

THE CLASSIFICATION SYSTEM
DESIGNATED FOR THE RECREATION SECTOR OF
THE CANADA LAND INVENTORY PROJECT:
A History of its Development and
the Background of the Problems
Involved in Achieving a Valuable
and Useful Classification of
Recreation Lands.

Thesis

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PREFACE

Urbanization, population growth, greater mobility, higher incomes and more free time are just a few of the reasons responsible for the rapid rise since the second world war, in the use of outdoor areas for recreation purposes. At the same time, competition for land and water for other purposes has also greatly increased and this situation demands immediate adoption of sound land use plans and policies at the national and provincial levels, to ensure the best possible use of our resources in the future. A crucial step in shaping these policies is an evaluation of the capability of our resources to accommodate such uses as agriculture, forestry, recreation and wildlife. The tool that can be employed to supply this information is land capability classification, and the federal government in co-operation with the provinces has boldly undertaken a comprehensive inventory on a national scale of Canada's resources.

This thesis deals with the recreation sector of the Canada Land Inventory Project, and traces the development of a national recreation land capability classification over the past three years. Major emphasis is placed on the problems encountered in developing a meaningful and suitable recreation classification since the program's inception in the summer of 1964. In addition, a discussion of theoretical considerations and data gathering procedures is included.

Since a program of this scale and importance is obviously a pioneering venture for Canada in the land use planning process, the first section of the thesis is devoted to an intro-

duction to recreation land classification. It includes therefore, both theoretical and practical considerations involved in the evolution of a suitable classification scheme, a discussion of the actual design of a system, and illustrations of a number of classifications already in use in the United States and Europe.

Section two gives a brief background of the Canada Land Inventory and its parent organization, ARDA. However, the main purpose of this section is to describe the approach and analyze the results of the pilot project that was carried out in Saskatchewan in 1964 as part of a program to develop a national classification.

As a consequence of the work done in Saskatchewan and other provinces in 1964, a national system was developed the following year and proposed for use across Canada. Section three describes the classification system and the procedures used in its application. Using the experience gained in working with the classification in widely differing areas as support, the writer attempts to critically analyze the results in terms of the system's application to Saskatchewan. Basic deficiencies in the classification system are described and illustrated by maps and photographs. This evaluation is then followed by an account of the conclusions and possible solutions drawn at the termination of field work in the fall of 1965.

Section four contains a discussion of the revised system evolved in 1966, with special emphasis on the major changes that were incorporated into the new system and the effect these changes had on the areas classified during the previous summer. The final

form of the classification as it now stands is described and further revisions to the physical shoreland inventory scheme are suggested.

The problems encountered in the development of the classification system apply to the Saskatchewan experience, but because of the similar topographic characteristics of the adjoining provinces, the lessons learned could be applied to the prairies as a whole. Therefore, a major source of material for this thesis was the wealth of personal experience gained from research and field work carried out over the past two and a half years, the last six months of which were in Manitoba. During the summer of 1965 and 1966, the writer was actively involved in the employment of the classification systems and the problems associated with their use, and as field foreman was able to gain an appreciation of the problems involved in the development of a system at both the provincial and national levels. The six months spent as chief of the recreation classification program in Manitoba have been the most beneficial however, as they provided an opportunity to obtain an even greater appreciation of the problems associated with the objectives, design and application of a recreation capability classification, and helped to crystalize ideas and experiences into thesis form.

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Section I - General Discussions on Recreation
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CHAPTER 1

Theoretical and Practical Problems Involved in the Development of a Recreation Classification System

Historically, the development of useful research techniques for the most efficient exploitation of our natural resources has lagged behind the physical occupation and use of the said resources. The problem now has become acute with the rapid advances in technology and attendant effect on economy. However, there is a growing awareness of the need for the study and application of land classification systems to avoid land use which experience has shown to be disadvantageous, and to thus ensure the most beneficial return from our natural resources.

Past experience has demonstrated that classification systems can not be developed in short periods of time, and that even when completed, they must not remain inflexible. To illustrate, development of a soil classification system was begun late in the 19th century, yet, today, increased knowledge of the field and varied approaches to the problem have lead to disagreement among researchers over certain aspects of the various classification systems in use and the systems are still undergoing change.

But soil classification is basically a morphological study and, therefore, it becomes evident that development of a recreation classification system, with its evaluation of physical resources in terms of varied human demands, is an infinitely more difficult and challenging problem. S. T. Dana expressed

his concern over this as follows: "The methodology of making useful inventories of areas of potential value for recreational use deserves careful study. The difficulties of the task should not be underestimated".¹ Another writer adds: "There is no one set of criteria that can be used for all types of recreation".² It would seem that a discussion of the various problems and considerations inherent in recreation classification should be presented as a preamble to the discussion of an approach to recreation classification and of systems already in use, or proposed for use.

A) Definition of Recreation

Development of any type of a recreation classification system is difficult when one considers that there is not even general agreement on what is "recreation". R. R. Renne indicated the range in meaning of the word when he stated: "Recreation - - - - takes a great variety of forms among modern peoples. These forms express the needs, desires, qualities, interests, powers, and instincts of individuals".³ Another authority is of the opinion that recreation is of a personal nature and must be

¹ S. T. Dana, Problem Analysis: Research in Forest Recreation, U. S. Forest Service, Washington 1957, p.5.

² William F. Fischer, Methods of Evaluating Lands for Recreation, Talk and discussion recorded from 14th Annual University of California Extension Forestry Field School, "Recreation in Wildland Management", April 9-13, 1962, p.3.

³ Roland R. Renne, Land Economics - Principals, Problems and Policies in Utilizing Land Resources, Harper and Brothers Pub. 1947, p.300.

experienced in a personal manner and this in turn makes it extremely difficult to define.¹ Renne further emphasized the role of the individual when he stated: "Recreation brings immediate personal satisfaction or happiness and must always permit freedom of individual choice and freedom of individual action".²

Despite the complexity of the subject, many definitions have been attempted but most, unfortunately, involve use of the term "leisure" in phrases such as the "creative use of leisure time", "pleasurable use of leisure time", or "constructive use of leisure" which ultimately only adds to the confusion inasmuch as we do not know what is meant by "leisure time" and the difference between spending it creatively, pleasurably or constructively. Brockman widened the scope of the problem of defining recreation when he pointed out that recreation is both recreative and creative, implying that work is part of recreation.³ Farina attempted to clarify the subject by identifying the many leisure time activities and thereby acknowledged the varied uses and meanings of the word leisure.⁴

¹ Ontario Department of Lands and Forests, The Ecological Basis for Land-Use Planning, Research Report No. 46, December 1961, p.114.

² Renne, loc. cit.

³ C. F. Brockman, Recreational Use of Wild Lands, McGraw-Hill, Toronto 1959.

⁴ J. Farina, The Social and Cultural Aspects of Recreation, Resources for Tomorrow Conference, Montreal, Canada 1961, p.944.

The problem, does not stop with a static definition, for the meaning of recreation is dynamic, changing with the times. R. Barlowe demonstrates this change through various periods of history,¹ and Burch and Taves traced the changing function of recreation in human society from pre-industrial to modern industrial societies.²

From this discussion, it can be seen that even the simple definition of the word "recreation" can be difficult. However, for the purpose of this thesis the term "recreation" will be equated with outdoor activities which are resource-based as opposed to man-made, and are now established as popular by the general public. These would include activities such as bathing, swimming, boating, canoeing, sight-seeing, hunting, camping, hiking, picnicking, skiing and tobogganing to name only a few.

B) The Nature of Outdoor Recreation Resources

The recognition of an outdoor recreation resource is dependent upon the answer to two interrelated questions: what are recreational resources, and for whom are we classifying? Although the former concerns physical resources, and the latter human resources, both involve recreation activities and it is by relating the human resource through a particular activity to the

¹ Raleigh Barlowe, Land for Recreation, (Land Use Policy and Problems in the United States, edited by Howard W. Ottoson), pp.255-271.

² William Burch and Marvin J. Taves, "Changing Functions of Recreation in Human Society", Outdoor Recreation in the Upper Great Lakes area, Lake State Forest Experiment Station, Paper No. 89, 1961.

physical resource that we are able to arrive at the recognition of the nature of an outdoor recreation area.

The problem of relating these factors is complicated because of the necessity of distinguishing between public and private human recreation requirements. Thus, whereas it is possible to locate cottages on various types of shoreline for individual use, most public recreation developments require large areas of relatively flat land for the purpose of parking, camping, picnicking and many of these sites require additional attractions such as bathing and swimming beaches, boat launching facilities and lake conveniences.

However, even though the nature of the physical resource, as in our illustration, would seem to indicate a particular recreation use, a conflict in individual preferences might still arise. Thus it is possible that a length of shoreland could be looked upon as a public campground by a government agency, a lucrative cottage subdivision by a private developer and a wilderness area by a preservationist.

It is clear, therefore, that in arriving at a fuller understanding and appreciation of the nature of a recreation resource it is necessary to understand and appreciate the individual needs and desires of the human element involved, such as, to cite only one example, the effect of the age of a particular person upon his choice of a site and/or activity chosen.

Unfortunately, little material on this subject is available, for even the recent voluminous research in the United

States concerning natural resources and recreational demands has only scratched the surface. This void in research data was fully recognized by M. Clawson and J. L. Knetsch when they stated:

"Outdoor recreation is booming, as a look at the attendance statistics for almost any area will show; but research regarding outdoor recreation has lagged badly".¹ The seriousness of this problem was made clear when G. D. Taylor, after an examination of the ideas expressed by various authorities, concluded that there simply was no general agreement as to what constitutes recreational resources or recreation land,² and only a concerted research effort in this area will help to alleviate the problem.

C) The Approach to the Study of Recreation Resources

Many recreation authorities make the basic assumption that the study of recreation lands may be undertaken in a manner similar to the study of certain other land uses such as forestry and agriculture. This situation can be partly explained historically since the first recreation lands were first handled by large Government Departments (especially Forestry Agencies) as a minor but necessary paltry part of their operation.³ Today, recreation lands have become a significant type of land use and recreation in many forested lands is no longer minor and some-

¹ Marion Clawson and Jack L. Knetsch, Outdoor Recreation Research, Resources for the Future, Inc., Reprint No. 43, November 1963, p.250.

² Gordon D. Taylor, An Approach to the Inventory of Recreational Land, The Canadian Geographer, Volume IX, 2, 1965, p.86.

³ The American National Forests (which include major parks) are part of the United States Department of Agriculture. The Manitoba Parks Branch which was formerly part of the Department of Forestry has been a separate entity for only three years.

times has become the primary use. It is understandable then that many of the people in recreation study today have forestry backgrounds and naturally are influenced by their previous experience. However, accepting the practices of applying forestry study techniques to recreation research is questionable and can place recreation professionals in a precarious position.

To demonstrate the different approaches required, we would point out that agriculture and forest lands generally need large areas; and agricultural lands would require relatively uniform topography while in the case of forest lands this consideration is not as important. In contrast, recreation lands may require large or small areas, with flat land or rough terrain and a special or unique attraction. Support for this view is furnished by Renne: "Physical factors play an important role in determining suitability of land for recreational use just as they do in the case of agricultural and forest lands; but the relative importance of the various factors is considerably different and they operate within more definite limitations of geographical factors than in the case of agricultural forest lands".¹

The inadequacy of approaching the study of recreation land use through standard techniques such as are applied to the fields of forestry and agriculture becomes even more apparent when one considers the many different land requirements in recreation land use itself. For instance, recreation lands vary greatly in size and can accommodate different activities depending

¹ Renne, op. cit., p.302.

on the nature of the resource, the availability of land or the type of demand. In addition they may have to accommodate large numbers of people all year round, seasonally or just on weekends. Further complications arise when one considers that recreation lands are administered and owned by the complete hierarchy of government agencies and a variety of private enterprises.

Yet despite the obvious need for a separate and comprehensive approach, many complicated schemes have been produced on a small scale which incorporate a number of different types of land uses. One such scheme was the approach taken by the Ontario Lands and Forest report which resulted in a multiple land-use plan made up of agriculture, timber, dryland wildlife, fish production and recreation capability maps.¹ This type of comprehensive study can hardly treat each individual aspect in any detail and in any case, recommendations resulting from such schemes are not realistic since they ignore key considerations; as for example, where the supply and demand situation may warrant that land rated high in agricultural use and low in recreational use, be used as a new park site. Conversely land rated high in recreational use may not be used for this purpose in an unpopulated area.

Still advocates of the multiple approach method argue that it avoids studying an area repeatedly to classify for different uses. While this cannot be denied, the obvious difficulties arising from co-ordination and application of a

¹ Ontario Department of Lands and Forests, op. cit., pp.174-180.

multi-use study over a large area considered with the shallow nature of the data gathered seems to favour the argument for individual approach. One authority states: "Land classification designed for a single purpose usually succeeds in serving its purpose, because when only a single purpose governs the work, that purpose is likely to be clearly understood and definitely stated".¹

However, despite the fact that various land uses may require different approaches, they must not be considered in total isolation from one another, for very often several types of land uses can operate effectively in the same area. Class 3 of the recreation classification designed for the United States recognizes multi-use lands and describes the class as land commonly supporting grazing, lumbering, or mining in addition to recreation.²

D) The Degree of Complexity of a Classification Scheme

The degree of complexity of a classification scheme must be given due consideration since it affects two important interrelated factors, namely time and costs. The duration of time between inception and completion of a project could be such as to hinder progress of other projects in a comprehensive plan, or even worse, could render the project completely useless due to a normal or unexpected change in conditions upon which the study was based. A classic example of this is the land use study

¹ United States Government Printing Office, Land Classification in the United States, Washington 1941, p.20.

² Outdoor Recreation Resources Review Commission, Outdoor Recreation for America, Washington, D.C., January 1962, p.107.

which began in the 1930's in England during the depression, and was completed after World War II during a period of rebuilding. Therefore, it is fair to say that, "the sooner the results of land classification surveys are available the greater the degree of their effectiveness".¹ In a nation-wide inventory, large areas of land have to be covered and the amount of field work can greatly affect the costs of a project as well as the time of completion. This consideration is adequately summarized in the following statement: "To develop methodology for rapidly classifying and mapping selected features of the land over wide areas, something more accurate than reconnaissance is needed, but the method must secure coverage of large areas, in limited time intervals and a low cost".² Today, aerial photographs and topographic maps used by skilled interpreters can provide a relatively quick and inexpensive land classification or inventory. These aids, used properly, could limit much of the costly and time consuming field work to occasional field checks. At the same time, we must not rely only on air photos because, while they are a great asset, all landscape features are not visible on them.³ Nevertheless, while to a great extent the objectives of an inventory program dictate the detail desired, one cannot ignore the obvious implications of employing the most efficient

¹ United States Government Printing Office, op. cit., p.23.

² Ibid., p.24.

³ Frank C. Edminster, Recreation Inventory - Conservation districts enumerate existing facilities, estimate potential for new ones, Resource Development Division, SCS, Washington, D.C. (Soil Conservation, U.S. Department of Agriculture, November 1965) p.91.

method in terms of accuracy, time and costs.

In addition, assuming the pertinent information desired has been obtained it must be simple and readily understood by personnel who intend to use the data. Thus, maps setting forth physical features of significant recreation value, in code, must be as meaningful to, and as readable by, one who has never seen the given local as to the reporting examiner.¹ In effect, the recreation land classification map and appropriate written text is only the primary stage of planning, with more detailed studies being carried out later in accordance with long and short range master plans and the degree of demand.

E) Objectivity of a Classification Scheme

In order for a classification system to be realistic, it must be objective; i.e., the inventory upon which the final classification is based must be objective. Subjective evaluation, while valuable, must not be the basis for an inventory; with current demands on recreation agencies increasing it is no longer adequate to have our resources described in subjective terms and measureless adjectives. This is emphasized by the introductory remarks to the shoreline inventory system used by the Province of British Columbia: "The recording of information in the past has sometimes been in general terms ("good beach attractive cover, extensive flats, moderately deep water" etc.) which are value judgments of the observer and require his interpretation. It is

¹ Department of Recreation and Conservation, Shoreline Reconnaissance Coding System, Parks Branch, Memorandum I, British Columbia, January 31, 1962, p.1.

obviously essential, in order to ensure continuity in the work of the Branch that uniformity of meaning be achieved in descriptive notations".¹ The same concern was expressed by G. Taylor when he stated that, "Judgment will always play an important role in classification, but the more precise the limits that can be placed upon the criteria, the less variation from an individual bias there should be in the results".² However, even after this initial stage, further guidelines must be set for the classification of the inventory data, for even though the physical characteristics have been accurately described, personal bias can once again dominate.

An excellent example of this is the highly favourable descriptions of the lakes and beaches in the Qu'Appelle Valley by cottage owners and day time visitors. Yet compared to the Waterhen and Candle Lake districts of central Saskatchewan, the Qu'Appelle Valley sites are obviously inferior. Again, persons having lived in one region of a certain topographic character could, and do, have a different impression of their area from that of people from outside the area. This was apparent in a field evaluation of the Big Muddy Valley where one of the crew members, who had lived only two miles from the valley walls, could not comprehend the enthusiasm expressed by the other members of the party.

¹ Department of Recreation and Conservation, op. cit., p.1.

² Gordon D. Taylor and Clarke W. Thomson, Proposed Methodology for an Inventory and Classification of Land for Recreation Use, Paper Presented to the Annual Meeting, West Lakes Division, Association of American Geographers, Winnipeg, October 29, 1965, p.159.

While an inventory and classification system must above all be objective it must, at the same time, be flexible. That is, it must not be so rigid as to become totally unrealistic. Beaches on the Waterhen Lakes, with their ideal backshore conditions, are among the best in the province but occasionally high water levels cover most of the beach area with anywhere from a few inches to a foot of water. This condition does not meet the generally adopted criteria for the better class of beach sites, but bland acceptance of this definition would yield an invidious and erroneous evaluation of sites which are obviously highly attractive in terms of recreation capability. In other words "standardization in the definition of the classes should not be carried so far as to force the rigidly defined classification in areas to which it is poorly suited".¹

Any system of classification today must also be flexible to ensure that the data can be adapted to changes in demands, such as are occurring from our rapid transition from a rural to an urban society. This view is more fully expanded in the following statement by R. I. Wolfe:²

"Exposure to the urban environment may conceivably make people lose, rather than increase, their interest in outdoor recreation. They may also be able to simulate the facilities to which they would otherwise have to travel - building swimming pools in their own backyards and artificial ski slopes in local parks. They may even turn to forms of leisure-time activity as yet undreamed of, which

¹ United States Government Printing Office, op. cit., p.23.

² R. I. Wolfe, Recreational Travel: The New Migration, The Canadian Geographer, Volume X, 1, 1966, p.12.

may make present forms of outdoor recreation activity seem relatively undesirable, as primitive, incompatible, or even dangerous."

As an example of the changing capability of certain areas due to new innovations one can cite the increasing popularity of the power toboggan. Areas formerly accessible only during the summer and areas having only limited summer use are now being visited in the winter months.¹ Park officials and conservation officers in Manitoba are giving their use serious consideration for it is quite conceivable that in the near future parks formerly used only during the summer, will become in addition, winter playgrounds for large numbers of people thus necessitating all year round park operation.²

F) The Scope of Application of a Classification System

Recreation is no longer mainly parochial or even provincial, it is also regional, national and continental. This fact, plus increased demands placed on our recreation resources by an unevenly distributed population has created the need for a nation-wide evaluation or "balanced national program".³ However,

¹ Whitewater Lake in southwest Manitoba because of its marshy shoreline and shallow nature has been classed very low (class 5SW for Wildlife value). However, despite the fact that it is located in an area of low population concentration it is used regularly by power toboggan owners and as many as 24 units have been cited at one time.

² This is especially true of the Whiteshell area where a number of power toboggan trails have been developed, ice fishing is becoming very popular and more and more cabin owners are opening their cabins on weekends for winter use.

³ The United States was faced with the problem of dealing with many agencies, each with their own approaches, criteria, and in some cases classifications and each having policies reflecting

a nation-wide classification is far more difficult to develop than those already proposed or in use in smaller geographic areas and by lower levels of government. Some basic questions which arise must be answered before attempting any type of national program. To demonstrate, one is immediately faced with the problem of whether the characteristics of all the classes in a system should be the same throughout the country, or just within a region, or both. It has been stated "The classification Class I or highly suitable should remain consistent on any map produced for any part or parts of the country or for the country as a whole, meaning, not that all the areas so rated are the same across the country, but that these are the most suitable areas to be found within the regional setting".¹

To paraphrase, an area could be the best in a region but may or may not be the best in the country. This would seem to suggest adoption of basically a non-national system. This approach recognizes the main problem in using a nation-wide system solely; namely that it stresses the uneven distribution of our natural resources both in quality and quantity and ignores the obvious significance of small areas of relatively good resources in an extensive geographic region largely devoid of recreation resources. A case in point is the prairie region where good recreation sites are few and far between, but where they do occur they are

their own objectives and responsibilities. The resulting diversity of management practices, varied efficiency in resource utilization and lack of consistent standards for recreation management created a major obstacle to a balanced national program. Outdoor Recreation for America, Chapter 6, p.95.

¹ Taylor, op. cit., p.90.

extremely important. This demonstrates the significance of the scarcity of a resource in an area and relates obviously to the laws of supply and demand.

Further, the relative importance of attractions can change from region to region depending on their abundance and existence of other attractions. For example, a well forested river valley on the flat prairie is a valued resource but in a mountainous area trees, relief, and flowing rivers may be ubiquitous and, therefore, a body of water or glacier may be the valued resource. A purely national system could not possibly recognize these regional peculiarities.

Nevertheless another author in speaking generally about classification systems suggests the more universal approach when recommending "that within a given system of land classification an effort be made to define the land classes in terms which are comparable in the different areas or regions where the work is done".¹ Other authorities have suggested that at least the higher classes should rank as only among the best in the country while the remaining classes could be consistent on a regional or national scale.²

A combination of these methods appears feasible and should prove acceptable to both provincial and federal needs, or we as a nation, are interested in the recognition, location, and

¹ United States Government Printing Office, op. cit., p.23.

² Personal conversations with various recreation authorities.

characteristics of the best recreation resources in our country, but at the same time, however, we are also interested in the lesser more numerous resources which are not necessarily important on a national scale, but are certainly significant regionally or provincially. Therefore, "Class I or highly suitable areas" should have characteristics consistent throughout the country while the remaining classes should be consistent on a more regional and provincial scale.

