnelian Lake	T. 31N-20W, Sec. 34; NE NE NW NE SE & E 1/2, SE SW SE NE.	1987
	Big Marine Lake	T. 32N-20W, Sec. 20; N 1/2, NW NW SE.	1987
	Bone Lake	T. 32N-20W, Sec. 5; W 1/2, SW NW NE.	1986
	Clear Lake	T. 32N-21W, Sec. 18; SE NE SE NW.	1986

APPENDIX V, continued

County	Project Name	Location	Year(s)
Wright	Buffalo Lake	T. 120N-26W, Sec. 25; S 1/2, SW NW NE & N 1/2, NW SW NE.	1987
	Cokato Lake	T. 119N-28W, Sec. 14; NE NW SE SE.	1986
	French Lake	T. 120N-28W, Sec. 11; N 1/2, SE SW SW.	1986
	Granite Lake	T. 120N-27W, Sec. 30; NW NW NE NE.	1986
	Ramsey Lake	T. 120N-26W, Sec. 18; SE SE SE NE.	1985
Yellow Medicine	Minnesota River/Kinney	T. 115N-39W, Sec. 15; SW NE NW NE & N 1/2, S 1/2, NW NW NE.	1988
	Spellman Lake	T. 114N-41W, Sec. 22; SW SE NE NW & SE SW NE NW; Sec. 33; NW NW.	1988

APPENDIX VI. MAP OF PROJECT LOCATIONS, 1985-88


RAINY RIVER
PIGEON R.
LAKE SUPERIOR
NORTH DAKOTA
RED RIVER OF THE NORTH
MISSISSIPPI R.
WISCONSIN
ST. CROIX RIVER
SOUTH DAKOTA
MINNESOTA RIVER
MISSISSIPPI RIVER
IOWA
1985-87 PROJECTS:
1988 PROJECTS:
SCALE OF MILES
50 MILES