G) The Argument for Total Area Coverage

Most of the inventory studies done in North America, whether local or national in character, have considered areas already in use for recreation or those areas set aside for recreation but not presently in use. However, for comprehensive nation-wide planning, with regional and local implications, an over-all evaluation is needed. Some would argue that much of our land area has little or no potential for recreation and, therefore, it is a waste of time and money to consider these lands. Notwithstanding the fact that only limited areas have the potential for intensive or even moderate recreation use, it is necessary to develop a hierarchical system of land classes in order to achieve a reasonable over-all view, especially since all lands provide recreation to some degree.¹ Barlowe states: "In an over-all sense, the whole surface of the earth is or could be said to be available for recreational use".²

¹ Ontario Department of Lands and Forests, op. cit., p.122.

² Barlowe, op. cit., p.270.

In addition, former low potential areas, in terms of location and physical attractiveness, are taking on new interest with increasing popularity of farms and ranches for guest use. The very fact that these limited use areas constitute the major portion of our land resources is in itself reason enough for these lands to be considered for evaluation. Besides, these areas can generally be easily classified through air photo interpretation and, therefore, can be economically fitted into a nation-wide inventory.

H) The Scope of the Objectives of an Inventory Program

The scope of an inventory and classification system is limited only by its practicality in terms of costs, time and effectiveness. It can include the evaluation of resources solely on their natural capability or may include feasibility for improvement. W. Baker pointed out, however, that the capability classification is of most value when related to those uses in which the natural quality of the resource is of prime significance.¹ The system could also consider population and demand analysis, location factors, transportation studies or economic and management factors.

It has been stated that, "Research to be really meaningful or accurate must consider both resources and users",² and many will agree that accessibility and distribution of recreation areas relative to large centers of population should be

¹ W. M. Baker, An Approach to Pilot Projects in 1964 Under the Recreational Sector of the Canadian Land Inventory, A Report presented to the Director, ARDA Administration, p.15.

² Clawson and Knetsch, op. cit., p.252.

considered in evaluating their potential use. This approach was followed by the Outdoor Recreation Resources Review Commission which, while basing its classification scheme largely on physical features, recognizes that economic and social factors also play an important role in class designation.¹

Whether the classification system is to include one or more of these considerations primarily depends on the objectives and ultimate goals inherent in the research program. Thus the establishment of a firm and clearly stated set of objectives is of paramount importance to the development of a sound inventory program. In other words, we must state initially and categorically the purpose of the inventory program.

Frequently in the past, the failure to recognize the need for a primary set of objectives has made the application of various types of classification systems unsuccessful; this is simply because they were used either to solve problems not originally considered in the design of the system or they were developed on a narrow framework thus ignoring the inter-dependent nature of various factors, both physical and human, which affect land use.

I) Some Public and Private Considerations

In general, in developing the primary objectives of an inventory and classification system, we are dealing with two fields of values, namely public and private, each of which has different standards. Unfortunately, public values are difficult

¹ O.R.R.R.C., Outdoor Recreation for America, p.96.

to assess, especially since profit or return on investment is usually not the primary goal in any development - public sentiment and custom are just as likely to be major factors affecting any projects. As a result, assessing the value of public recreation lands poses a difficult problem. However, the situation is changing rapidly, and an amazing number of methods have been proposed and are in use for estimating recreation values, costs and benefits.¹ For example, Clawson argues very strongly that measurable values can be placed on recreation and has proceeded to outline various methods for obtaining these values.²

It can also be safely said that as recreation continues to become a larger factor in our way of life the problem of measuring recreation values in dollars should become simpler, as the costs for using recreation land becomes more significant.³

¹ National Council of Regional Recreation Planning, A User Resource Recreation Planning Method, 206 East Grant Street, Roseville, California, U.S.A. (1958), p.52.

² Marion Clawson, Methods of Measuring the Demand for and Value of Outdoor Recreation, Resources for the Future Inc., Reprint Number 10, February 1959, pp.2-4.

³ It has been expressed many times and with increasing emphasis in the last decade that the use of leisure is important as much to the nation as it is to the individual. Further, accepting this, there should be a far greater share of the tax dollar devoted to recreational development. But it also follows that as recreation becomes more a part of our life or becomes the same order of importance as other necessary land uses, it will have to compete financially. That is, there is decreasing justification for public agencies to provide free or nearly free recreation opportunities. Therefore, it is conceivable that in the near future recreation will in fact have a more measurable value.

The fact that costs will rise is supported in the following statement by Wagar.¹

"Wildland recreation has traditionally been inexpensive in this country, and many of our attitudes toward it were developed when the country was sparsely settled and land was abundant. Quality recreation then cost only the effort of getting to it. But as the United States becomes more fully settled, and as desires for land greatly exceed the supply, quality in wildland recreation will become more costly."

Admittedly today, private values are easier to analyze for they can generally be related to dollars and cents - investments, costs and returns. This is not to say that all private values are measurable in monetary terms based on production and return, for on this basis one can hardly justify the building of a cottage in terms of dollars and cents when it is only used on weekends three months of the year.

While in many areas, public and private interests coincide, such as the location of stores, filling stations and like commercial enterprises in public recreation areas, their interests could be directly opposed. For example, commercial enterprises in a natural environment area would obviously mar the latter's aesthetic appeal. Yet in other cases whether public and private interests are in conflict or not is not the issue since such developments may be satisfying an acute demand situation.

In conclusion, to be realistic, the interests of both the public and private factions and their relative position in

¹ J. Alan Wagar, The Carrying Capacity of Wild Lands for Recreation, Society of American Foresters, Forest Science - Monograph 7 - 1964, pp.5-6.

our economy should be considered in the establishment of the objectives of a nation-wide inventory program. Above all, we must not underestimate the part that private enterprise can and will play in the future. Barlowe states, "Much of the opportunity provided for recreation in the future can and logically should be expected to come from the private sphere. Recreation is big business in the United States and the people engaged in this business are already making plans to provide for many of our emerging demands".¹ Another authority writes, "A continuation of both private and public efforts will be necessary in the future, to meet the demands for outdoor recreation - - - -".² Again, "A national recreation plan which will be adequate to meet the need of the nation must have local, state,³ and federal components".⁴ This involves careful consideration of both the differing and common goals of the various levels of government.

¹ Barlowe, op. cit., p.276.

² Marion Clawson, Private and Public Provision of Outdoor Recreation Opportunity, O.R.R.R.C. Study Report 24, Washington, D.C., 1962, p.96.

³ By substituting the word "provincial" for "state", the quote becomes applicable to Canada.

⁴ Renne, op. cit., p.323.

CHAPTER 2

Theoretical Considerations as a Basis for a Recreation Capability Classification Scheme

With almost incredible swiftness, we have been ushered into an era of urbanization. But with urbanization and its new experiences there has been an equally powerful urge to escape to the countryside. Unfortunately, it is the very fact that urbanization is a relatively new phenomenon that makes planning of any kind difficult, because in reality we know little about ourselves. Philip Hauser pointed out this problem when he talked about our little experience with urbanization and its effect on forecasting what future generations will like.¹ While there are many problems and questions to be answered, their solutions and answers are not unobtainable and researchers have met the challenge, resulting in a number of recreation classifications. Before analyzing some of the systems already developed and discussing their applicability to the Canada Land Inventory Program it is necessary to discuss a general approach to a national recreation classification system.

Basically we are dealing with three major factors, all of which are interrelated. They are Resources (physical resource), Activities (active segment), and People (human resource). Each of these factors can be subdivided further (figure 1, p.24). We know that certain activities require certain physical resources

¹ Hauser, P. M., Demographic and Ecological Changes as Factors in Outdoor Recreations, O.R.R.R.C. Study Report No. 22, pp.45-46.

FIGURE 1Physical Resources or Attraction Factors

MAIN FACTORS:

water bodies
 rivers
 streams and creeks
 shoreland
 relief and slope
 climate - micro and macro
 tree cover - dense, open, unique
 scenic viewpoints
 historical sites

OTHER FACTORS:

access
 size or area
 drinking water
 wind exposure
 water level fluctuation
 soil stability, erosion problems

Activities

canoeing	auto rallying	gliding
bathing	camping (many types)	fishing offshore
swimming	picnicking	nature photography
diving	hiking	exploring
surfing	riding (touring)	horseback riding
skin diving	gathering	dude ranching & packing
water skiing	scenic viewing	historic study
boating	educational study	skiing
fishing	nature study	tobogganing
driving or touring	climbing	power tobogganing

Human Resource

population characteristics - physical,
 demands, interest and desires
 economic - income, spending, costs

but the number of possible combinations is impossible without even considering individual preferences or the human factor. An illustration of only a few of the combinations is demonstrated in figure 2 (p.26) using the list of activities and resources in figure 1 which is by no means complete. Therefore, there has to be a method of categorizing the activities in terms of common land characteristics and further categorizing the results in terms of the desired human factors or by intensity of use and type of use. It is hoped that the following approach is the answer to developing a system best suited for our current needs.

Water bodies and their adjacent shorelands have long been recognized as a valuable resource. Today they are being accorded even further recognition and their use for recreation purposes is increasing at a significant rate. The importance of water is illustrated in the following paragraph.¹

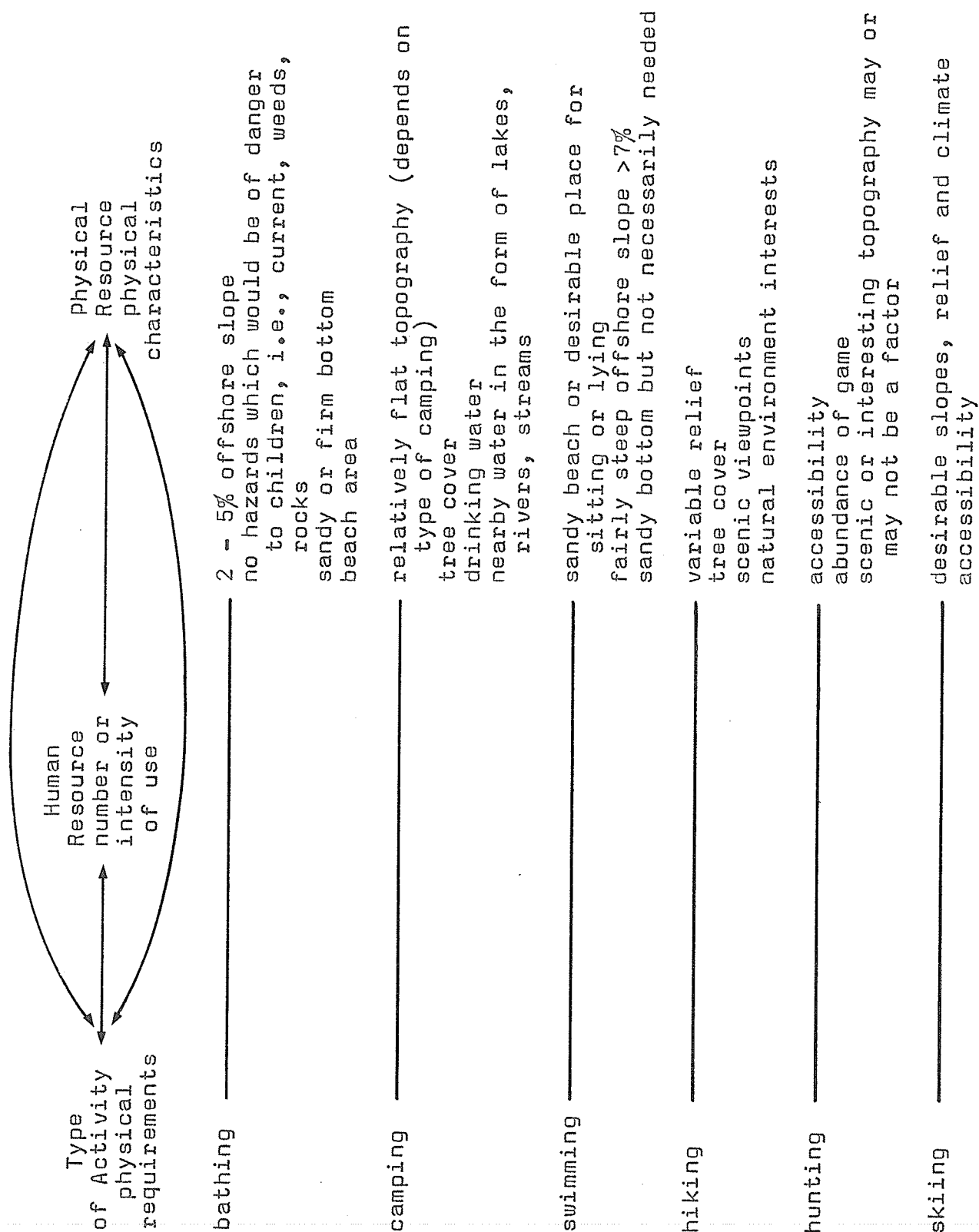
"Water is a focal point of outdoor recreation. Most people seeking outdoor recreation want water - to sit by, to swim and fish in, to ski across, to dive under and to run their boats over. Swimming is now one of the most popular outdoor activities and is likely to be the most popular of all by the turn of the century. Boating and fishing are among the top ten activities. Camping, picnicking and hiking, also high on the list, are more attractive near water sites."

W. F. Fischer commented that water was one of the most important recreation resources, simply because most recreation is generally water oriented.² Another report stated: "On the

¹ O.R.R.R.C., Outdoor Recreation for America, p.4.

² Fischer, op. cit.

FIGURE 2



basis of the experimental inventory, it was decided that the most efficient way of identifying the recreational and environmental resources of the state for the basis of this preliminary report would be to identify and map the patterns of water, wetland, and significant topography".¹ But what is really being said in these statements or what is the relationship of water, wetland and significant topography to our problem of recreation classification?

The answer is that these physical entities are attractions; and there are many others such as tree cover, climatic relief, a small stream or winding river, a scenic viewpoint, etc. By knowing the physical characteristics of an area in terms of key attractions² we can deduce the activities which are best suited for the use of the area. For example, a large sandy beach with good³ offshore conditions would be excellent for swimming, bathing and boat launching and a rolling well-treed landscape with frequent streams would be excellent for hiking, fishing, wilderness study or hunting. Having established the relationship between important attractions and their use in certain activities, the mapped results can be further categorized

¹ Wisconsin Department of Resource Development, Recreation in Wisconsin, Madison, 1962, p.4.

² Certain attractions such as varied relief, unique tree cover and water bodies with desirable shoreline are of significant importance. A more detailed study might reveal numerous minor attractions but for the purposes of a broad classification these attractions would only serve to add undue complications to the overall procedure.

³ Sandy bottom, 5-7% gradient, reasonably warm water, and not overly exposed.

according to the third factor, namely the human resource, which is common to the other two factors. This final consideration is the most important, for, whereas the first step involves an inventory of key physical characteristics - that is those which are critical for identifying the possible use by certain activities, the second step is the final assessment and is in terms of the level of its recreation capability. The data upon which to base the level of capability or intensity of use potential rating is obtained from two sources, namely the number of activities that can take place in an area and the nature of the activities themselves. Together this data reveals the potential of an area in terms of intensity of human use. For example, a beach and an adjoining camp and picnic site will have a large number of people making use of a relatively small piece of land and this type of outdoor recreation use can be called intensive use. A hunting or hiking area which involves a small number of people using a large amount of land can be described as extensive use and a third category might possibly be developed for activities such as skiing and skin diving which could be intensive or extensive use. Another way of looking at this division is that intensive use of an area invariably involves the use of man-made and man-modified facilities or extrinsic resources, while extensive use of an area most often is the use of the natural environment or intrinsic resources with few, if any, man-made adaptations. In any event both these categories can be divided still further on the basis of the physical properties of the resource. For example, a long beach is of more value than a short beach in terms of intensity of use. This then completes the final stage of classifying an area

in terms of its recreation potential. To quickly review this approach, a schematic diagram is provided (figure 3, p.30).

Having reached this final stage it is possible to consider all the classes to be part of one system with a hierarchical order running from lowest to highest recreation potential. In this case intensive, extensive and special uses would be part of classes or subclasses of one system.¹ However, it is also evident that there are obvious differences, by nature of the resources, in the use of certain broad types of resources. For example, the use of shoreland which in most cases involves intensive use is different from the use of upland which in most cases involves extensive use.² The same is true for the use of water bodies and land adjacent to rivers. Therefore, it is also possible, recognizing these differences and following the same general approach, to separate these different types of physical resources or physiographic units and develop a hierarchy of classes for each one. The very fact that these resources are obviously physically different and their uses greatly varied seems enough for the author to support the latter method.

¹ Taylor, op. cit., p.86.

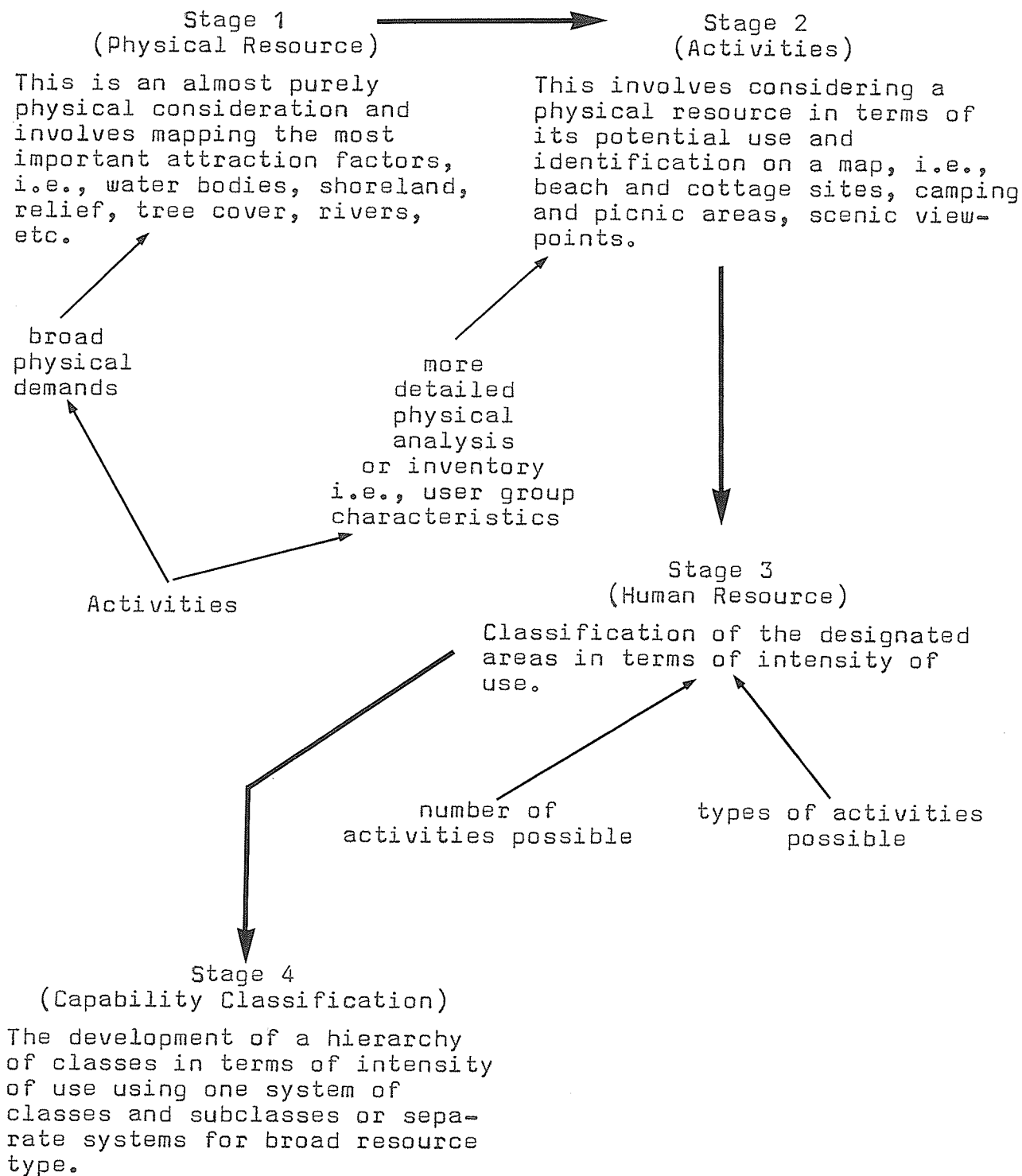
² Both Baker and Hill recognize this fact and have developed separate classifications for upland and shoreland units.

Baker, op. cit., pp.17-54.

G. A. Hills, Definition of Capability Classes and Benchmark Sites for the Recreational Land Inventory, Ontario Department of Lands and Forests, Research Branch, Maple, Ontario, January 21, 1966, pp.1-6.

FIGURE 3

Four Stage Approach to Land Classification



CHAPTER 3

Some Examples of Recreation Classification Systems

Here will be described some recreation classification systems which have been developed or proposed in recent years, and their applicability to the current Canadian Land Inventory program. Since the purpose of this thesis is not to describe and/or analyze recreation classifications, only four of the systems mentioned are discussed in greater detail and this is done in Appendix 1. The systems were chosen for a number of reasons including their historical and international interest but mostly because the author feels that they will provide an introductory background to the chapters which follow.

State of Michigan Lake-Shore Inventory and Classification¹

Even as early as 1940 much of Michigan's shoreline was held by private owners, many of whom were speculators interested in profit rather than the kinds of use or misuse of the property. University of Michigan's Geographers were concerned with this situation and, therefore, set out to discover what items make up shore complexes, to arrive at a system of classification based upon these items, and to determine the extent of types derived from this classification along the shore under study. Ironically, another concern of the Geographers was that they believed many of the speculators had the mistaken notion that all frontage has relatively high value.

¹ Appendix 1A, p.117.

Today, it is evident that the notion was not in fact mistaken.¹

Their approach was, first, to obtain a detailed physical description of the shore; second, to recognize distinct physical types; and third, to divide the shore in terms of intensity of use. Although only six miles of shoreline were studied, sixteen types of shore were identified, which indicated a need for simplification of the classification system. In addition the shoreline's final rating seems to have been based on its suitability for beach activities rather than on beach activities together with other shoreline use such as camping, picnicking, cottage development. But more important the approach considered the most important factors last - namely identification of those physical features which are suitable or unsuitable for a certain activity. By taking this step first, a physical inventory of only key physical attractions can be recorded, thus decreasing the time it takes to obtain the basic physical information and eliminating the needless physical grouping or classification. However, this was an early attempt when little formal research had been conducted on the relationship between outdoor recreation activities and their physical requirements. The study was valuable in that the researchers gained some conception of the varied physical characteristics of shorelines and their possible use for recreation activities. This data no doubt formed the basis for further studies by other groups interested in planning the use of one of our most important assets - shoreland.

¹ Further information on this subject may be obtained from O.R.R.C.'s Outdoor Recreation for America, p.70.

A Polish Recreation Land Classification System¹

Europe has long been a center of recreational activities and tourism. Countries such as Switzerland and Austria depend heavily on the tourist economy to stabilize their balance of payments. While most of the other countries are less dependent on this form of income, all of them consider this activity to be an increasingly important part of their economy. Poland is no exception and with increasing land use conflicts, work on a recreation classification was begun because of the awareness of the need for a comprehensive guide to all future developments of their natural resources.

The system classified all of Poland in terms of its recreation potential and its objectives are, therefore, similar to those of the Canada Land Inventory. The classification system is basically a rating of the country's natural physical geographical divisions in terms of certain key criteria which are believed to give an indication of the potential recreation use of an area.² That is, a division rated according to its topographic relief, abundance of water, and amount of tree cover. In their final analysis it was felt that the initial estimation of the potential recreation resources through this comparative method was adequate; and in fact the location, extent, and type of developed areas correlated very well with the classes allocated to the various regions in the country.

The classification is a good example of the different

¹ Appendix 1B, p.121.

² Note the correlation drawn between natural physical regions or areas and the degree or type of recreation potential.

emphasis placed on certain physical features and associated activities by countries in different areas of the world. In this case the mountain regions and seaside resorts of Europe are highly attractive tourist areas and, therefore, it is not surprising that these areas were classed in the top two brackets, above areas not unlike Manitoba's Whiteshell or Saskatchewan's Waterhen districts. This bias is further evident from additional values given special features which favour the top two classes. In contrast, on the North American continent areas which can accommodate water based activities are considered most important, but when one considers the difference in size between, say, Canada and Poland the nature of their resources and economy, their population characteristics and their political ideology¹ the dissimilarity of resource emphasis becomes reasonable. In conclusion, the system developed for Poland appears only a preliminary step for a more complicated analysis; but the premises on which it is founded are sound and the system with its nationwide type of coverage could be applied in Canada as a base for more comprehensive studies.

O.R.R.R.C.'s Recreation Classification for the United States²

The Commission designed their proposed scheme as a tool or guideline to provide a framework for the development of management policies and practices for all types of outdoor recreation situations. It evolved from a recognition that with

¹ Planning would be on only a national scale and classification would probably reflect this.

² Appendix 1C, p.126.

the ever increasing land use competition by all facets of our economy, more effective resource management and more careful planning would be necessary to assure, for present and future generations, outdoor recreation opportunities of adequate quantity and quality. The approach is one of recreation zoning based upon the relationship between physical resources characteristics and public recreation needs and desires. All types of outdoor recreation resources as well as the full range of recreation activities are included in the six broad classes which constitute the body of the classification system. The classes range from those areas suitable for high density use to sparsely used primitive areas. Lands not suited or available for recreation do not fall within the classification. The classification system with its built-in management policies, mainly applies, therefore, to already recognized recreation areas such as national forests or lands and local, regional, state or federal parks. In this sense then it is not a classification of the total area of the United States in terms of its recreation potential.

The proposed scheme is a general classification and is based largely on physical features but economic and social considerations also play an important part in deciding the class designation of any given area and herein lies its greatest advantages. Firstly, it is a general plan which can be easily applied by both State and Federal authorities. A more complicated system would tend to obscure the importance of nation-wide planning or the "big picture".¹ Secondly, the suggested classification is

¹ Nation-wide planning is especially important when one takes into account the poor correlation between the location of high density population areas and recreation resources national parks, etc.

not simply a physical inventory which would be unreasonable when one considers the obvious importance of economic and social factors for a general national comprehensive guideline. For example, the location of Class I areas are usually near urban centers where the scarcity of available land necessitates mass use in order to accommodate as many people as possible. However, as increasing distances from urban centers reduces population pressure and makes more land available, Class II zoning grows steadily stronger. Finally and perhaps most important, the system is flexible, thus recognizing the dynamic relationship between physical resource characteristics and public needs. An area could be placed in Class VI to assure its preservation as a historic shrine or it could be placed in Class I to provide mass recreation for a nearby metropolitan area; or all of a virgin timber area could be placed in Class V to prevent it from being cut, or appropriate areas could be assigned to Class II, III and IV so as to open it to a wide variety of recreation and other uses. There are two illustrations of how the system can be adapted according to the specific demands and desires of a particular area. In addition, many of the activities can be carried out in more than one class but they will be under different conditions of resource development and numbers of participating people.

The classification system, with its accompanying policy directives, should prove to be a valuable implement in making constructive decisions on recreation resource development although more rigid guidelines for each class may be needed to ensure nation-wide consistency. The system is different from the Canadian Land Inventory recreation classification in that the latter is

purely a physical inventory to be used as a base for future comprehensive planning involving such factors as population characteristics, economic considerations and management directives.

Random Point Method of Recreation Classification¹

This method was developed by Dr. Jack Lessenger as part of a study on changing land use patterns in Santa Clara County, California. It is ideally suited for relatively small studies because of its flexible nature and time saving approach. But the broad principles on which the system is built could be expanded to accommodate larger studies.

The essential part of the approach is to determine the relationship between user groups (via activities) and resource types or between user requirements and resource potential.² Having established this, selected characteristics of an area such as topography, flora, fauna, accessibility, etc., are mapped. Then a random number of points are plotted and points having a particular set of characteristics are joined. These points, having certain characteristics in common, have been chosen on their suitability to accommodate certain activities, thus making use of the premise that certain recreation experiences require certain resource types. The detail can be regulated by the number of land characteristics plotted on the map and the accuracy can be controlled by the number of random points.

Before applying this system it is assumed that the

¹ Appendix 1D, p.128.

² Discussed earlier in Chapter 2.

criteria which define resource types have been selected and the combination of characteristics required by each user group has been determined beforehand.

When the system was developed, its application was hindered by the fact that many questions arising from the two assumptions could not be answered. However today, with the results of increased activity in recreation research at hand, it is interesting to note that this relatively unknown system bears a marked resemblance to the commonly accepted approach discussed in Chapter 2 and the Canadian Land Inventory classification to be discussed in later chapters.

Two other recreation classification systems worth mentioning are the ones developed and proposed by W. Baker¹ and G. A. Hills² for the Canadian Land Inventory program. The classifications are based on a system of physical classification of essential features, and the ranking of the classified areas in terms of intensity type of use capability. They are thus not unlike the suggested approach discussed in the previous section and their failure to be accepted for the national program was due mainly to the fact that their detailed nature would have made nation-wide application difficult. However, a modified form of G. A. Hill's system is currently being used on a provincial scale in Ontario.

A significant characteristic of these two systems is

¹ Baker, op. cit., pp.17-54.

² Hills, op. cit., pp.1-6.

their recognition of major physiographic units. These physiographic units are, therefore, separated in classification and final ranking. For example, a separate classification and ranking scheme is developed for upland and shoreland and, in fact, Hills recognized four units, namely, (i) shoreland - ranked for bathing, group camping, etc., (ii) hill land - ranked for winter sports, summer hiking, etc., (iii) lake water - ranked for boating, fishing, and (iv) terrestrial - ranked for hunting, viewing.

In essence these are not systems which classify obviously different units in one all inclusive ranking system.¹

¹ Unfortunately, it was just this type of system to be described in Section III that was accepted for the 1965 Canadian Land Inventory.

Section II

- Background Information on the Eventual Development of a National Recreation Capability Classification.

CHAPTER 4

ARDA: The Canada Land Inventory and a National Recreation Classification

ARDA

Technological advances, economic changes, mechanization and urbanization, have generally enhanced our economy but they have at the same time created or contributed to many of our present problems. Adjustment to these rapid changes has in many cases not been rapid enough, with the result that there is low income in many rural areas, misuse of natural and human resources, inefficient use of much land and water and in some areas a breakdown of social structure and an increase in high public costs, with a depressing effect on income.¹ Since rural rehabilitation is a nation-wide concern, the Federal Government decided to join with the provinces in a broad scale attack on the problem and thus the Agricultural Rehabilitation and Development Act (ARDA), under the Department of Forestry, was created. It was passed by Parliament in June, 1961, and has the following three main aims:²

1. To put to better use some marginal land that is not very productive in its present use.
2. To develop income and employment opportunities in rural areas.

¹ A. T. Davidson, Concerning ARDA, Canada Department of Agriculture, April 1963, p.2.

² Canada Department of Agriculture, ARDA - A program to conserve and develop rural natural resources and to improve income and employment opportunities in rural areas, Publication 112B, p.2.

3. To develop and conserve water and soil resources of rural Canada.

The Canada Land Inventory

As the ARDA program began to unfold, it soon became apparent that without a land capability inventory many of the pertinent decisions on land use and economic development would have to be made without recourse to essential information - a situation which was unacceptable if any measure of success was to be obtained by ARDA. With the endorsement of a need for such an inventory by both the continuing Senate of Canada Special Committee on Land Use and the Resources for Tomorrow Conference of 1961 as added support, the Government of Canada in October of 1963 approved the undertaking, under ARDA, of a comprehensive land resource inventory as part of a co-operative Federal-Provincial program, but distinct from the rural redevelopment division.

The Canada Land Inventory includes assessments of land capability for agriculture, forestry, recreation and wildlife; a land use survey; and assessments of social and economic factors relative to land use. The inventory has been designed primarily for planning rather than management¹ and will cover only agriculturally settled portions of rural Canada, and adjoining areas which affect the income and employment opportunities of rural residents. Its broad objective is to classify lands as to their

¹ It will not provide detailed information on small areas of land which would be used by local resource management agencies or local government units but will provide data of a reconnaissance type to be used by municipal, provincial and national levels of government.

use capabilities and to obtain a firm estimate of the extent and location of each land class. Its overall objective is to provide the facts of supply and demand on which to base decisions concerning the utilization of land resources.¹

Land Suitability for Recreation

The recreation sector of the Canada Land Inventory will involve evaluation and research in a number of areas such as the relationship of natural environment to recreation, a present recreation land use inventory, and socio-economic data relating available land to the quantity and quality of land needed to predicted demand, to name only a few. However, the prime objective is to determine the quantity, quality and location of the outdoor recreation lands in the settled portion of Canada. This study is to consist of assessing the natural² capability of land for recreation use and it is only after this information has been gathered that proper decisions can be made by various levels of government on formulating programs and policies regarding planning for the future use of recreation resources.

Pilot projects for the development of a suitable classification system were initiated in Saskatchewan and the Maritimes

¹ Department of Forestry, The Canada Land Inventory - Objectives, Scope and Organization, Report No. 1, January 1965, p.5.

² Location and present access do not influence the classification ratings. In addition, major modifications will not be considered. That is, while minor improvements to a beach by removing boulders, weeds, etc., or to the forest cover of a nucleus backshore area by shrub clearing will be considered normal management practice, the evaluation of a site for reservoir construction or the feasibility of filling a swamp behind a beach will not be considered.

in 1964. The results of these studies were used as a basis for the designing of a national classification scheme to be used in 1965. As a result of the work completed in 1965 a revised form was developed for the summer of 1966. By the summer of 1967 all the provinces in Canada will be participating in the recreation program.

The problems encountered in developing a suitable recreation classification system with specific reference to the experiences in Saskatchewan is, along with a proposed system, the major concern of this thesis (location map showing areas covered in 1964, 1965, 1966, Appendix 6, Map No. 1).

CHAPTER 5

The Beginning of the Development of a Nation-wide Recreation Classification System

Early in 1964 a number of provinces expressed an interest in carrying out pilot projects during the summer to set the groundwork for the development of a recreation classification. It was hoped that the results of these research projects could be analyzed over the following winter with the ultimate goal of developing a realistic nation-wide system in time for the 1965 summer season. The outcome of such projects did help to produce a nation-wide system but most of the information used was based on the experiences encountered by researchers involved in the pilot project in Saskatchewan.

The Saskatchewan Pilot Project

A) General Thesis

Lands having the greatest capability for recreation use tend to exhibit regional characteristics, e.g., the rock, lake and forest complex of the Southern Shield, the hill-valley-upland complex of the Eastern Townships, the mountain-valley complex of the Appalachians, the mountain-plateau-canyon ensemble of the Western Cordillera, the mountain-basin-desert complex of the American South-west, and the diversified shorelines of both the West and East Coasts. This same regional characteristic can also be applied to those lands which could generally be described as less useful. The most obvious and ominous example of this type of lower capability recreation land is the vast interior

plain of North America.

It appears from this observation that the value of recreation land is determined by terrain quality and terrain quality is a function of Land Form, abundance and nature of Water Bodies, Relief, and to a lesser extent Vegetative Cover.¹

B) The Topography of Southern Saskatchewan

The nature of the terrain in Saskatchewan is the result of continental glaciation and while its forms are varied, they can be explained by erosional and depositional action.

To illustrate most of northern Saskatchewan is characterized by ice scoured bedrock, scattered thin deposits of mainly sandy materials, disarranged drainage systems and numerous lakes and marshes, while most of southern Saskatchewan is dominated by the results of widespread deposition of unsorted fine and coarse materials. These deposits of end and till moraine have covered the preglacial landscape leaving undulating plains of sags and swells.² Of the lakes which were formed at the head of the glaciers, only large flat clay plains remain. Water from these glacial lakes was drained through channels which eventually became large, deep spillways.

While the preglacial landscape was modified the major

¹ Dr. J. Howard Richards, Classification of Land (not water), project report, fall of 1964, unpublished, p.2.

² Dr. J. Howard Richards, Saskatchewan Geography - The Physical Environment and its Relationships with Population and the Economic Base, Extension Division, University of Saskatchewan, Saskatoon, Modern Press, p.6.

features of the former age are still prominent and thus the main element of southern Saskatchewan is the second prairie level or Saskatchewan Plain. This great expanse of generally monotonous topography is broken only occasionally by deep-set valleys such as the north and south Saskatchewan; old spillways such as the Souris, Pipestone and Qu'Appelle Valleys; moraine features such as the Touchwood and Allan Hills. Only a small portion of the Alberta Plain which has greater relief extends into Saskatchewan but it is separated from the second prairie level by a line of relatively rough rolling hills called the Missouri Coteau. The western edge of the first prairie level in Saskatchewan is marked by the Pasquia and Porcupine Hills areas. Many of the mountain-like features such as those mentioned and others like Moose Mountain and Cypress Hills are tertiary remnants covered with glacial deposits.

A gently undulating landscape with frequent intermittent lakes and ponds, and some permanent water bodies occupying shallow depressions (characteristic of the youthful nature of the landscape¹) plus large flat plains, are common characteristics of southern Saskatchewan. However, there are micro-areas which do offer interesting opportunities for recreational development. In fact, there is a significant correlation between the location of the areas having a variety of local relief, good quality tree cover and water bodies suitable for recreational use.

¹ Donald F. Putnam, Canadian Regions - A Geography of Canada, J. M. Dent and Sons (Canada) Limited, 1952, p.344.

C) The Classification System

The criteria selected as the basis of the system included three elements in descending order of importance:

- (a) The association of land and surface water.
- (b) Relief characteristics of land.
- (c) Tree cover characteristics.

Eleven mapping units exhibiting a hierarchy of landscapes in terms of recreation potential were developed and are illustrated in figure 4 (p.48). These units were derived from the 125 combinations (Appendix 2A) of the general classification of 15 categories of water, topography and vegetation (Appendix 2B).

In developing this system, several important assumptions were made and their validity was naturally key to the success of the use of the classification.

- (a) Combinations of certain physical characteristics of the three elements demonstrating a potential for intensive recreation use should rate higher than those combinations exhibiting less potential for intensive use or a more extensive type of use.
- (b) The differences between water orientated and land orientated areas is significant enough to separate them in the classification.
- (c) The relative importance of the three aspects of landscape-water, topography, and vegetation and their contribution to the recreation potential of an area, i.e., water is rated

FIGURE 4Eleven Classes Developed from the Fifteen Categories
Involving Water, Topography and Vegetation(A) Water Oriented Areas

I Water body with a
surface area greater
than 2 square miles
having recreation
potential.

Class 1
Class 2
Class 3

II Water body with a
surface area less
than 2 square miles
having recreation
potential.

Class 1
Class 2
Class 3

(B) Land Oriented Areas

Class 1
Class 2
Class 3

Class 4
Class 5¹

1. Class 5 of topography is considered to have negative potential for recreation while the other classes of topography and water are thought to possess varying degrees of recreation potential.

above topography and vegetation only received stress in classes 3, 4 and 5 of topography orientated areas.

- (d) Saskatchewan's outdoor recreation is and will be mainly water orientated.

D) Methodology

Water, topography, and vegetation were each assigned five value classes and a numerical notation system was adopted for mapping purposes (Appendix 2B). Thus the notation 5-5-5 and 1-1-1 indicated maximum and minimum quality respectively in all three components. The mapping unit adopted was the section or mile square, and after careful examination of topographic sheets and air photos plus occasional field checks, the values for each unit were recorded on 1:50,000 and 1:40,000.¹ Each unit was then classified according to the eleven classes which were developed from the 125 possible combinations of the three variables (Appendix 2A).

Any unit which indicated a relatively high classification in water and/or topography oriented components, became the subject of specific field study with the information being recorded on form D (Appendix 2C). The 55 criteria contained in this form covered all information necessary to give a complete description of the area in terms of physical characteristics, and present and potential uses (the definitions for the criteria are given in Appendix 2D). Each criterion was made up of a list

¹ While the 1:50,000 map was the most desired scale, sometimes only the 1:40,000 scale was available.

of multiple choice answers and the desired description could be obtained by placing a check mark in the appropriate block provided. This system of recording pertinent data made possible the relative quick and easy use of the form by personnel in the field and computer processing for storage and analytical purposes.

Sites which appeared to have particular potential for public beach use, were further described in more detail in Beach Form E (Appendix 2E). The definitions of each of the criteria are given in Appendix 2F. This form covered in particular the water quality, beach characteristics, socio-economic factors, and regional significance of the site.

Since water oriented units or shoreline areas were recognized as highly important (this was especially true south of the Shield), most of the shoreline covered in the project was first described in terms of offshore, foreshore and backshore on the back of the appropriate photographs (Appendix 5, Photo Nos. 1 and 2) and each of these photos was accompanied by a completed form D and if necessary, form E.

Because of the unique nature¹ of northern lakes, a

¹ Most of the lakes designated as "Northern" are located in the Shield. In many cases they are accessible only by aeroplane and are characterized by high shoreline length to lake area ratios and many miles of homogenous shorelines backed by either bedrock or muskeg. Therefore, a system was needed to accommodate analysis of shoreline by aeroplane and by boat where flying time and labor hours are critical factors respectively. In addition, northern lakes are usually on crown lands, remote from large population centers and inaccessible by road. Southern shoreland on the other hand is largely in public ownership with large proportions already developed.

separate system, based on material obtained from the National Parks Service, was developed for describing the northern shoreline (Appendix 2G and 2H). Use of this method did not prevent the application of the classification system to this type of shoreline but time permitted coverage of only 12 lakes in the area designated as the Northern Area (Appendix 6, Map No. 1).

E) Accomplishments

Over 14,000 square miles of Eastern Saskatchewan were covered in fourteen man months of students. Of this coverage 340 sections were examined and described in the field, and approximately 120 actual beach sites on 20 major lakes were described in detail (Appendix 6, Map No. 1).

F) Evaluation

Study of the results of the pilot project revealed a number of distinct deficiencies inherent in the classification system used.

First, the objective of the recreation sector of the Canadian Land Inventory is to assess land capability for recreation. However, the method used in this pilot project classified three aspects of a topographic map - Terrain, Water and Cover and thus did not express the natural use capabilities (type and intensity of use) for recreation in the areas covered. It was, therefore, only a physical classification of the existing topographic characteristics.

Second, adoption of the square mile as a mapping unit resulted in unnatural straight line or grid boundaries,

(Appendix 6, Map No. 2). These boundaries tended to be artificial and ignored the more realistic natural boundaries of different physiographic units. Even more serious, land characterized by narrow belts of potentially good recreation land less than a mile wide could hardly be mapped or studied on a reasonable and meaningful basis.

Third, experience in the field and office indicated that the potential of upland and shorelines for recreation use are vastly different and in many cases study of the latter was too coarse to distinguish significant variations in shoreline conditions.

Fourth, the method of recording the shoreland characteristics as illustrated by photos 1 and 2, Appendix 6 (pp.204 and 206) was unsatisfactory because: (a) writing on the back of the photograph and filling out the detailed form was both time consuming and redundant, (b) the filling out of Form D for each photograph was far too comprehensive and unnecessary for most areas of shoreland, (c) the information gathered at any point and written on the back of any of the photos was inconsistent, and (d) the terminology used and the description given on the photos was dependent on the person doing the writing and thus very subjective.

Two other problem areas which lent themselves more readily to adaptation involved: (1) a lack of consistency in the numerical order of the description of the three topographic aspects (Appendix 2B) and final classification scheme (Appendix 2A), (2) the sacrifices in clarity and accuracy in

form D and E imposed because of proposed computer handling, and (3) the use of a different beach form for the northern and southern areas seemed unnecessary.

While the system used in the project was not totally acceptable, it did point the way to the development of a system which, with the addition of attraction and/or limitation notations, could indicate recreation capability. Further, it revealed that equivalent lands in terms of recreation potential do tend to coincide with definite physiographic units, thus suggesting that these physiographic units or natural units should be adopted as the basis for class capability boundaries.¹ In addition, field experience demonstrated that the complicated but valuable shoreline unit demanded further greater analysis than upland,² and, therefore, indicated a definite need for separate classification.³

To conclude, the 1964 pilot project in Saskatchewan was a limited success in that it established a set of references which could be used to solve the difficult problem of developing a national recreation capability classification scheme.

¹ Dr. J. Howard Richards, Criticisms and Recommendations, project report, unpublished, fall of 1964, p.3.

² The method of gathering information on northern lakes was generally believed to have been adequate and, therefore, was adopted for 1965 and 1966 (Appendix 2G and A).

³ C. S. Brown, Recreation Land Inventory in Saskatchewan, 1964 Experience and 1965 Proposals, project report, unpublished, October 21, 1964, p.6.

Section III

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A National Recreation Capability
Classification, Methods and
Procedures, Application, and Results.

CHAPTER 6

The 1965 Classification System

The experiences gained from pilot studies, and the discussions of the results by the provinces concerned, provided a wealth of data and ideas that were invaluable for building a national classification system. By February, 1965, all available information had been studied by the Recreation Sector of the Canada Land Inventory and with the help of a committee of the Federal-Provincial Parks Conference a national classification was developed and proposed for use by the participating provinces. While not all provinces agreed on every facet of the system, there was general agreement on the basic approach. Thus adoption of the classification on a national scale was a milestone - and made possible a step in the right direction towards achievement of the ultimate goals of the Canada Land Inventory Program.

As stated earlier¹ the development of a clear set of objectives is a critical factor in the creation of a classification system and in the ultimate success of its use. Bearing this in mind the following objectives were set and clearly outlined for scrutiny by recreation sector officials.² In short the recreation inventory is to provide reliable information on the quality, quantity and location of our recreation resources.

¹ Chapter 1, page 19.

² C. S. Brown, Outline of the Canadian Land Capability Classification for Outdoor Recreation, Prepared for ARDA, March 1966, unpublished.

This information is to be presented in a form indicating relative use capability or comparative levels of recreation use capability. In addition, the type of recreation activity that an area is best suited for is to be indicated, and outstanding or unique areas are to be identified. In total this information could be used for planning purposes by all levels of government.

In looking at the 1965 classification closely it can be seen that the aforementioned objectives played an important role in systems development. The classification was firstly to be a measure of natural capability and, therefore, was an evaluation of land¹ resources ignoring present use, access, and location. Only minor modifications to any site were to be considered in the final evaluation. The final result was to be an evaluation of an area's capability in terms of its natural physical characteristics of its environment. To involve factors such as access for example, which are basically human considerations would greatly complicate matters and ultimately defeat the purpose of the inventory. That is, evaluation of areas including say the location factor would not give an overall picture of our resources at any time, but rather a picture of our resources at the time of evaluation and with the existing economic, political, technological, supply and demand conditions.

The new system was to give an indication of the relative level of recreation capability of any area. This was made possible by developing a hierarchy of seven classes ranging from

¹ Land refers to upland, shoreland and water bodies.

the most valuable areas at the top of the scale to the least desirable or valuable at the bottom of the scale. For example, a shoreland unit containing a beach could rate as high as a class 1 (picture 1, p.57) because of its potential to accommodate a large number of activities and users while a land unit made up of flat treeless prairie could rate as low as class 7 (picture 2, p.57) because of its limited potential for even extensive recreation use. The yardstick for measuring an area's relative value was to be the degree of intensity of use that an area was capable of sustaining which in turn was based on the physical characteristics of the site and their suitability as a base for certain activities. To reduce subjective evaluation and promote consistent application of the classification system, guidelines¹ were developed, to aid field workers in their evaluation of pertinent information. These guidelines were quite explicit with regard to beach appraisal. For example, a class 1 beach was required to be at least 2000 feet in length with suitable conditions for family bathing and at least 25 acres of development area within 1000 feet of the beach.

Intensity of use was not to be interpreted as merely numbers of users but rather number of uses. That is, the quality of the area with respect to individual use was not to be considered as significant as the number of different uses. From this discussion it is evident that the class value of an area is based

¹ A complete outline of the guideline together with the requirements of each class supplemented by illustrative photographs is located in Appendix 3A, p.150.

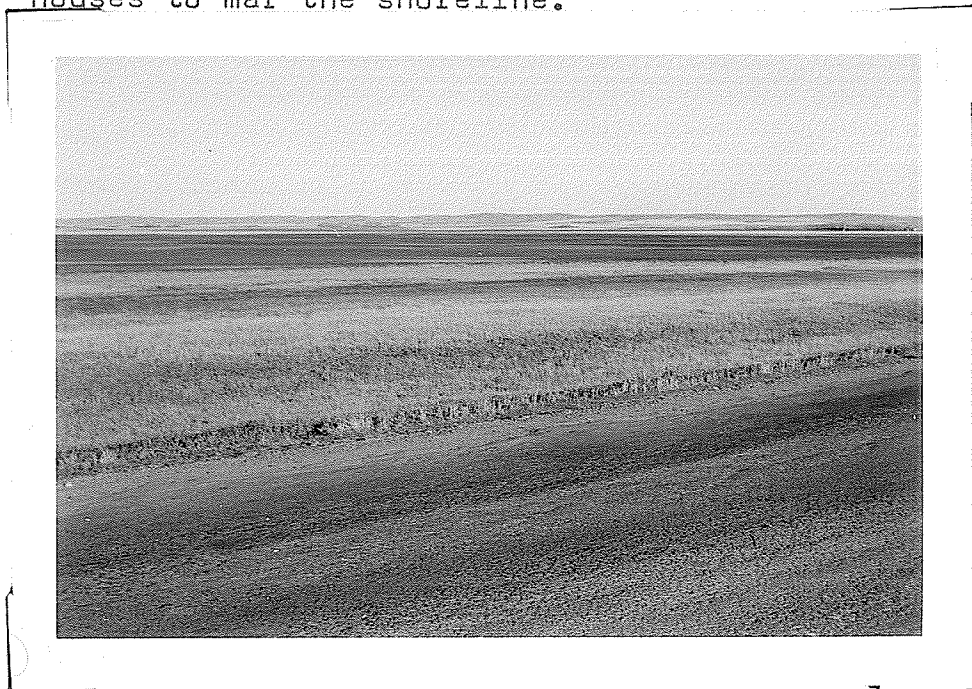
No. 1



R.V.P.

This large beach on Fishing Lake has high capability to support a large number of people and activities. The offshore conditions are excellent for swimming and bathing. Unfortunately, unplanned development has allowed both cottages and boat-houses to mar the shoreline.

No. 2



R.V.P.

Flat, treeless country such as the scene in the picture has little if any capability for even extensive types of recreation activities. The rising hills in the background have a slightly higher capability because of the variety of local relief, scenic viewpoints and the appearance of wildlife in treed coulees.

on the possible number and type of uses respectively and this information is derived from an analysis of pertinent physical characteristics which provide desirable conditions for certain activities. In other words, the area is characterized by certain attractions, the nature of which ultimately lead to the designation of a class value.¹ Therefore, it became apparent that symbols were needed to; firstly, indicate by their significance or the number of symbols following the class value, why an area has been designated a certain number; secondly, describe the area's pertinent physical characteristics; and finally, denote the type of activities best suited for the area. As a result an attraction symbol index² was developed to supply this information. For example, the letter "B" was defined as: wet and dry beach conditions suited to family bathing, at normal water levels, in terms of water quality, beach slopes and beach materials; and the letter "V" was defined as: a promontory or vantage point which provides a superior view of a feature, landscape or seascape; or a corridor or other area which provides frequent good viewing opportunities.

While the class number and assigned attraction symbol or symbols gave a fairly good indication of a designated area's capabilities, the provinces generally felt that more detailed information was required especially with regard to undesirable physical characteristics which would lower an area's capability

¹ Discussion chapter 2, pp.27-30.

² Consult Appendix 3B for the complete list of attraction symbols.

rating. Therefore, a number of limitation symbols¹ were developed and these were designed to complement the information supplied by the attraction symbol. For example, the small case letters "a" and "m" indicated the following: a - beach activities limited by steep slopes offshore and, m - use of foreshore zone limited by organic soils, mud or extensive tidal flats.

In addition, new forms encompassing descriptions of water bodies, shoreland and upland units were developed to replace the inadequate computer designed forms² and to further facilitate the gathering of more detailed data by the provinces.

Unlike the approach used in the 1964 pilot project in Saskatchewan, the new classification was a measure of an evaluation of the recreation capability of land, rather than a mere ranking of the importance of three physical properties,³ namely, (1) the association of land and surface water, (2) relief characteristics of land, and (3) tree cover characteristics. The major factors in the new classification were the potential intensity of use, range of recreational activities possible, and the degree of attractiveness. The classification included seven major classes and two sub-classes. Hopefully this was to accommodate the complete range of upland and shoreland situations.

The prime emphasis of the classification was on shore-

¹ Consult Appendix 3C for the complete list of limitation symbols.

² This applied especially to the form "D", Appendix 2C.

³ A more detailed discussion of this point is located in chapter 5, p.51.

land and, therefore, the first three classes aside from the special classes were applicable only to the shoreland physiographic unit. Further emphasis on shoreland was reflected in the partial adoption of Baker's method of shoreland inventory and this made possible a more complicated but more valuable shoreland evaluation. However, the major emphasis on shoreland with an even greater bias towards the beach type of shoreland later proved to render the classification unsatisfactory for application at the provincial level.

CHAPTER 7

Methods and Procedures

A) Approach

One of the most important steps in the classification process is to separate and identify the different physiographic units since, in most cases, as discussed previously,¹ there is a correlation between the types of physiographic units and their ability to support different levels or degrees of recreational use. The first step, therefore, was to draw the boundaries of physiographic units based on the degree of relief (Appendix 3D, p.170) in red pencil; and tree cover based on percentage of cover per square mile (Appendix 3D, p.170) was then mapped in blue pencil. Scale of mapping for this preliminary analysis was 1:50,000 (Figure 6). These boundaries were established through the study of contour lines, aerial photographs and soil survey maps (Figure 5), with caution being taken to ensure coincidence of boundaries on adjacent maps.

Following this procedure 1:50,000 maps pertaining to the area covered by a 1:250,000 map sheet would be studied in concert² to: (1) separate the water bodies which could be

¹ Chapter 5, pp.45-46.

² The 1:250,000 maps are being used as separate study areas because: (1) the Federal Government requires complex 1:250,000 maps with accompanying 1000 word written descriptions as part of the ARDA contract, (2) gives a field worker a picture of the complete unit of which he might only be studying one part on a 1:50,000 basis, and (3) tends to place a unit or group of units in a regional setting which aids in assessing an area's capability classification.

classified by air photo interpretation and field spot checks from those which would require detailed field study of shoreland, (2) identify and classify those upland areas which would not need field study, (3) identify interesting upland areas which might require field inspection, and (4) isolate areas which might prove difficult to classify. Basically the idea was to eliminate the relatively large and unimportant areas which, except for occasional spot checks, could be classified in the office, and thus promoting savings in both time and money which might better be applied to more detailed studies in more significant areas.

At this time it seems appropriate to discuss the problem of subjectivity¹ in the application of the classification scheme. A brief study of the classification manual² would reveal that the definitions for each class were vague and, apart from the guidelines for beach classification, few physical criteria were specified which would permit separation and classification of the various upland units. Therefore, a new guideline, in which objective criteria were proposed and defined, was created. Its essential purpose was to eradicate the gross subjectivity inherent in the previous system (Appendix 3E). This guide was not to be used as a strict rule but was to serve the purpose of achieving reasonable consistent classification throughout the province, by different field parties working in different parts of the province. It was hoped that it would be helpful in

¹ Chapter 1, page 11.

² Official guidelines Appendix 3A.

standardizing work during the early weeks of field study when personnel lacked experience.

Having identified a potentially valuable water body, a team of field surveyors would conduct a detailed study of the shoreland. The field study technique generally adopted was to travel the length of the shoreline by boat¹ and record pertinent information² (Appendix 3E) onto 4-inch to the mile air photographs (Photo Appendix No. 3 and 4). Occasionally, landings were necessary to check out certain backshore or foreshore conditions. Under good weather conditions it was possible to classify many miles of shoreline.

Beach sites, being the most important units in the classification scheme, were studied in detail and this involved: (1) a field inspection of the offshore, foreshore and backshore, (2) the filling out of a shoreline form³ (Appendix 3G), which would be attached to the appropriate photograph, and (3) writing on the back of the shoreline form any other information which would be helpful in final evaluation. Following the completion of a shoreline inventory, a water body form (Appendix 3H), and a

¹ In some cases the water body could be inventoried and classified by using an airplane and landing only occasionally for spot checks. This was done if there was a considerable length of homogenous shoreland or if the water body and its shoreland had only a limited capability.

² Data to be gathered was listed on a specially developed shoreline physical inventory sheet (Appendix 3F).

³ The shoreline form along with a water body and upland form were developed to replace the previously computer orientated all inclusive form to facilitate the gathering of information in a more meaningful form for the provincial government.

written report of the lake's capability were completed and this information, together with the air photographs and shoreline forms, were filed according to the name of the lake and the 1:250,000 map sheet on which it was located. In some cases the lakes were only of limited use and, therefore, only spot checks of shoreline, by airplane or vehicle, were necessary.

Possibly interesting upland areas were field checked and if an area was deemed significantly important an upland form (Appendix 3I) and written report were completed.

When field work and office analysis was completed, the field workers drew the final capability classes and boundaries on the maps, together with the appropriate attraction and limitation symbols (Overlay Figure 7, p.66). Occasionally further discussion and/or additional information necessitated revision of designated classes and boundaries.

B) Final Capability Mapping

Once the class designations and boundaries were firmly established the information was transferred onto new 1:50,000 maps with black ink (Overlay Figure 7, p.66). As illustrated by this overlay, the class designations are followed by the attraction and limitation symbols respectively. The maximum allowable number of each type of symbol is three and they range in decreasing order of importance from top to bottom. The following is a brief discussion of some of the classified areas on the overlay to demonstrate the type of information that can be gathered from a completed map:

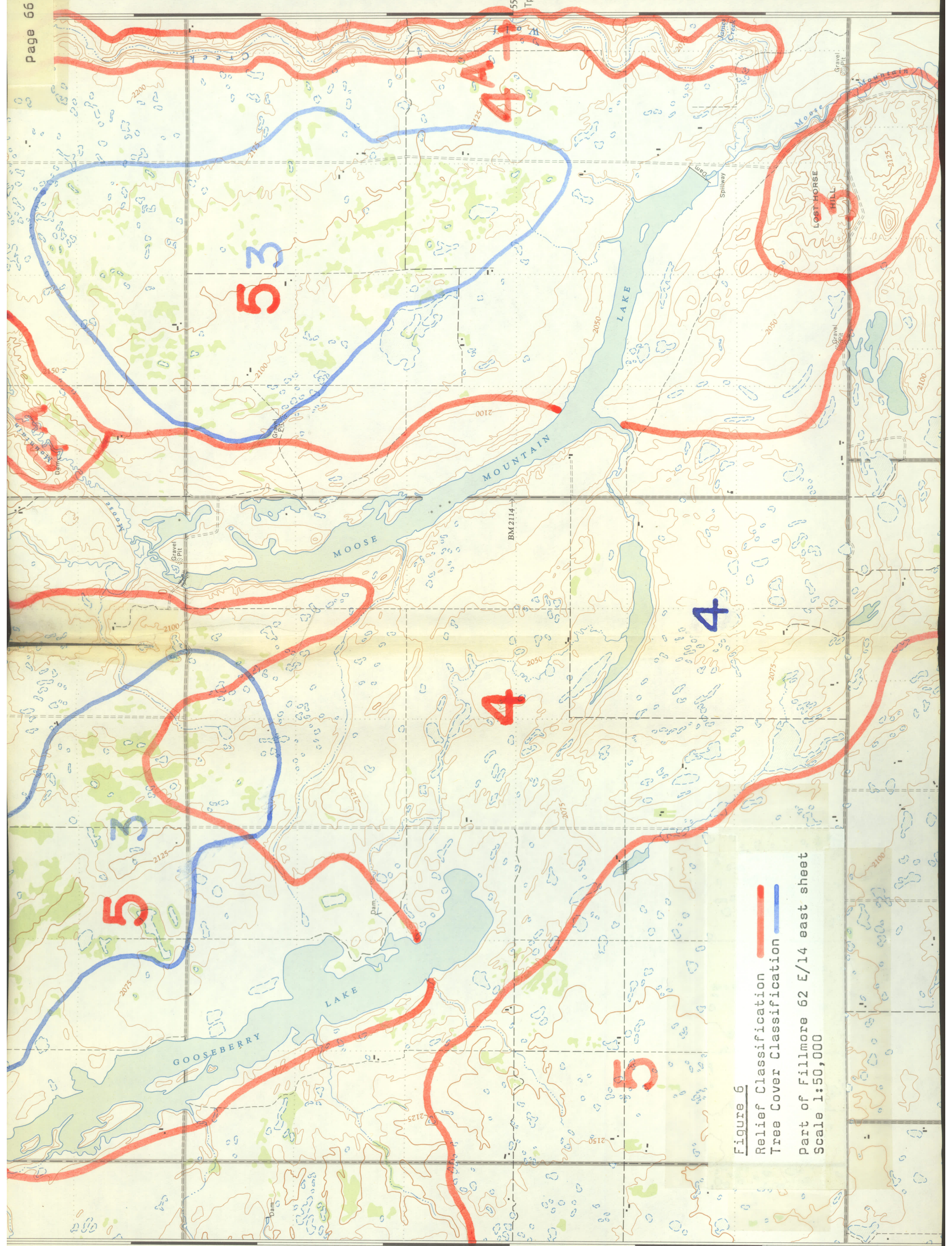


Figure 6

Relief Classification
Tree Cover Classification

Part of Fillmore 62 E/14 east sheet
Scale 1:50,000



1965 CAPABILITY CLASSIFICATION

Figure 7

- 6W¹ - area with capability for wildlife viewing or hunting but not significant enough to rate class 2S.
- 3Bn - relatively poor quality bathing and swimming beach: poor water quality due to natural aquatic nuisances, weeds or pollution - mineral or organic. A complete description of the beach would be found on a beach form (Appendix 3G).
- 3 n
b
a - An area of shoreline characterized by poor water quality, a steep slope >40% rising from the high water line to a level from 5' to 25' above the water level, and steep offshore slope limiting bathing activity.
- 6V - An area of land providing a view of the surrounding countryside.

After completing all the 1:50,000 maps of an area covered by a 1:250,000 map sheet, the information was then transferred to the 1:250,000 map (Figure 8). Understandably in the transfer of information to the smaller scale, a reduction in detail was needed to avoid cluttering of data and hence, this necessitated changes in symbolization. Therefore, as a means of alleviating this problem a method of generalizing or complexing

¹ The meaning of the letters may be found in Appendix 3B and C, p.164 and 165.

was devised to group smaller units on a percentage basis. For example, the following units from the 1:250,000 map (Figure 8) would be interpreted as:

- $6^8 3^2_m$ - 80% class 6 and 20% class 3 with
use of foreshore and offshore zones
limited by organic soils, mud or
extensive tidal flats.
- $5^9 N 3^1_r$ - 90% class 5 characterized by a variety
of local relief and stony or rocky
surface that hinders development,
and 10% of class 3 shoreland.

[illegible]

From Interim Manual of Recreation Classification
Guides, ARDA, May 1965

CHAPTER 8

Examples of Classified Areas

The purpose of this chapter is to describe a number of areas that were classified to show the relationship between important physical characteristics and their potential for accommodating certain activities, and to illustrate the eventual outcome of translating this information into final capability maps. Despite the fact that by the end of August, 1965, all of the eastern half of the ARDA designated area in Saskatchewan was classified, most of the examples have been taken from the southern most part of the province where contrasts in landscapes and subsequent potential use are more evident. The general location of these areas is indicated in Appendix 6, Map No. 1 and the examples of capability maps are also located in Appendix 6, Map Nos. 3 to 6. There were no areas rated as 1S and only a few marginal ski areas rated 4S¹.

Candle Lake

Located 60 miles northeast of Prince Albert, Candle Lake has one of the brightest futures for new development. Its large size, adequate depth and crystal clear waters make it ideal for the complete range of shore-based activities. There are many miles of shoreland with excellent potential for a great variety of recreation development. Picture 3 is an example of only one of the many high quality beaches found along its shoreland.

¹ See Appendix 3A for a description of an area implied by these codes.

This particular site easily met the requirements for a class 1 area with nearly a mile of beach front and almost an unlimited amount of developable backshore. The beach has sandy offshore conditions with gradients suitable for both bathing and swimming. In addition the gentle rolling, well treed backshore extends on either side of the beach to shoreline which could provide areas for cottage sub-divisions and sites for access and mooring for small boats.

The majority of the shoreland, except for the north end which is marshy rated at least class 3. Picture 4 is a good example of a beach with certain limitations but it still easily rated as class 3B. While there is space for backshore and foreshore development the beach is only 300 feet long and 10 to 15 feet wide. However, despite its small size and the presence of a reed problem, the fine sand materials and moderate offshore gradient provides a pleasant site for swimming and bathing.

The Qu'Appelle Valley

This former spillway originating southwest of Elbow on the south Saskatchewan River runs east almost paralleling the Trans-Canada Highway. From west to east the attractiveness of the valley gradually increases with a corresponding increase in the quality and extent of tree coverage on the valley walls, and the occurrence of large lakes particularly northeast of Regina. The lakes have the potential to support almost the complete range of shore-based activities, and the valley walls in addition to their vantage viewing points provide areas for extensive activities and winter sports. In addition, the winding Qu'Appelle River

No. 3



R.V.P.

Class 1 beach on Candle Lake

No. 4



R.V.P.

Class 3 beach on Candle Lake

(misfit river) provides an excellent course for canoeing, small boating and camping.

The valley normally rated class 5 but where vantage points for viewing lakes are located the valley rated class 4. Most of the shoreland on the lakes rated at least class 3 but there are numerous beaches that rated class 2B. Picture 5 illustrates a type of point bar feature which is very common on lakes in the Qu'Appelle Valley. The windward side has an 8% offshore gradient with coarse gravels as a base while the sandy leeward side has a 6% gradient with sands and fine gravels as a base. On the basis of slope and materials the leeward side, therefore, is probably best suited for bathing while the windward is more suitable for swimming. In total the two beach sites are 600 feet long. The backshore, being flat and adequately treed, is well suited to public use for camping or picnicking and the rising, complex, coulee dominated slopes of the valley wall are excellent sites for cottage development and activities such as hiking and exploring. The backshore on either side of the point is well suited for cottages or camping and provides easy access to the water for boat launching or swimming.

Since this lake is located along the southern wall of the valley, the northern valley is rated as class 5, 1000 feet north of the north shoreland (shoreland boundaries extend only 1000 feet.

Long Lake

This lake is situated in a former glacial spillway

which eventually flows into the Qu'Appelle Valley. It is very popular and valuable for popular shore-based recreational activities. The northern end, while of limited use for the normal type of recreation development because of the shallow water conditions, is a significant wetland breeding and migration area.

Aside from a number of beaches, picture 6 illustrates the type of shoreland characteristics that are very common on both the west and east side of the lake. This site which was rated as class 3 is part of a long length of physical homogenous shoreland. The backshore is well above the water line and in only a few spots is the bank slope serious enough to make access and erosion a serious problem. The foreshore is mostly boulders but this condition changes to gravel and shingle offshore. The backshore provides excellent sites for cottages and in other places where the gradient is steeper and tree cover greater it provides camping and picnicking spots. In no place is there any difficulty in launching or docking a boat and swimming and fishing can be accommodated anywhere along the shoreline.

The Big Muddy Valley

The Big Muddy, a former glacial spillway flows through the semi-arid southern most portion of Saskatchewan. Except for a few interesting areas comprised of treed coulees, viewpoints overlooking alkali lakes and badland features, the valley is barren, dry and of little value for recreational use. However, a few areas because of their uniqueness and relative location in the province rated as high as class 2S.

No. 5



R.V.P.

Typically scenic undeveloped beach on south
shore of Crooked Lake.

No. 6



R.V.P.

Shoreline characteristic of Long Lake.

Picture 7, an example of a class 2S, was taken from a rocky outcrop and scenic viewpoint that forms part of the north facing wall of the valley. Aside from being of geologic interest, the top of the outcrop has numerous petroglyphs (Appendix 3A, picture 25). Also the outcrop and surrounding land provides a panoramic view which is of cultural interest showing the pattern of land use and a French hamlet at the bottom of the valley. Below the viewpoint a series of coulees containing relatively flat areas provide excellent tree cover for camping, picnicking, hiking and viewing.

Another area forming part of the north facing wall rated class 5 and is characterized by over 400 feet of relief, numerous tree covered eroded coulees. It is very different from the south facing side which has only about 150 relief, is less rugged and virtually lacks tree cover (Appendix 6, Map 3). Numerous areas along the north facing slopes provide a panoramic view of the surrounding countryside, attractions such as the town of Willow Bunch and two alkali lakes (picture 8). The coulees, especially the larger ones have relatively flat bottoms which could provide bases for camping and picnic sites (picture 9). While activities would be limited to the extensive type there appears to be potential for a large number.

Big Muddy Lake is farther east and south of the previous example of a class 5 (Appendix 6, Map 4). The surrounding area is drier with little tree cover except in some of the larger coulees. However, the relief ranges from 500 to 350 feet providing many scenic spots from which to look out onto the lake

No. 7



R.V.P.

From left to right: grain elevators of Willow Bunch, farm house, alkali lake and badland feature (exhibits bright colors of purple and grays).

No. 8



R.V.P.

The petroglyphs are on top of the rock outcrop at the right. The treed coulee below is excellent for camping or picnicking.

and its white alkali shores (picture 10). In addition the bad-land features which appear along the south shore of the lake are spectacular scenic attractions and are unique in Eastern Saskatchewan (picture 11).

Another scenically attractive valley south of Big Muddy Lake runs off the Big Muddy Valley and parallel to the American border (Appendix 6, Map 4). While it does not have a comparative amount of relief and the scenic attraction of a large lake, its coulees are adequately treed with numerous erosion features that could provide a camp or base site for the viewing of the Big Muddy Lake area (picture 12). Some of the coulees contain freshwater springs.

In general, both of the last two areas have good capability for supporting of wide range of extensive activities such as wilderness camping, hiking, exploring, riding and touring or driving.

Moose Mountain

Another example of a class 5, Moose Mountain is a relatively large remnant upland feature that rises about 500 feet above the surrounding prairie level. It is characterized by a knob and kettle topography and contains numerous small shallow ponds or bodies of water bordered by thick growths of reeds (picture 13). However, the area is a pleasant relief from the surrounding rather monotonous countryside and its excellent deciduous tree cover together with the presence of two large lakes containing class 2 beaches, many scenic viewpoints, and a

No. 9



R.V.P.
North facing slope of Big Muddy Valley with
high point for the region located in far right
corner.

No. 10



R.V.P.
Alkali flats east side of Big Muddy Lake.

No. 11



R.V.P.

Badlands south side of Big Muddy Lake.

No. 12



R.V.P.

One of the smaller coulees off Carlyle Coulee

number of smaller lakes ideally suited for camp development, makes it very attractive for recreational use.

Examples of the Lowest Classes

A great variety of landscapes placed in class 6 have one thing in common - limited recreation capability. They range from small river channels flowing into the Qu'Appelle Valley to the dry rugged uplands south of Fife Lake (Appendix 5, Map 6) and the heavily forested regions especially north and west of Prince Albert. Still in other cases the area simply provided pleasant touring country with occasional panoramic views (picture 14).

Areas with little or no recreation capability rated class 7. They generally lacked attractions or were uninteresting. Most of the flat prairies, parkland belt and muskeg areas were placed in this class. In the extreme south most areas, unless they were relatively rugged, were placed in class 7.

No. 13



R.V.P.

Taken from a hogback which provides a 360°
view of the surrounding mountain and farmlands.
(Moose Mountain)

No. 14



R.V.P.

This picture was taken from the top of an
abandoned ski jump. Possibilities for skiing are
present in the Big Muddy area but require high
management input.

CHAPTER 9

Critical Analysis of the 1965 Classification System

Problems in applying the classification system arose throughout the summer, but understandably their significance was not fully appreciated until a comprehensive examination of the scheme in the fall; at a time when the accumulation of all the data and experiences gained through the use of the system, over the previous four months, was available. In general, provincial authorities and field workers were far from satisfied, despite the obvious improvements and advantages of the system as compared to the one used in 1964.¹

In addition, application of the classification system was further complicated by virtue of the fact that there were difficulties in identifying pertinent and meaningful physical data on shorelands and in choosing attraction or sub-classes symbols for both shoreland and upland designated areas. As a result, class designation was neither easy to apply, nor necessarily proper.

As these problems arose and were identified, subsequent additions of limitation symbols, and further explanations of the various classes did little to alleviate the basic deficiencies in the classification scheme.

Ultimately, the difficulties arising from, the unsuitable design of the classification system, the problem of identifying

¹ Chapter 5, pp.51-53, and chapter 6, pp.54-60.

certain physical data, and the attempt to apply corrective measures, contributed greatly to the undesirable and unsuccessful results of the final capability maps. Since an understanding of the nature of these problems is essential in evaluating the results, they are divided into distinct divisions and discussed accordingly.

(1) The Classification System

An examination of the classification system as applied in 1965, clearly indicated three major deficiencies which are as follows:

- (i) The limited depth of the shoreland unit.
- (ii) The consideration of shoreland and upland units within a single hierarchical classification scheme.
- (iii) The attempt to apply a strongly nationally orientated classification system.

These deficiencies either singularly or in combination with each other were responsible for the final maps which illustrated only the highly desirable areas while the remaining less significant, but important areas, were grouped in a small number of class designations. In addition, many areas were classified in a way that did not reveal their true recreation capability. While these three factors are closely related they will be discussed separately to facilitate a greater understanding of the inherent difficulties encountered in applying the class designations.

a) The Limited Depth of the Shoreland Unit.

No one today would deny the obvious importance of shoreland resources as a base for the majority of intensive outdoor recreation activities, but to isolate the shoreland immediately adjacent to the water line from the surrounding or peripheral upland, when they are in many cases part of a recognizable physiographic unit is unrealistic and impractical from a planning viewpoint. Yet, despite the fact that a shoreland boundary could extend up to a mile back of the water line, the stipulation covering the location of developable backshore (within 1000 feet horizontal distance from the shoreline) tended to act as the boundary between shoreland and upland. That is, the maximum distance that a shoreland boundary extended was approximately 1000 feet or about $3/8$ of an inch on a 1:50,000 map sheet. Thus, shoreland boundaries cut part way up valley walls or did not include good backshore areas over 1000 feet away from the shoreline. The ultimate effect was the division of natural physiographic units and this situation was undesirable since as mentioned earlier the assessed levels of recreation capability do tend to coincide with distinct physiographic units and, therefore, this should be the basis for a capability classification.¹

To illustrate, planners would surely consider the Souris River as part of the Souris Valley, Round and Crooked Lakes as part of the Qu'Appelle Valley, Big Muddy Lake as part of the Big Muddy Valley complex, Pierce and Greig Lakes as part of the Waterhen drainage system, Kenosee and Carlyle Lakes as part

¹ Chapter 5, pp.45-46.

of Moose Mountain, etc. Unfortunately, the division of physiographic units did occur especially in the Qu'Appelle Valley where lakes such as Round and Crooked are located. The result being that because of the lakes' positions on one side of the valley floor, only one side of the valley wall was classed as shoreland while the wall farthest from the shoreline and over 1000 feet away was classed as upland, and by the very nature of the classification system it was valued very low compared to its potential.¹

This does not imply that shoreland should not be studied separately in greater detail, but that shoreland should be evaluated in combination with an evaluation of the physiographic unit (upland area) of which it forms an integral part, to give a final overall shoreland capability rating for the area.

b) Shoreland and Upland within a Single Hierarchical Classification System.

By incorporating both upland and shoreland in a system encompassing only seven classes, many significant areas exhibiting different physical characteristics and capability ratings had to be placed in the same class. In other words, three shoreland classes and four upland classes were hardly adequate to illustrate on maps the relative value of recreation resources on a national

¹ Classification of this area in this manner was unrealistic because of the significance of the lake being part of an obvious and easily recognizable physiographic unit; a large lake in the flood plain of a former glacial spillway. Also the fact that the valley walls and lake are of significant value for winter sports such as family skiing, tobogganing, skidooring, ice fishing, increases the potential use of shoreline developments to almost full-time and, therefore, further validates the argument for a unit approach and a more flexible application of shoreland boundaries.

scale. Limitation symbols were used copiously and in many combinations to try and separate the various types of shoreland, but this introduced subjective evaluation, both in the symbols chosen by the field worker and in the interpretation of the data by other people examining the completed maps.

The two special classes were intended to isolate outstanding areas but there is no reason for this since these areas still involved sites having attractions with the capability for certain activities. For example, skiing involves an upland area which is intensively used as a class 1 beach site. Therefore, these outstanding areas should have been accommodated "within" the system rather than "an addition to" the system.

c) The System's Extreme National Orientation.

Limiting the number of classes of usable¹ shoreland to three classes was undesirable, but the first two classes referred to beaches and thus only one class was left to accommodate the remaining types of shoreland. In addition, the standards of the first two classes were so high that only two beaches in south-east Saskatchewan² were rated as class 1 and of the relatively small number of beaches rated class 2, most barely made the requirements.

The special classes also appeared to have been developed to isolate or emphasize outstanding areas on a national scale. Considering that class 4 was to be an exceptional area (i.e.,

¹ Shorelands that were deemed lower than class 3 but still useful could not be rated lower since class 4 lands were referred to front on water bodies of negligible use (Appendix 3A, page 157).

² Appendix 6, Map No. 1.

Cypress Hills) this left one class of shoreland and three classes of upland from which to rate the resources in Saskatchewan.

Since the physical characteristics of Manitoba and Alberta are in many ways similar to Saskatchewan, application of the classification became inapplicable on a scale encompassing the largest portion of Western Canada - a fact which was considered significant in the evaluation of the inadequacies of the classification system.

d) Examples of Anomalies Resulting from the Basic Deficiencies in the Classification Scheme.

A study of the lakes in Saskatchewan classified in 1965 revealed that most of the shoreland was rated as class 3. Also many good quality beaches were rated 2 and 3 because of high standards. Pictures 15-18 are examples of the range in types of shorelands and in levels of use capability that were placed in class 3.¹

The upland classification involved classes 4 to 7 but since class 4 was considered to be of exceptional quality, and 6 and 7 of virtually little or no potential, this left one class to designate most of the valuable recreation land in Saskatchewan, most of which varies both in physical characteristics and, therefore, recreation capability. For example, parts of the Big Muddy Valley which are capable of supporting basically extensive activities were classed the same as Moose Mountain, Duck Mountain, and The Waterhen District which are capable of supporting a wide

¹ For further examples of shoreland falling in class 3, consult Appendix 3J.

No. 15



R.V.P.

Beach on the north side of Round Lake in the Qu'Appelle Valley. Good swimming and bathing conditions. Ample backshore in scenic setting of valley. However, the beach is less than 500 feet in length.

No. 16



R.V.P.

Shoreline on Tulabi Lake. The backshore is extremely rugged making access to and from the water impossible. The area is exposed to strong currents and winds and is obviously unsuitable for private and public use.

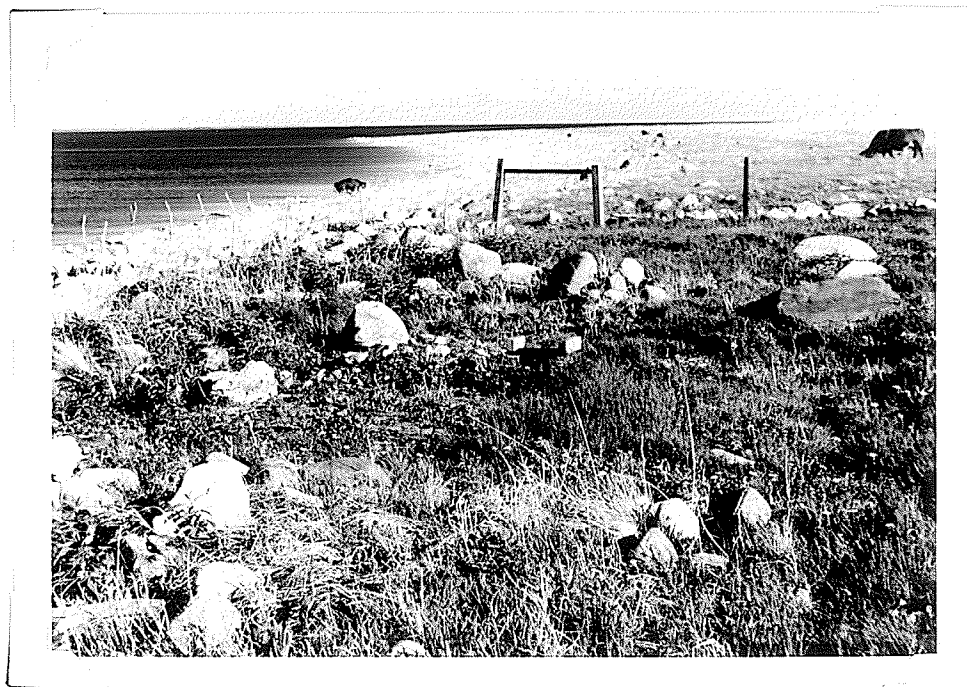
No. 17



R.V.P.

Shoreline on the south shore of Madge Lake. Excellent backshore for development, but very shallow offshore, weed, till and boulder conditions hinder its use for boat launching, swimming and bathing.

No. 18



R.V.P.

West side of Long Lake. Treeless barren backshore, low relative to the water level. The offshore gradient is extremely gentle and the materials are till, boulders and gravel. This length of shoreline has very low capability.

range of extensive activities and some intensive activities.

There was also no real guide for classification of valleys and the rivers flowing through them or simply rivers in general. In some cases the rivers were rated as shoreland and the valley walls upland, and in others the river and valley or adjacent land were rated as upland. Some valley walls, if the guidelines were strictly adhered to, would have been rated shoreland on the lower sections and upland on the upper section (i.e., Lakes in the Qu'Appelle Valley). While it is realized that the physical characteristics of rivers vary greatly, as does also their use capability, some definite guidelines were needed to promote consistent handling of these features.

(2) The Shoreline Physical Inventory

This method of recording physical data on shorelands (Appendix 3F and Appendix 5, Air Photo Nos. 3 and 4) was far more comprehensive and consistent than the system used in 1964.¹ It also had the additional advantage of being easy to apply.

At first, there were many problems in using the shoreland coding system but in most cases it was just a matter of field personnel gaining experience. For example, it was imperative to recognize what differentiated a serious access problem from a moderate one, a serious flood hazard from a moderate hazard, excellent tree cover from adequate tree cover, a boulder foreshore from a mud boulders rubble foreshore, etc. However, in general

¹ Problems associated with this system are discussed in Chapter 5, pp.45-46.

the inventory sheet lacked some physical criteria necessary to adequately describe shoreland; these are discussed accordingly:

- (1) The system did not indicate the broad type of shoreland unit that was being described. That is, whether the shoreland is low or high relative to the water level and further the nature of its predominant physical characteristic, i.e., marsh, wetland forest, bedrock, till, ice pressure ridge, etc.
- (2) While some indication of the amount of tree cover was given, no indication of the species was provided (species were described on shoreline forms at beach sites).
- (3) In many cases a predominantly gravel offshore was present which differed from offshore conditions normally described as gravel and shingle.
- (4) The weed condition of the offshore was indicated by the symbol "W", but the degree and type of growth was not described. The necessity for description of vegetation should not be underestimated: often it can be an indicator of water quality, fish potential, prevailing wind and current, and development costs.
- (5) In some cases the type of materials and percentage slope offshore were not as significant factors as the degree of firmness of the bottom. For example, some offshore bottoms are characterized by a 1 to

2-inch crust of sand over a soft organic base which makes the area undesirable for bathing or swimming.

(3) Attraction Symbols

Among the objectives of the recreation capability classification program, the indication of the type of recreation activities to which land is best suited, is perhaps one of the most important. In addition, identification of lands or features possessing outstanding or unique recreational values is also of paramount importance. To complicate attainment of these objectives, the classification is to be applied on a nation-wide basis, despite the fact that recreation resources differ greatly from one part of the country to another.

The attraction symbol or sub-class could have solved this problem with proper development and application. That is, the sub-class or classes could have indicated the type of recreation feature, the type of activity best suited for its use and the quality of the feature by virtue of its application among the major classes (in terms of the 1965 classification from 1 to 7) and the other sub-classes or class (maximum of 3 per class in descending order of importance¹).

However, the sub-classes that were developed, gave firstly, only a broad indication of the physical characteristics of an area and secondly, gave no suggestion of the recreation activities possible in the area; as for example, M - mountains,

¹ Chapter 7, page 67.

N - variety of local relief, T - thermal springs, etc., (Appendix 3B). Further, there was no guidelines on the use and implication of applying the symbols in different combinations with various major classes. For example, when would the symbol "C" (sheltered waterway suitable for small boat use such as canoe tripping) be dominant over "N" and "U" (upland wildlife areas), and what would the difference in capability be between an area classed as 3C (shoreland) and 4C (upland)?

Conclusions

After consideration of the discussion on the faults of the classification system and the related problems arising from its application, the following conclusions can be deducted:

- (1) Shoreland should continue to be evaluated separately from upland; but, application of the shoreland boundary should include all of a physiographic unit of which it is part. Also, application of the boundaries should be more flexible and include suitable backshore which may be over 1000 feet (up to a mile) from a beach site or any other attraction feature.
- (2) The number of classes of shoreland and upland should be extended to present a better indication of the relative capability level of the varied recreation resources present in Canada. The exact nature or relationship between the two classifications in terms of their relative level of capability should be based on the intensity

of use factor.

- (3) The requirements for class 1, 2 and 3 should be lowered to accommodate and separate the wide variety of beaches. There also should be at least 4 beach classes.
- (4) Outstanding areas on a provincial or regional scale that provide recreation interest in the form of wetland or upland viewing and hunting, angling, tier cottaging, etc., should rate at least class 2. That is, class 2 shoreland should not be restricted to simply beaches.
- (5) Definite criteria needs to be developed to enable field workers to classify rivers either as shoreland or as upland. One key criterion might be the capability of the river to support the normal forms of family boating or even swimming.
- (6) Modifications should be made to the sub-classes so that they will better describe the capability of all classified areas and adequately fulfill the objectives of the Canada Land Inventory.
- (7) Some meaningful and helpful additions could be made to the physical inventory information gathering chart which would facilitate more competent class designation and provide more information for the provinces.
- (8) The use of limitation symbols should be continued as additional information for the provinces.

Increasing the number of classes of upland and shoreland should provide enough information for federal requirements.

Section IV - Final Revisions and a Recreation Land
Capability Classification for Canada.

CHAPTER 10

Revisions and the 1966 Classification System

Discussion and evaluation of the results obtained from the use of the classification during the summer of 1965, at both the provincial and federal level formed the basis for the development of a revised system. Consequently a revised form of the 1965 classification was devised for use during the 1966 field season, and was incorporated into the Saskatchewan program.

The classification was still based on the premises established in 1965, in that the class designations would be a reflection of; the potential level of intensity of use or quantity of recreation which may be generated and sustained per unit area of land per year; and the natural capability with present access, location, and major modification not influencing the ratings.¹

Major alterations were made to the classification scheme by creating two classification systems, each with seven classes; one for shoreland and one for upland. The level of capability for each of the classes within the two systems ranged from the highest class 1 to the lowest class 7.² Therefore, shoreland and upland were rated separately, and they were distinguished on maps by applying the symbols "S" and "U" respectively after the class number. With both systems being based on the intensity of

¹ C. S. Brown, Outline of the Canadian Land Capability Classification for Outdoor Recreation, Prepared for Canada Land Inventory, ARDA, March, 1966, pp.1-6.

² For the detailed guidelines see Appendix 4A.

use factor, the capability of each class was to be comparable. That is, a class 4 shoreland and class 4 upland would be comparable in terms of their level of use capability. Since upland areas by their very nature, are generally only capable of supporting extensive activities, the majority of upland areas were rated from class 4 to 7. Areas rated from class 1 to 3 were restricted to areas or features which were capable of accommodating a large number of people on a relatively small amount of land such as ski slopes or vista spots. However, no class 1 and 2 sites were recorded in Saskatchewan.

The availability of 4 additional shoreland classes and 2 upland classes were the immediate effects of the changes in the design of the classification system. Use of the new scheme resulted in a more meaningful and useful application of the data obtained in the field onto capability maps. While the special classes were eliminated areas formerly designated as a special class were easily accommodated by the classes in the new system. For example, the site south of St. Victor and Lefty's Falls became class 3U and 3S respectively.¹ Other sites which were formerly grouped into a larger area with a relatively low class were isolated and raised to class 3 if they were thought to be outstanding or unique on a provincial scale. Thus the badland feature over Big Muddy Lake was raised from a class 5 to a class 3U.²

¹ Appendix 3A, picture Nos. 7 and 24, pages 77 and 153, respectively.

² An overlay map has been prepared to illustrate the changes that occurred on the Big Muddy Valley sheet (Minton 62H2/W) Appendix 6, Map No. 7.

Generally, the greatest readjustment to the new system was in applying the new shoreland classes, especially where the old class 3 was concerned. As discussed earlier¹ most classes of shoreland not meeting the requirements of class 1 and 2, were designated class 3. This resulted in a wide range of shoreland types being grouped into one class. Fortunately, most of the changes could be made from the data gathered and placed on the air photos the previous year. However, spot checks were carried out to ensure that the shorelands in question were being reevaluated properly.² Ultimately, the changes in the classification system resulted in many class 3 areas being reclassified as 4, 5 and 6S. For example, pictures 19 and 20 illustrate the lengths of shoreland affected by the changes.³

In addition, the requirements for beaches were lowered and since this type of shoreland is significantly important all beach sites were reevaluated by field examination. While the requirements for a class 1 beach were lowered the major changes occurred in the class 2 beach requirements. This resulted in a

¹ Chapter 9, page 85.

² One of the greatest problems in applying the new classification involved separating non-beach types of shoreland into class 3, 4 and 5. The other shoreland classes were relatively easy to apply since beaches had fairly straight forward requirements such as type of materials and length of beach, and class 6 was obviously shoreland of negligible use. Therefore, the author developed a table of physical conditions that would be characteristic of each type of shoreland and this served to aid field workers in reclassification of those shorelands affected by the classification changes (Appendix 4B).

³ See Appendix 4C for a list of the changes in class designation affecting the areas illustrated by the 44 pictures in the thesis.

No. 19



R.V.P.

Rising water level has flooded the former backshore. The dead trees and marshy area now prevent access and, therefore, this area was rated as class 6. (Anglin Lake)

No. 20



R.V.P.

Access can be obtained with some difficulty but the low backshore and organic materials offshore make the area poor for development for bathing, swimming or boat launching. Therefore, the area was rated as 5. (Moosomin Reservoir)

few beaches being raised from class 2B to 1SB and a large number being raised from class 3B to 2SB. Pictures 21 and 22 are examples of beaches affected by the changes in the classification system.¹

The major changes in the requirements for beaches were in the location of the backshore and the length of sand beach. Formerly 2000 feet of beach was required to designate an area as class 1, while the new system only required 1000 feet of nearly continuous feet of fine sand beach. The class 2 requirement for beach length was lowered from 500 feet to 300 feet.² Also the occurrence of a lagoon or marshy area was no longer to be thought of as being a limitation in all cases, especially when developable backshore is available at either or both ends of the beach. Therefore, beaches such as the one south of the Torch River on Candle Lake³ (access from one end) was raised from a class 3B to 2SB and the beach in Gull Harbour which has access at both ends would have been raised from a class 2B to 1SB.⁴

By the end of August, 1966, the classification of the eastern half of the Canada Land Inventory area in Saskatchewan was completed. This included a reappraisal of the areas classified in 1964 and 1965, together with a study of those areas previously unclassified, most of which were in the northern part

¹ Ibid.

² See Appendix 4D for the detailed guidelines for the individual classes.

³ Picture No. 21.

⁴ This beach of over 1000 feet is part of a large harbour complex and is located on the northeast corner of Hecla Island in Manitoba.

No. 21



R.V.P.

This fine beach is over 500 feet in length and has excellent conditions for swimming and bathing. While there is a lagoon back of the beach there is good access from one end. Therefore, the area's rating was raised to class 2. (Candle Lake)

No. 22



R.V.P.

The rating of this beach was lowered to class 4 because of the danger of backshore flooding and poor water quality (Fife Lake). Note algae in bottom left hand corner.

of the inventory area.¹ Reclassification was undertaken with relatively little difficulty because most of the class lines had been based on a relief classification² which did not change in the new system, and therefore, this generally necessitated only the change of a class number³. Also good advantage was taken of the physical data that had been gathered over the previous two summers and the personal knowledge acquired through the carry-over of field personnel.

Immediate reaction by the Saskatchewan project leaders to the results obtained from the application of the revised classification was very favourable.⁴ In fact, approval of the new system was generally favourable across Canada, and this was most encouraging. Certainly, the system was now more applicable on a provincial scale,⁵ but perhaps the most important consideration was the fact that the objectives of the recreation land inventory were close to being achieved. That is, the maps would no longer be an indication of a few select physical characteristics (1964 results) or an indication of recreation capability for a few

¹ See Appendix 6, Map No. 1 for an exact illustration of the boundaries covering the work done in 1964, 65 and 66.

² See Appendix 3D for the relief classification.

³ This was especially of shoreland areas. However, Map No. 7, Appendix 6, is an example of where class lines were changed on an upland area.

⁴ Mr. P. Polischuk, Director Resource Lands Branch, D.N.R., Saskatchewan Government; Dr. J. Howard Richards, consulting Geographer, University of Saskatchewan; R. V. Peiluck, field foreman, University of Manitoba.

⁵ The system was less orientated to outstanding features not normally found on the prairies.

highly important areas and designation of all other areas by limitation symbols, (1965 results), but an overall view of the relative level of capability of a wide range of recreation lands. Thus the use of the limitation was not necessary at the federal level and was less significant at the provincial level.

The attraction symbols were revised to include more recreation land uses and give a more meaningful indication of the type of resource being designated.¹ For example, "Y" was the following: Boating area - shorelands providing access to a water body capable of accommodating popular forms of family boating activity. However, most inventory personnel generally agreed that further work was needed on the sub-classes or attraction symbols as for example, an indication of the exact type of recreation activities represented by the symbol and a better framework from which the symbols could be applied.

In conclusion, after examination of the results of the 1966 program the classification appeared to be at the stage of development where only a few minor revisions and further guidelines would be required to establish a suitable finalized form of a national recreation classification for Canada.

¹ See Appendix 4E for the complete list of revised attraction symbols.

CHAPTER 11

Revisions and the 1967 Classification

A) The Attraction Symbol Guidelines and Their Implications on the Application of the Classification System.

The generally successful application of the revised system across Canada was an indication that the development of a suitable recreation land capability classification, for national and provincial use, was near completion. However, minor revisions to the classification system were warranted and more guidelines to the application of the classes and sub-classes were needed. Subsequently a preliminary draft of a comprehensive working manual was produced and distributed among the provinces by February of 1967. This was developed at the Federal level¹ from comments by and discussions with the inventory authorities in the various provinces². The draft deals specifically with the meaning and use of the sub-class, and will serve to aid field workers in applying the classification.³

¹ Mr. C. S. Brown and Regional Co-ordinators.

² Mr. R. V. Peiluck, Chief of Recreation Sector for Manitoba.

³ The object of this thesis is to trace the development of a national recreation classification with an introduction which includes the philosophic and practical considerations involved in its development. The final manual deals with application of the classification and is more concerned with problems incurred by field staff rather than the classification itself. Therefore, only two of the guides to the application of the sub-classes are presented in the appendix with the hope that these will be sufficient to explain the motives behind the final guide manual which will be published sometime in April or May of this year.

However, the guideline to the use of the sub-classes, and the subsequent application of the major classes does contain an important implication; one which in reality applies to probably the final revision in the nature of the classification system. Initially, by nature of the 1965 classification, beaches were of paramount importance in the rating scale, but with the revisions in 1966, this particular characteristic became less significant and other features such as wildlife habitats gained more recognition. However, under the new guidelines a wide variety of recreation features can be rated higher than ever before. For example, it is conceivable that a wetland area could be rated as high as class 2, an upland wildlife area as high as class 3, a historic area as high as class 1, and an angling area as high as class 2. Also, shoreland having the capability for tiered cottaging on suitable water frontage could rate as high as class 2. This development will no doubt succeed in removing the last traces of the "Beach Classification" stigma which was applied to the national classification after its application in 1965.¹

The comprehensive guidelines will serve to promote better

¹ One of the major criticisms of the 1965 classification was that only beach areas were being recognized. While this was not the only thing wrong with the classification, the author did consider this characteristic to be undesirable and advocated changes (Chapter 10). This feature along with a number of others was modified in 1966 but some of the critics (wildlife biologists, game fish authorities) still maintained that the system recognized only beaches. However, with the 1966 system these criticisms were largely unfounded and were in part due to a lack of understanding of the classification system. In the future, with the results of the 1966 classification available and the nature of the classification explained more clearly, most criticisms of any kind will be dispelled.

understanding of the meaning of the symbols and facilitate consistent application by the field workers.¹ These are two considerations that must not be underestimated since consistency in establishing the attraction symbol or symbols is just as important as establishing the classes. Finally, the expanded meanings of the symbols, now indicate more fully the activities that can be accommodated by the feature they represent. For example, "Y" indicates shoreland adjacent to water suitable for popular forms of family boating activity. The associated activities are; (1) the primary ones, i.e., boat launching, boat mooring, water skiing, swimming, etc., and (2) the secondary ones, i.e., viewing, sunbathing, camping, cottaging, etc.²

To conclude, few if any changes will occur in the design of the system and further development with regard to the proposed working manuals will take the form of more comprehensive guides for application purposes. Therefore, for all intensive purposes the classification that has been adopted for Canada is the one that was used with much success in 1966.³

B) A Proposed Revised Shoreland Physical Inventory System.

Both experience in the field⁴ and the advent of a revised classification involving more classes led to the proposed

¹ Chapter 1, pp.10-12.

² For the complete guide to the application of "Y" and "C" see Appendix 4F.

³ Appendix 4A and 4C.

⁴ Explanation Chapter 9, p.90.

additions to the shoreland physical inventory system.¹ With the new system more valuable information will be provided from which to make more precise class designations and to facilitate better planning decisions at a later date (Figure 9).

Figure 10 illustrates how the inventory system would be applied to an air photograph. While most of the information would be obtained by field reconnaissance both the backshore group and category should be interpreted before entering the field in order to indicate the broad type of shoreland being classified. The site designations indicate that there is a good area for intensive development and these sites would be studied in greater detail with accompanying shoreline form, pictures and written description.

¹ See Appendix 4 for shoreland conditions to be considered when applying the revised system.

Figure 9

SHORELAND PHYSICAL INVENTORY

BACKSHORE

*CATEGORY

- L - Low Shoreland

U - Upland Shoreland

I - Intermediate Shoreland
- M - Marsh

MH - Marsh Hay

K - Muskeg
- W1 - Wetsite Forest

W2 - Imperfectly Drained Forest

RL - Rock, bedrock
- ST - Soil Till

PR - Ice Pressure Ridge

*GROUP

EROSION & FLOOD HAZARD

2. No problem
3. Some problem
4. Difficult

DEVELOPMENT AREA

2. 1000'
3. 500' - 1000'
4. 250' - 500'
5. 100' - 250'
6. 50' - 100'
7. 25' - 50'
8. 0' - 25'

COVERAGE

2. Excellent
3. Adequate
4. Poor
5. Nil

*TYPE

2. Hardwood
3. Mixed
4. Softwood

VIEW

2. Panoramic, variety
3. Above average
4. Average for region
5. Poor for region

*SPECIES

- A. Spruce
- B. Pine
- C. Cedar
- D. Fir
- E. Poplar
- F. Elm
- G. Birch
- H. Oak
- I. Maple
- J. Basswood
- K. Aspen
- L. Willow
- M. Cottonwood
- N. Ash

FORESHORE

MATERIALS

2. Sand
3. Sand and fine gravel
4. Gravel
5. Boulders
6. Mud, boulders, rubble
7. No beach
- W. Weeds
- P. Pressure Ridge

WIDTH

2. 100' +
3. 75' - 100'
4. 50' - 75'
5. 40' - 50'
6. 30' - 40'
7. 20' - 30'
8. 10' - 20'
9. 0' - 10'

OFFSHORE

MATERIALS

2. 0% - 3%
3. 3% - 7%
4. 8% - 11%
5. 12% - 14%
6. 15% +
2. Sand
- *3. Gravel
4. Gravel and shingle
5. Clay, silt, mud, rubble
6. Boulders
7. Bedrock
- *0. Organic material

*VEGETATION

2. None
3. No problem
4. Reeds
5. Weeds
6. Reeds and Weeds
- A. Emergent
- B. Submergent
- C. Mixed

*BOTTOM

2. Firm
3. Moderately firm
4. Soft

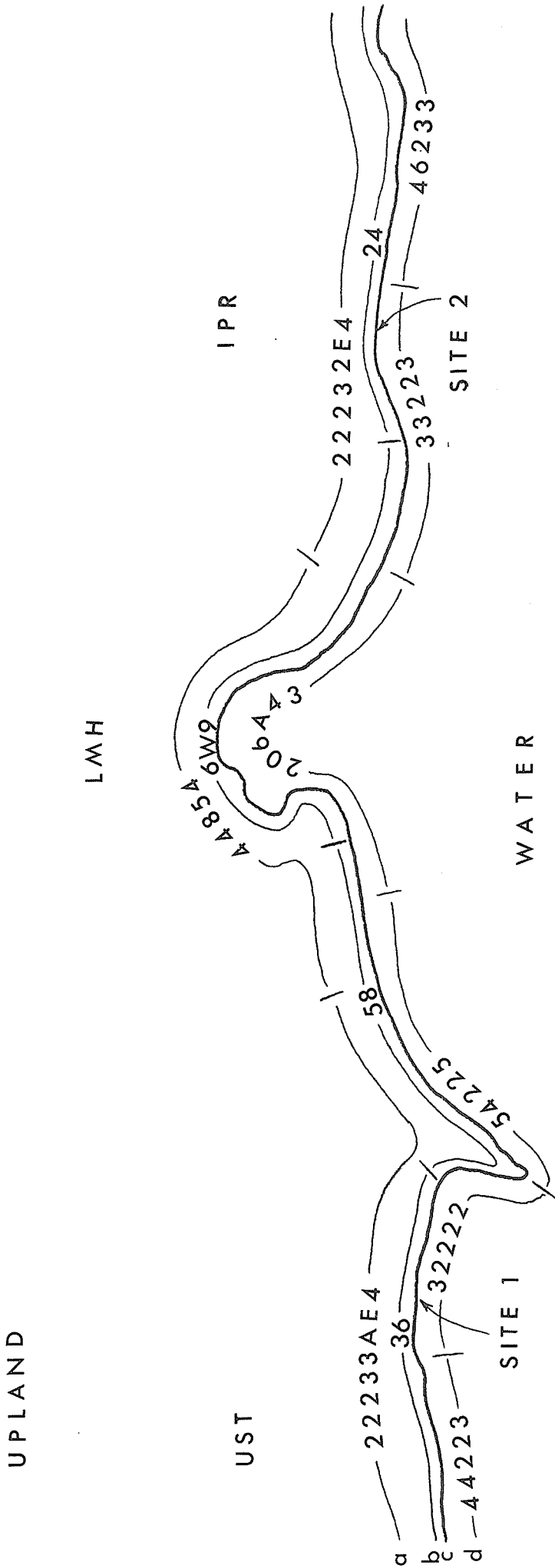
SHELTERED

2. Excellent
3. Adequate
4. Exposed
5. Too Exposed

* Additions to Table

Figure 10

ILLUSTRATION - APPLICATION OF SHORELAND INVENTORY CODING SYSTEM



- a Backshore conditions
- b Foreshore conditions
- c Shoreline
- d Offshore conditions

Note: Sites 1 and 2 are of special significance. They are promising beach sites and would merit a detailed written report using "beach forms", etc.

SUMMATION

SUMMATION

Many factors must be considered before a recreation land classification system can be developed and it is imperative that they be fully outlined and understood. That is, creation of a working framework must be preceded by an evaluation of both theoretical and practical objectives: the peripheries of the field of study must be clearly designated, the exact nature of the resource being studied fully understood, and the method of approach determined. While these factors and others such as the degree of detail, objectivity and flexibility of a proposed system are very important and must be resolved, the most critical consideration is to determine and clearly state the ultimate use to be made of the information gathered from the classification system, since any use of the data for purposes other than those for which the scheme was designed would inevitably lead to unsatisfactory results.

Any type of recreation land capability classification should be based on the interrelationship among three major factors, namely, resources (physical resource), people (human resource), and activities (active segment which is related to both the physical and human factors). An understanding of this interrelationship will form the basis for a classification framework. From this analysis a suggested approach for classifying land for recreation purposes can be developed. This approach involves, first, identification of the topographic characteristics of an area; second, evaluation of these characteristics in terms of their ability to accommodate recreation activities;

third, analysis of the nature of these activities by number of activities and participants and fourth, a hierarchical grouping of the areas in terms of potential intensity of use.

There are several different types of recreation classifications in use today and their characteristics understandably depend on the nature of their use. The Lake Michigan study, a good example of the early research that was being done on shoreland classification, demonstrates the degree of detail that could be obtained in an evaluation of this type. Poland's classification on the other hand is being used for broad, long-range planning and is, therefore, very general, but it is interesting to note that the system is based on an evaluation of topography, shoreland and water bodies, and tree cover in terms of their capability to support certain recreation activities which is not unlike the physical criteria considered important in North America. An even greater number of factors such as location, economic and social considerations, and private enterprise, in addition to physical characteristics are included in the classification designed by ORRRC as a management guideline. The random point method of classification is also a planning tool and has many advantages for application to relatively small areas because of the higher degree of detail that can be accommodated by the system.

A recreation land capability inventory of the settled portions of Canada became a reality as part of the Canada Land Inventory program under ARDA, in October, 1963. The purpose of the pilot project in Saskatchewan during the summer of 1964 was

to develop a system of classification that could be applied on a national scale. However, the experience and data obtained as a result of the pilot study was of more value than the classification system that was developed. In fact, application of the classification scheme was only of limited success because; (1) the system was a classification of three aspects of topography, terrain, water and cover, and was not an evaluation of land capability; (2) the square mile mapping unit resulted in artificial, unnatural grid boundaries; (3) the method of gathering and recording shoreland information did not adequately describe or inventory shoreland, nor was the eventual classification a suitable indication of the shoreland's capability, and (4) the building of the system on a strictly computer-use basis resulted in sacrifices of both clarity and accuracy in the information gathered. The observations and conclusions drawn from the study were very valuable for they formed the framework upon which a more suitable classification could be developed. One of the most pertinent conclusions was that the value of recreation land is determined by terrain quality which is a function of relief or land form characteristics, abundance and nature of water bodies, and the extent and quality of tree cover. In addition, since the difference between shoreland and upland in the level of potential and types of use is so great, it was concluded that they should be classified separately. Unfortunately, this latter conclusion went unheeded and the 1965 classification combined shoreland and upland into one system.

The experience and information gained from the Saskat-

chewan pilot project and other studies similar to it, plus additional data from the National Parks was analyzed and combined to yield a national capability classification. This system was to evaluate the recreation capability of land with the boundary lines following natural rather than artificial boundaries. It was made up of seven classes ranging in order of importance from the highest, class 1, to the lowest, class 7, plus two additional special classes. Attraction symbols indicating the feature and possible use, and limitation symbols indicating limitations of the area were developed and designed to accompany the class number.

The 1965 system was a vast improvement over the one developed in Saskatchewan the previous year since it was based on natural topographic units or on the limits of a unit with a certain level of potential (therefore, boundary lines could be within or cross a natural topographic unit boundary). The system indicated a level of recreation capability and was not simply a physical or topographic classification. In addition, the method of inventorying the shorelands and the resulting classification of these units yielded a more realistic picture of a shoreland capability. However, while the system was an improvement there were serious deficiencies which ultimately led to undesirable results; (1) both upland and shoreland were part of one classification system, (2) the system was strongly biased in favour of shoreland, and (3) the classification was strongly nationally oriented. These factors combined to yield capability maps which identified outstanding areas and grouped together areas of lesser importance, but having significant differences

in levels of capability. Therefore, the resulting maps gave only a limited indication of the level of capability and this was by limitation symbol rather than the actual class value.

The revised classification that was developed for use in 1966 was less nationally oriented and made up of two classification systems, one for shoreland and one for upland. The capability classes of both shoreland and upland were, therefore, more meaningful and directly related to class value. The less nationally oriented requirement allowed clearer designation of areas important more on a provincial than a national scale. Thus, it identified and separated the shoreland units which are obviously of different levels of capability but were formerly grouped into one class.

Application of the 1966 classification was very successful across Canada. Its development is now almost complete, except for a few minor adjustments in the meaning of the attraction symbols. Perhaps the most significant modification is that greater recognition will be made of the recreation value of areas other than beaches and, therefore, relatively important wildlife, fishing, cottaging, historic or other interesting areas will be rated higher than in previous years. In addition, improvements have been made to the shoreland inventory system in order to obtain more useful information for provincial planning purposes. The basic format and design will definitely not be changed. Further guidelines and explanations are in the process of development but these apply more as aids in the use of the classification than as changes to the classification itself.

Establishment of a national recreation capability classification has been a long and tedious process, but we appear to be at a stage now where we can safely say that we have a suitable and meaningful classification. Yet even though a classification has been developed that will hopefully achieve the goals set out in the Canada Land Inventory objectives, we must remember that it is only a means to an end and not the final product. That is, the recreation land classification is only the first stage in the process of recreation planning and recreation planning is only part of the total planning field which evaluates land for all uses. It should also be remembered that even the best classification is useless if the results of its application are misused or misinterpreted. The classification system and the implications of each of the classes must, therefore, be made known to government officials, to planners and last, but not least, the general public, who will ultimately be most affected by any use of the inventory data.

While research is needed to substantiate the premises established in the classification system, no other project could have stirred up so much activity and enthusiasm in the field of recreation planning and research. That the inventory program, a proposal just four years ago, is already yielding valuable information and initiating a multitude of research programs must be considered an inspiring achievement, but the fact that such results will ensure the most beneficial use of our resources for our generation and the ones to come is an even greater accomplishment.

APPENDICES

APPENDIX 1

A) State of Michigan Lake-Shore
Inventory and Classification¹

The first step in their systematic study of the sample shoreline was to adopt a definite terminology for the various parts which make up any shoreline. The following were adopted: Waterline, the line at which the land and water meet; Beach, landward from the waterline to the limit reached by waves during storms; Backshore, a zone landward from the beach of indeterminate width; Foreshore, lakeward from the waterline, a water covered strip of varying width, arbitrarily marked on its outer margins by the five foot depth contour line; and Shore, a combination of backshore, beach and foreshore. Mapping was done on a scale of eight inches to the mile. Surface configuration, drainage, vegetation and the nearest roads were mapped on the backshore, surface materials and vegetation on the beach, bottom materials and water depths on the foreshore. The width of the beach and distances to the one and five foot contour line were also indicated. Finally, existing recreational development was also noted.

By careful study of the information on the maps, namely the characteristics of the backshore, beach and foreshore, the shoreline was grouped into different types (Figure 11) and these types were plotted on a map of the study area (Figure 12). The sixteen resulting types were then grouped into three broad categories on a basis of intensive recreational possibilities,

¹ N. M. Bowers, K. C. McMurry and K. M. Stahl, Lake-Shore Inventory and Classification, Michigan Academy of Science, Arts and Letters, Volume 27, 1941, pp.337-344.

Figure 11

Lake Michigan Shore Types Along the Northwestern Coast
of Emmet County, Michigan

Type	Backshore	Beach	Foreshore
I	Bluff, strip 3 to 8 chains wide between beach and base of bluff, covered by small sand dunes Mixed hardwood	Sand; 1 to 4 chains wide	Gravel, pebbles, cobbles, boulders; 6 to 20 chains wide
II	Bluff, strip 3 to 8 chains wide between beach and base of bluff, covered by small sand dunes Mixed hardwood and conifer on face of bluff, hardwood on top	Sand, cobbles, boulders, marsh patches; $1\frac{1}{2}$ to 5 chains wide	Sand, cobbles, boulders; 5 to 10 chains wide
III	Bluff Mixed hardwood and conifer on face, hardwood on top	Sand; $1\frac{1}{2}$ to 5 chains wide	Sand, cobbles, boulders; 6 to 20 chains wide
IV	Dunes, fixed Hardwood cover	Sand; 1 to 4 chains wide	Sand, cobbles, boulders; 5 to 10 chains wide
V	Bluff, strip 8 to 10 chains wide from beach to base of bluff, covered by sand ridges and small fixed dunes Hardwood cover on bluff, grass below the bluff	Sand; 1 chain wide	Sand, 5 chains wide
VI	Dunes, fixed Norway pine and white pine	Sand, pebbles; $\frac{1}{2}$ to 1 chain wide	Sand, pebbles, cobbles; 3 chains wide
VII	Dunes, active dunes backed by fixed dunes Jack pine, oak, poplar	Sand, pebbles; 1 to 3 chains wide	Sand, 1 to 3 chains wide

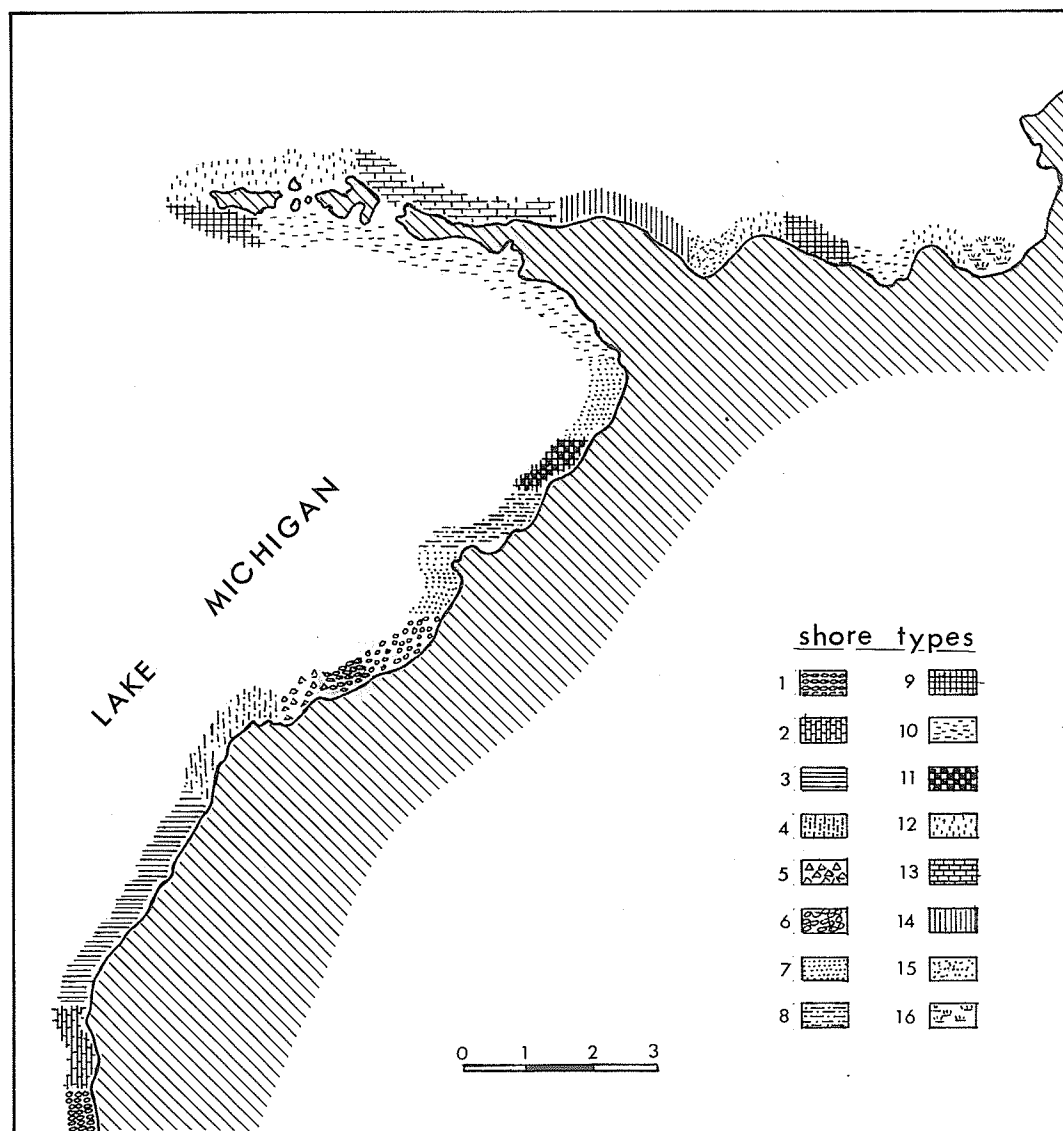
Figure 11

(Cont'd.)

Type	Backshore	Beach	Foreshore
VIII	Dunes, active dunes backed by fixed dunes, large blow-outs in the active dunes White pine, oak, poplar	Sand; 2 to 4 chains wide	Sand, cobbles, boulders; 3 to 10 chains wide
IX	Dunes, fixed Mixed hardwood, poplar, birch	Sand, gravel, pebbles, cobbles; marsh patches; 1 to 3 chains wide	Sand, cobbles, boulders, mud, marl; 4 to 10 chains wide
X	Beach ridges Conifer cover	Pavement, gravel, pebbles, cobbles, marsh patches; 2 to 18 chains wide	Sand, cobbles, boulders; 15 to 25 chains wide
XI	Beach ridges Conifer cover	Cobbles, boulders, shingle; 3 to 6 chains wide	Cobbles, boulders, bedrock; 1/3 to 3 chains wide
XII	Beach ridges Mixed-conifer cover	Pebbles, cobbles, boulders; 2 to 18 chains wide	Cobbles, boulders; 1/2 to 9 chains wide
XIII	Beach ridges Mixed-conifer cover	Sand, gravel, pebbles; 1 to 5 chains wide	Sand, gravel, pebbles, cobbles; 5 to 15 chains wide
XIV	Beach ridges Mixed-conifer cover, poplar	Sand, cobbles, boulders, marsh patches; 1/2 to 6 chains wide	Pebbles, cobbles, boulders; 5 to 15 chains wide
XV	Beach ridges Mixed-conifer cover	Sand; 1 to 4 chains wide	Sand; 2 1/2 to 6 chains wide
XVI	Beach ridges Mixed-conifer cover	Marsh; 8 to 15 chains wide	Mud, sand; 10 to 15 chains wide

Figure 12

Michigan State - Lake-Shore Classification



i.e., Excellent - Type XV (Figure 11) mixed - conifer covered backshore of beach ridges, a sandy beach from 1 to 4 chains wide, and a sandy foreshore from $2\frac{1}{2}$ to 6 chains wide; Fair - Type I (Figure 11) hardwood covered bluff backshore, a sandy beach 1 to 4 chains wide, and a foreshore of gravel, pebbles, cobbles and boulders, 6 to 20 chains in width; Poor - Type XI (Figure 11) conifer covered beach ridges, a shingle, cobble, and boulder beach 3 to 6 chains wide and a bedrock, cobble and boulder foreshore, $1/3$ to 3 chains wide. From these ratings, they were able to divide the six miles in length study area on a percentage basis and concluded that much of the shore was almost worthless for those recreational uses upon which high frontage values were populated - beach use.

B) A Recreation Classification for Poland¹

The basis for the system is the identification of the natural physical geographical divisions of the country with the assumption that the areas of greatest recreation potential, and therefore, potential intensity of use, have moderate to rugged relief, an abundance of water resources and a high percentage of tree cover. The various degrees of each of the three physical qualities are rated on a point system (Figure 13). The rating in each area can have a theoretical total rating for all three of the natural features from 0 to 12. In addition, to stress the importance of outstanding recreation areas extra points were

¹ Institute of Geography, Polish Academy of Science, Tourist Regions of Poland, Geographic Proceeding No. 43, Panstwowe Wydawnictwo Naukowe, Warszawa, 1963.

Figure 13

Degrees of Landscape Attractiveness

Relief	Values	Area of Surface Water	Values	Tree Cover	Values	Total Theoretical Values
Very Strong	4	Very Much	4	Very Much	4	12
Strong	3	Much	3	Much	3	9
Mod- erately Strong	2	Medium	2	Medium	2	6
Gently Rolling	1	Small	1	Small	1	3
Flat	0	Lack of	0	Lack of	1	0

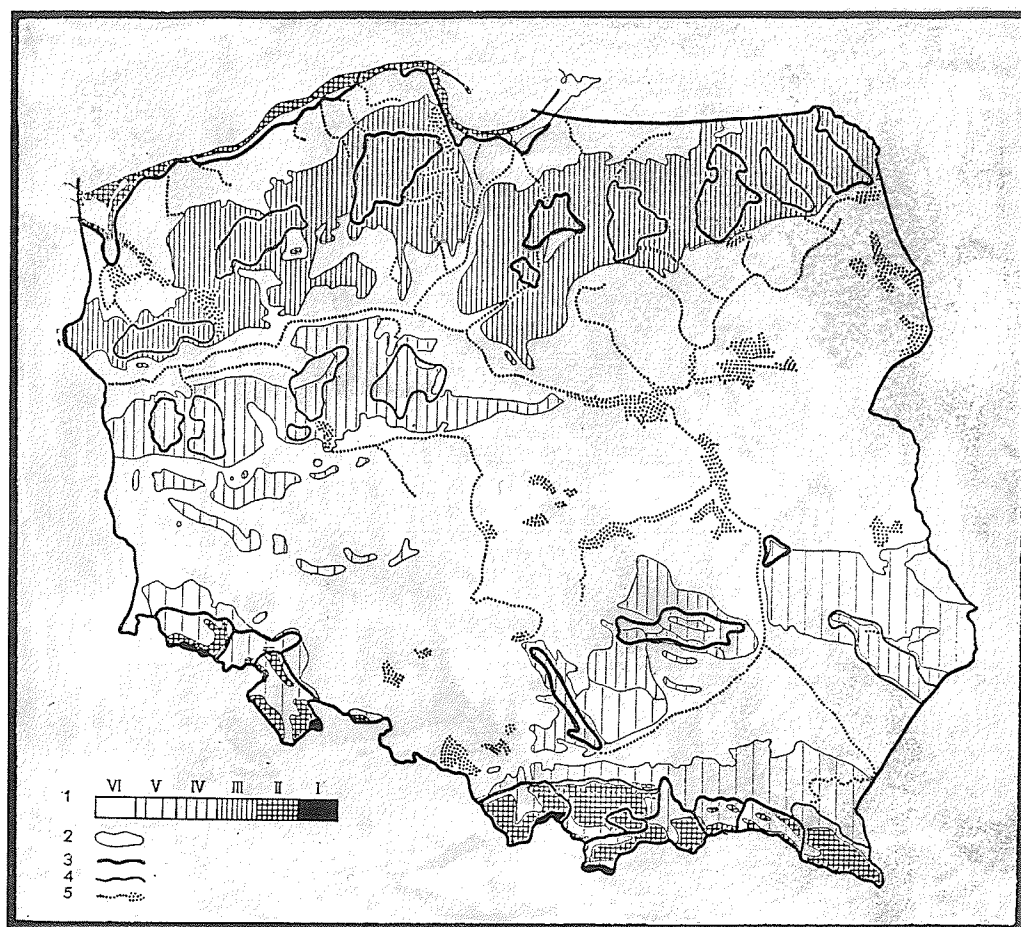
Figure 14

Classification of Poland's National Physical Regions

Class	Physical Regions in Poland	% of the Total Area	Values Relief Water Forests	Total of the Values	Additional Values	Final Total Value
I	Alpine	0.15	4 2 4	10	1-a 1-d	12
II	Mountain	2.60	3 2 4	9	1-d	10
II	Seashore	0.60	2 4 2	8	1-c 1-d	10
III	Lake District	14.70	2 4 3	9	-	9
IV	Highland District	1.80	3 1 3	7	-	7
IV	Highland District	0.60	3 1 2	6	1-b	7
IV	Lake Area	4.82	2 3 2	7	-	7
V	Butte Area	0.50	2 2 2	6	-	6
V	Loess Highlands	3.80	2 1 2	5	1-b	6
V	Piedmont District	5.25	2 2 2	6	-	6
V	Moraine	0.18	2 1 3	6	-	6
VI	Flatland Lowland	65.00 2.60	0 2 1	3	-	3

Figure 15

Poland - Distribution of Natural Physical Regions



1. Area classifications
2. Boundaries of the classified areas
3. Boundaries of developed areas
4. Potential regional boundaries
5. Areas specially attractive within the general classified region

allotted on the following basis: a - extremely rugged areas, ice fields; b - gorge and valley areas; c - sea beach areas and d - special climatic values. The various regions with their value totals and final classifications were developed from the analysis of natural landscape, land use, tree cover and surface water maps and by reconnaissance in the field (Figure 14).

It was concluded that the range in values (Figure 13) is adequate to demonstrate the difference of attractiveness in terms of recreation potential for all the regions in Poland. It is interesting to note that all of the special features favour the first two classes and in fact it is only these additional points which place Class II above Class III and allow the three point difference between Class I and Class III (Figure 14).

The accompanying map shows the distribution of the various classes in Poland and has superimposed the developed and potential areas of development (Figure 15). The researchers found that the developed areas correlated with their given classes and concluded that good potentially designated areas not in use lacked only investment and demand. In the final analysis it was admitted that the system is not precise, but it was also felt that the premises on which it was based are sound.

C) The Outdoor Recreation Resources Review
Commission's Recreation Classification System
for the United States¹

Class I - High Density Recreation Areas

These areas are characterized by a high degree of facility development and are usually managed exclusively for recreation purposes. They provide a wide range of activities for many people, are particularly suited for day and weekend use and are subjected to periodic peakload pressure while often sustaining only moderate use throughout the year. Bathing beaches, artificial lakes, playing fields, parks, skating rinks and swimming pools are focal points of areas which could possibly be called Class I.

Class II - General Outdoor Recreation Areas

Class II areas provide a wider range of opportunities than Class I sites and usually involve more extensive less crowded use. They encompass a wide variety of physical resources that have been or can be developed to provide a diversity of recreation experiences. Included in the possible sites are camping areas, picnic grounds, trailer parks, ski areas, resorts, stream and lake locations, coastal areas and hunting preserves. These areas have a large range in size and are popular for day, weekend and vacation use.

Class III - Natural Environment Areas

Resources in this class represent a transition between general (Class II) and primitive (Class V) areas. The objective

¹ Outdoor Recreation Resources Review Commission, Outdoor Recreation for America, Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C., January, 1962, pp.95-117.

of these areas is to provide for the traditional recreation experience in the out-of-doors in conjunction with other resource uses such as grazing, mining and lumbering. The natural environment should be emphasized rather than man-made facilities. Typical recreation activities occurring in Class III areas are hiking, hunting, fishing, camping.

Class IV - Unique Natural Areas

This class consists of individual areas of remarkable natural wonder, high scenic splendor or scientific importance. Public access for enjoyment and educational purposes is important but should be consistent with the primary objective of preserving these resources in their natural condition.

Class V - Primitive Areas

These areas with their wild and underdeveloped characteristics distinguish them from all other recreation resources included in the classification. They must give the user the opportunity of feeling the enjoyment of the wilderness experience - a sense far removed from the sights and sounds of civilization.

Class VI - Historic and Cultural Sites

These sites are associated with the history, tradition or cultural heritage of the nation which are of sufficient significance to merit their preservation. While not providing outdoor recreation activities in the usual sense, they are closely associated with vacation travel and hence are included in this classification system.

D) Random Point Method¹

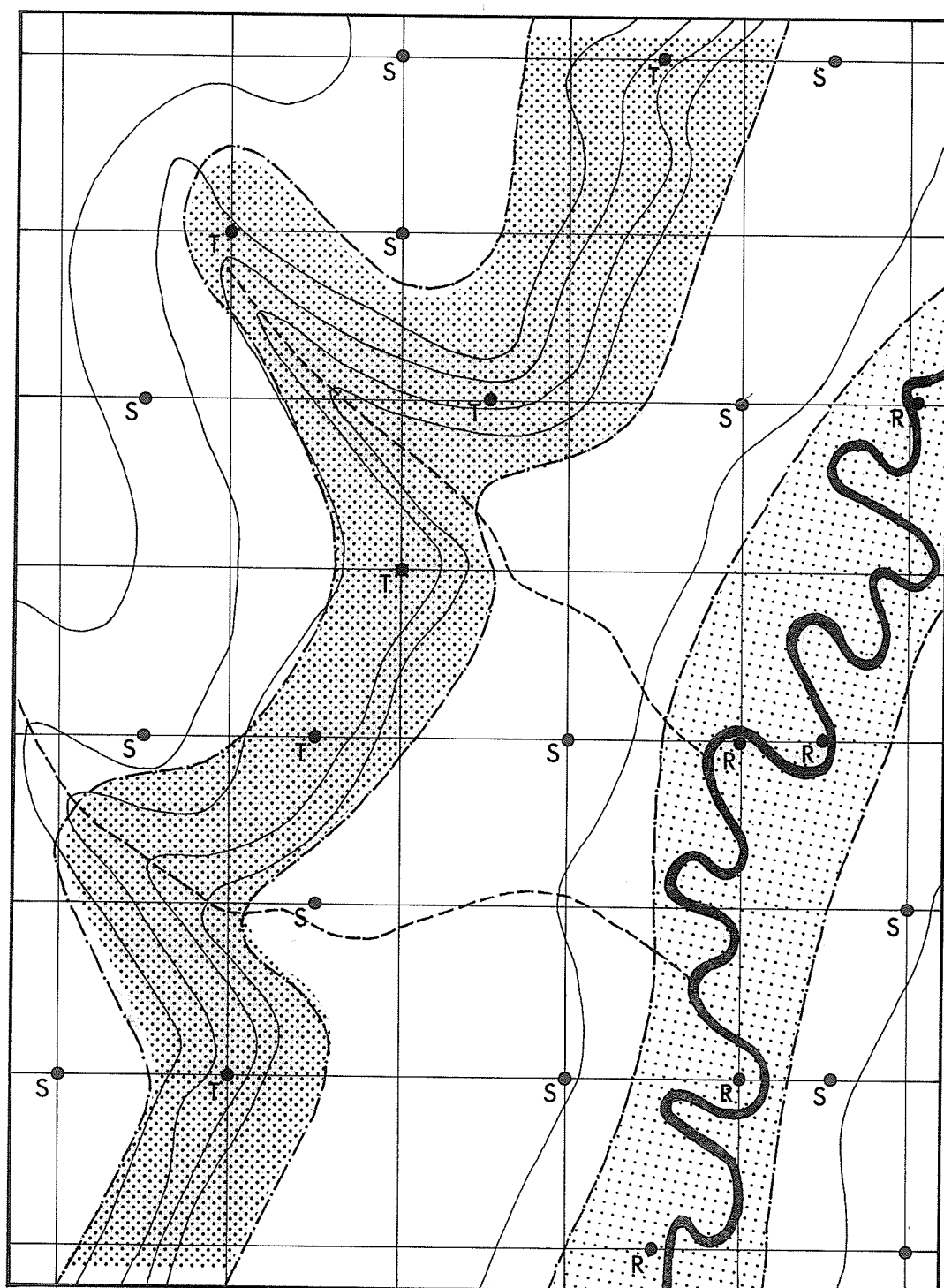
The system is based on the principle of Random Sampling that any point truly selected can represent characteristics of the surrounding area and the amount of area is determined by the number or density of random points. The procedure is as follows:

1. Map all the desired characteristics of the area of study.
They may be slope, topography, climate, flora, fauna, scenery, land use, historic background, geology, accessibility, etc.
2. Superimpose a predetermined set of random points on the map or maps using a transparent overlay.
3. Each is then assigned the characteristics of the land on which it falls.
4. By using a mechanical tabulation system, all points that have a particular set of characteristics which define a resource type may be gathered together, located by their co-ordinates and present in map form (Figure 16).

¹ Dr. Jack Lessinger, National Council of Regional Recreation Planning, A User Resource Recreation Planning Method, 206 East Grant Street, Roseville, California, U.S.A., 1958, pp.41-42.

Figure 16

RANDOM POINT METHOD



- Contour line
- ~ River
- - - Intermittent stream
- Random Sample Points

Areas with common characteristics and particular type of recreation capability.

APPENDIX 2

Appendix 2A

Each of the 125 combinations of the 15 categories (Appendix 2B) have been divided into the above eleven mapping units as follows:

"A" Water OrientedI. Water Body has Great Recreation Potential (i.e. > 2 sq. miles)

Class I.	555	Class II.	535
	554		4
	3		3
	2		2
	<u>1</u>		<u>1</u>
	545		525
	4		4
	3		3
	2		2
	<u>1</u>		<u>1</u>
Class III.	515		
	4		
	3		
	2		
	<u>1</u>		

II. Water Body has Less Recreation Potential (i.e. < 2 sq. miles)

Class I.	455	Class II.	435
	4		4
	3		3
	2		2
	<u>1</u>		<u>1</u>
	445		425
	4		4
	3		3
	2		2
	<u>1</u>		<u>1</u>
Class III.	415		
	4		
	3		
	2		
	<u>1</u>		

"B" Topography Oriented

Class II.	345	Class I.	355
	4		4
	3		3
	<u>335</u>		2
	4		1
	<u>245</u>		<u>255</u>
	4		4
	3		3
	<u>235</u>		2
	4		1
	<u>145</u>		<u>155</u>
	4		4
	3		3
	<u>135</u>		2
	4		<u>1</u>
	<u><u> </u></u>		
Class III.	342	Class IV.	332
	1		1
	<u>333</u>		<u>323</u>
	<u>325</u>		<u>315</u>
	4		4
	<u>242</u>		<u>232</u>
	1		1
	<u>233</u>		<u>223</u>
	<u>225</u>		<u>215</u>
	4		4
	<u>142</u>		
	1		
	<u>133</u>		
	<u>125</u>		
	4		
	<u><u> </u></u>		
Class V.	322		
	1		
	<u>313</u>		
	2		
	1		
	<u>222</u>		
	1		
	<u>213</u>		
	2		
	1		
	<u>122</u>		
	1		
	<u>113</u>		
	2		
	1		
	<u>132</u>		
	1		
	<u>123</u>		
	<u>115</u>		
	4		
	<u><u> </u></u>		

Appendix 2B

The General Classification of Water, Topography and Tree Cover

WATER		TOPOGRAPHY		COVER
1.	None (within the section)	1.	Within the section 0' - 50' local relief in $\frac{1}{4}$ mile	1. Bars
2.	Intermittent or Ephemeral (within the section)	2.	50' - 100' local relief in $\frac{1}{4}$ mile	2. Treeless - upper limit 5 acres of trees including shelter belts
3.	<u>Shallow</u> or unuseable for recreation excluding wildlife (within the section)	3.	100' - 200' local relief in $\frac{1}{4}$ mile	3. Open Park (more than 5 acres of trees up to 25%)
4.	Water body < 2 sq. miles & has potential for recreation (within the section)	4.	200' - 400' local relief in $\frac{1}{4}$ mile	4. Park 25 - 75% trees
5.	Water body > 2 sq. miles & has potential for recreation (within $\frac{1}{2}$ mile of section)	5.	400' local relief in $\frac{1}{4}$ mile	5. Tree covered (greater than 75%)

Meridian: _____ Township: _____ Section: _____
Map Sheet: _____ Photo: _____ Gen. Classification: _____

1. WATER CATEGORY
none 1
int. & eph. 2
shallow 3
small nav. 4
large nav. 5

2. BATHING AREA(S)
Yes 1
No 2

3. LENGTH SHORELINE SUITABLE BATHING
0 - 50 ft. 1
50 - 200 ft. 2
200 - 500 ft. 3
500 - 1000 ft. 4
+ 1000 ft. 5

4. BEACH
Yes 1
No 2

5. WIDTH OF BEACH
- 5 ft. 1
5 - 15 ft. 2
15 - 25 ft. 3
25 - 100 ft. 4
+ 100 ft. 5

6. SLOPE OF BEACH
- 5% 1
5 - 15% 2
+ 15% 3

7. MATERIALS - BEACH
Rocks or boulders 1
gravel 2
sand 3
silt 4
mud 5
spongy 6
mixed 7

8. MATERIALS - OFFSHORE
rocks or boulders 1
gravel 2
sand 3
silt 4
mud 5
spongy 6

9. BOAT LAUNCHING SITES - NUMBER
one 1
or more 2

10. BOAT LAUNCHING SITES - EXTENT
20 - 50 ft. 1
or more 2

11. ACCESS TO ROAD
difficult 1
moderate 2
grade only 3

12. LANDING SITES
NUMBER
one 1
or more 2

13. EXTENT
20 - 50 ft. 1
or more 2

14. QUALITY
good 1
fair 2
poor 3

15. LENGTH OF WATERWAY
- 1 mi. 1
1 - 5 mi. 2
5 - 10 mi. 3
10 - 50 mi. 4
+ 50 mi. 5

16. WIDTH OF WATERWAY
MAXIMUM
- 1000' 1
1000 - 3000' 2
3000 - 5000' 3
1 mi. - 5 mi. 4
+ 5 mi. 5

17. MINIMUM
- 1000' 1
1 - 3000' 2
3 - 5000' 3
1 mi. - 5 mi. 4
+ 5 mi. 5

18. TYPE OF WATERWAY
lake 1
river 2
reservoir 3
river-lake 4
river-reservoir 5

19. HAZARDS TO NAVIGATION
shallow 1
reef 2
vegetation 3
dead heads 4
winds 5
other 6

20. STABILITY OF WATER LEVEL
not apparent 1
0 - 5 ft. 2
5 - 10 ft. 3
+ 10 ft. 4

21. DISTANCE
0 - 500' 1
500 - 1000' 2
1000 - 5000' 3
+ 5000' 4

22. RELIEF
0 - 20' 1
20 - 50' 2
50 - 70' 3
70' & over 4

23. POTABLE WATER
Yes 1
No 2

24. COVER CATEGORY
bare 1
treeless - 5 ac. 2
open park - 25% 3
park - 75% 4
tree cov. + 75% 5

25. TYPE OF TREE COVER
widely scattered 1
small groups 2
large groups 3
one large grove 4

26. HEIGHT OF TREES
0 - 30 ft. 1
30 - 50 ft. 2
50 - 70 ft. 3
+ 70 ft. 4

27. SPECIES OF TREES
SINGLE TYPE
Poplar 1
birch 2
spruce 3
pine 4
E.A. & M. 5

28. COMBINATION
Pop. & birch 1
spruce & bir. 2
pine & birch 3
Pop & spruce 4
E.A.M. & Pop. 5

29. PLANT COMMUNITIES
wetland 1
grasses & flowering plants 2
edible fruits & berries 3
combination of 1, 2 & 3 4
combination of 1 and 2 5
combination of 1 and 3 6
combination of 2 and 3 7

30. TOPOGRAPHIC CATEGORY
0 - 50' (1/4 mi.) 1
50 - 100' " 2
100 - 200' " 3
200 - 400' " 4
+ 400' " 5

31. VERTICAL DROP
- 100 ft. 1
100 - 200 ft. 2
200 - 300 ft. 3
300 - 500 ft. 4
+ 500 ft. 5

32. MAXIMUM LENGTH OF SLOPE
- 500 ft. 1
500 - 1000 ft. 2
1000 - 3000 ft. 3
+ 3000 ft. 4

33. EXPOSURE OR SLOPE DIRECTION
N 1 SW 6
NE 2 W 7
E 3 NW 8
SE 4 varied 9
S 5

34. SCENIC VIEW
uninteresting 1
limited 2
interesting 3
exceptional 4

35. DOMINANT LANDSCAPE:

lake plain	1	☐
till plain	2	☐
end moraine	3	☐
escarpment	4	☐
delta	5	☐
ice scoured	6	☐
outwash plain	7	☐
hill lands	8	☐
dissected valley wall	9	☐
other	10	☐

36. ACCESS TO ROAD

difficult	1	☐
moderate	2	☐
grade only	3	☐

SITES FOR PARKING AND/OR BUILDING

37. EXTENT

1 - 10 ac.	1	☐
10 - 50 ac.	2	☐
50 - 160 ac.	3	☐
± 160 ac.	4	☐

38. AVERAGE SLOPES

- 5%	1	☐
5 - 10%	2	☐
10 - 15%	3	☐
± 15%	4	☐

39. ELEVATION ABOVE WATER

- 25 ft.	1	☐
25 - 100 ft.	2	☐
100 - and over	3	☐

40. DISTANCE FROM WATER

- 100 ft.	1	☐
100 - 500 ft.	2	☐
500 - 1000 ft.	3	☐
1000 - 3000 ft.	4	☐
± 3000 ft.	5	☐

41. TERRACING

terraced	1	☐
non-terraced	2	☐

42. EXTENT OF USABLE AREA

- 10 ac.	1	☐
10 - 100 ac.	2	☐
100 - 500 ac.	3	☐
500 - 1000 ac.	4	☐
± 1000 ac.	5	☐

43. PLAYING FIELDS

Yes	1	☐
No	2	☐

44. SOIL TEXTURE

Rock	1	☐
gravel	2	☐
sand	3	☐
loam	4	☐
clay	5	☐
muskeg	6	☐
heterogeneous	7	☐

45. SOIL STABILITY

stable	1	☐
minor slumping	2	☐
slumping common	3	☐

46. OUTSTANDING LAND FORM

Yes	1	☐
No	2	☐

47. FAUNAL ASSEMBLAGE

Water dwel.	1	☐
burrowing	2	☐
antlered	3	☐
other	4	☐
- - - - -		
water fowl	5	☐
shore birds	6	☐
birds of prey	7	☐
other	8	☐

48. WILD LIFE OBSERVATIONS

Notes:

49. GAME FISH

Yes	1	☐
No	2	☐

50. HISTORICAL INTEREST

Yes	1	☐
No	2	☐

51. DISTANCE TO HIGHWAY

- 1/2 mile	1	☐
1/2 - 1 mile	2	☐
1 - 2 miles	3	☐
2 - 5 miles	4	☐
5 - 10 miles	5	☐
10 - 25 miles	6	☐
25 - 50 miles	7	☐
± 50 miles	8	☐

52. DISTANCE TO ROAD

- 1/2 mile	1	☐
1/2 - 1 mile	2	☐
1 - 2 miles	3	☐
2 - 5 miles	4	☐
5 - 10 miles	5	☐
10 - 25 miles	6	☐
± 25 miles	7	☐

53. DISTANCE TO URBAN CENTRE

- 5 miles	1	☐
5 - 10 miles	2	☐
10 - 25 miles	3	☐
25 - 50 miles	4	☐
50 - 100 miles	5	☐
± 100 miles	6	☐

54. EVIDENCE OF PRESENT USE

Yes	1	☐
No	2	☐

55. TYPE OF DEVELOPMENT

none	1	☐
picnic tables	2	☐
campsites	3	☐
landing or dock	4	☐
cottages	5	☐
comm. or inst.	6	☐

EXTENT OF DEVELOPMENT

Notes:

Appendix 2DRevised Definitions for Categories Appearing on Check List

FORM III

June 29, 1964.

This classification is concerned with a section (i.e. 1 sq. mi.) as the mappable unit.

Different criteria in the classification check list will have different applications. These applications are as follows:

- (A) an item referring to a site or location within a section
- (B) an item referring to a section as a whole
- (C) an item referring to relationships with areas beyond the section.

In the definitions which follow, each item has been given a notation, A, B, or C, in order to indicate which of the three above is intended.

1. WATER CATEGORY: (C) as defined in the classification of physical criteria; use one of five.
2. BATHING AREA: (S) (A) area (s) suited for wading or swimming with no improvements required. Choice of yes or no. It assumes a firm and gently sloping lake bottom at the shoreline.
3. LENGTH OF SHORELINE SUITABLE FOR BATHING: (A) length of bathing area above measured along the shoreline. If more than one bathing area exists state the cumulative length.
4. BEACH: (A) the land area between the water's edge and the bank. The bank is a line inland from the water along which there is a significant change in vegetation.
5. WIDTH OF BEACH: (A) the distance from the water's edge to the bank.
6. SLOPE OF BEACH: (A) average slope.
- 7&8. MATERIALS: (A) this applies to the texture of material (a) along the beach and (b) offshore to a depth of six feet. IN THIS CATEGORY SPONGY is used to designate a beach or a lake bottom that is composed largely of organic debris or of other materials that would yield readily under pressure of fill, pilings, etc.
- 9,10&11 BOAT LAUNCHING SITES: (A) sites where both topography and texture of materials permit access by automobiles and

trailers to a navigable waterway. The slope of the lake bottom at the shoreline must be between 7% and 25% (not more than an angle of 14 degrees).

NUMBER: refers to the number of different possible sites within the sector.

EXTENT: is the width along the shore that could be effectively used; if more than one site exists give the cumulative distance of all possible sites.

ACCESS: is defined as in category 35.

- 12,13&14. LANDING SITES: (A) places where boats can be brought to shore to load or unload equipment and/or passengers; but not necessarily to be loaded onto a trailer. Such sites could be for camping, picnicking, resting or for construction of a marina.
 NUMBER: refers to the number of such sites in the section.
 EXTENT: refers to the distance measured along the shore; and if more than one site exists then state the cumulative distance.
 QUALITY: is defined here as the aesthetic appeal as well as the combinations of physical conditions such as beach materials, width of foreshore, vegetation, etc.; if more than one such site exists select the best one for this class.
15. LENGTH OF WATERWAY: (C) is the maximum length of uninterrupted motor boating measured in midstream of a navigable waterway, e.g., between portages.
- 16&17. WIDTH OF WATERWAY: (C) is the width, both maximum and minimum of the waterway being considered above.
18. TYPE OF WATERWAY: (C) refers to the generic class of the waterway in the category above. Is it a lake, river, reservoir, or combination of one of those? Here reservoir is used to designate any body of water dammed by a man-made structure.
19. HAZARDS TO NAVIGATION: (C) phenomena within, on, or below the surface of a waterway that may interfere with the safe operation of any type of boat.
20. STABILITY OF WATER LEVEL: (C) refers to fluctuations in water level, such that there is a net gain or loss over the last five years, if such are known or apparent.
- 21&22. PORTAGES: (A) an existing or possible overland trail between two navigable waterways that is or might be used to transport canoes and/or small boats. The distance or elevations can be paced, estimated or measured on a map. Note only the portages which begin or are found within the section under study.

23. POTABLE WATER: (A) this is water fit for human consumption. If supplies are known to exist answer YES; if it is known that such water definitely does not exist or can be obtained only with great difficulty answer NO; and if information is not readily available answer UNKNOWN.
24. COVER CATEGORY: (B) cover is defined as in the list of physical criteria. Select one of five.
25. TYPE OF TREE COVER: (A) this refers to the manner in which the trees are grouped or distributed.
26. HEIGHT OF TREES: (A) this is the average height above ground of the tops of trees in category 25 above.
- 27&28. SPECIES OF TREES: (A) this is the group of trees that have certain common characteristics. It does not include individual variations. If the stand is pure, use only category 27. If the pertinent combination exists in category 28, it is then not necessary to use category 27. However, it is possible to use both categories 27 & 28 to get the most pertinent combination. E, A, & M. means elm, ash and maple.
29. PLANT COMMUNITIES: (A) this is to refer to forms of vegetation other than trees. The aim here is to indicate a floral assemblage that could be indicative of the natural history potential of the section. Wetlands include marshes, bogs and sloughs which are usually wet and have a succession of vegetation. Usually reed grasses, willows, etc. are found. Edible Fruits and Berries such as chokecherry or Saskatoon berry need to be fairly conspicuous but not necessarily dominant.
30. TOPOGRAPHIC CATEGORY: (B) this group to be defined as in the list of physical criteria. Select one of five.
31. VERTICAL DROP: (A) to indicate sufficient topographic relief to provide a potential ski slope, e.g., the maximum vertical relief of the Buffalo Pound ski slope is 193' in 900' horizontally. This is considered to be the minimal conditions. Usually the farther away from large urban centres, the better the conditions, i.e., higher vertical relief, must be to warrant development as a ski area.
32. MAXIMUM LENGTH OF SLOPE: (A) is measured directly down the slope to indicate the length of a downhill ski run, e.g., the maximum length of slope at the Buffalo Pound ski area is 1100'.
33. SLOPE EXPOSURE: (A) this is the direction into which the slope(s) selected above face. If more than one direction is significant use the term varied.

34. SCENIC VIEW: (A, B & C) here the observer is required to make a value judgement of the scenic quality of the site being inventoried. Guides are difficult to lay down, but generally high points with the broad vistas, exhibiting a variety of landscape features rate highest; whereas areas with a limited view, with little or no variety rates lowest.
35. DOMINANT LANDSCAPE: (B) the observer is to select the physiographic term that best describes the area. If none of the terms listed will do, then write in on the sheet the term or terms that you think would be suitable.
36. ACCESS TO ROAD: (A) this is to indicate the degree of difficulty to construct a graded road from the site to the nearest existing road (municipal or graded highway). Use the guide below.
- Difficult: where extensive cut and fill or bridging would be required; steep valley walls and/or hills between site and the existing road.
- Moderate: where a minor amount of cut and fill would definitely be required. Small culverts would or may be necessary but not bridges.
- Grading Only: where the surface needs only to be graded, drained by ditches and gravelled. Few slopes over 10%.
- 37 to 40. SITES FOR BUILDING AND/OR PARKING: (A) this category is oriented to the primary resource and is intended to cover areas necessary or suited to the construction of parking lots and large buildings such as restaurants, dormitories, etc. It assumes that these types of uses require level or gently sloping land of at least one acre in extent. Gently sloping for this category would include slopes up to 10%. 37 EXTENT: is the area of such land at the site or if more than one suitable location exists then state the cumulative area.
- 38 AVERAGE SLOPE: is a reference to the average slope of the site being inventoried. If more than one site exists at a location select the largest one OR the one closest to water. With respect to the last, water holds priority over size. 39 ELEVATION ABOVE WATER: this is the elevation above high water mark. The location should refer to the site above (38) and if more than one exists select the one closest to water. 40 DISTANCE FROM WATER: refers to Item 38 and/or 39 above and is measured in feet.
41. TERRACING: (B) it is possible that many of the river valley sites are terraced, i.e., have level or gently sloping land at two or more elevations. If so, use the term terraced. If no such level or terraces are apparent use non-terraced.

42. EXTENT OF USEABLE AREA: (C) this refers to total acreage that is available for all recreation uses including not only buildings and playing fields but hiking and riding trails, lookouts and natural history phenomena. This includes category 37.
43. PLAYING FIELDS: (A) this category to include all level or gently sloping areas over two acres in extent. They are areas where soccer, baseball, etc. could be played with little or no land grading necessary. They could be also included in categories 37-39 above. Here however, proximity to water is not a necessity. A YES or NO answer is sufficient, do they or do they not exist.
44. SOIL TEXTURE: (A) this is significant to indicate the trafficability or difficulty of construction and drainage on the area. Use one of the five categories below that best typify the developable area.
45. SOIL STABILITY: (A) this is significant to indicate the stability of slopes within the area; that in turn affects construction; both as to cost and type. Observer to note evidence of slumping, sliding, collapse of banks, etc.
1. Slumping frequent on steep slopes
 2. Slumping evident but not frequent
 3. No slumping or sliding evident
46. OUTSTANDING LANDFORM: (A or B) if the site possesses or is within half a mile of an outstanding land form or geologic phenomena answer (1) yes or (2) no.
47. FAUNAL ASSEMBLAGE: (A or B) this notation to be made if a large or significant community of animals or birds is observed, or known to exist within the section.
48. WILDLIFE OBSERVATIONS: (A or B) a subjective notation as to the existence or reports of game animals or game birds in the section.
49. GAME FISH: (C) a subjective notation as to the existence or reports of game fish in the vicinity.
50. HISTORICAL INTEREST: (B) an observable feature or known items of historical interest within the section.
51. DISTANCE TO HIGHWAY: (C) this is the measured distance from centre of area along an existing road (s) to a provincial highway. If no road (s) exist use line of right distance.
52. DISTANCE TO ROAD: (C) the measured distance from the centre of the area to nearest existing road of any graded type.

53. DISTANCE TO URBAN CENTRE: (C) this is the distance measured from the centre of the area along existing roads and highways to the nearest urban centre. An urban centre is defined as any area over 1,000 population.
54. EVIDENCE OF PRESENT USE: (A) if any evidence of present use for recreation purposes exists answer YES or NO.
55. TYPE OF DEVELOPMENT: (A) the observer is required to select one of the categories listed as best typifying the type of development noted in 54 above.

EXTENT OF DEVELOPMENT: (A) the observer is to note the extent of the developed area in 55 above if applicable.

PRIMARY USE POTENTIAL: (A) by way of summary, the observer is to indicate the recreational use for which the site is best suited, if applicable.

Appendix 2ECriteria for Assessment of Recreational Potential
on Lakes

(BEACH FORM)

Revision June 1964

A. General

1. Name of Lake _____
2. (i) Area _____
(ii) Length _____
3. Location (T.R.S.) _____
4. Map location (1:50,000) _____
5. Nearest settlement (of + 300 population)
(i) Name _____
(ii) Distance _____
6. Islands
(i) Number _____
(ii) Size _____
(iii) Beaches _____
7. Fishing potential
(i) Amount _____
(ii) Species _____
8. Boating Potential _____

B. Water Quality

9. Odour frequency _____
10. Stability of water level _____
11. Depth
(i) mean _____
(ii) Greatest _____
12. Clarity _____
13. Shallows _____
14. Characteristics _____

C. Data Specific to Each Beach

15. Beach location _____

Lake Bottom at Beach

16. Immediate offshore slope _____
17. Surface distance from shore to water 6' deep _____
18. Dropoffs _____
19. Materials _____
20. Weeds _____
21. Deadfalls _____

Beach

22. Length _____

- 23. Width at widest _____
- 24. Width at narrowest _____
- 25. Aspect _____
- 26. Slope _____
- 27. Materials _____
 - (a) _____
 - (b) _____
 - (c) _____
- 28. Vegetation _____
 - (a) _____
 - (b) _____
 - (c) _____
- 29. Pressure ridges _____

Immediate Backshore:

- 30. Width _____
- 31. Slope _____
- 32. General Char. of terrain _____
- 33. Vegetation _____
- 34. Materials _____
- 35. Drainage _____
- 36. Stability _____
- 37. Break in slope between beach and backshore _____

Immediate Hinterland

- 38. Slope, height _____
- 39. Vegetation _____
- 40. Materials _____
- 41. Drainage _____

D. Socio-Economic Factors

Development on Beach

- 42. Total number of structures _____
- 43. Commercial resorts or camps _____
 - (i) Number of Est. _____
 - (ii) Number of units _____
- 44. Stores _____
- 45. Public Facilities (list) _____
 - _____
 - _____
- 46. Commuters' residences (centres) _____
- 47. Water supply _____
- 48. Institutional camp facilities _____
 - (i) location _____
 - (ii) Ownership _____

Subdivisions

- 49. Existence of registered subdivisions _____
- 50. Number of lots (cumulative) _____

51. Number of cottages (cum.) _____
 52. Existence of unregistered subdivisions _____
 53. Number of lots (cumulative) _____
 54. Number of cottages (cumulative) _____

Present Use

55. Picnicking _____
 56. Tenting _____
 57. Angling _____
 (i) Summer _____
 (ii) Winter _____
 58. Commercial fishing _____

Domicile of Cottage Owners

- | | |
|-------------------------------|-------------------------------|
| 59. <u>Place of Residence</u> | 60. <u>Number of Families</u> |
| (i) _____ | _____ |
| (ii) _____ | _____ |
| (iii) _____ | _____ |

Regional Significance of Beach and Lake

61. Is this the most important recreational lake within 25 miles?

62. What other lakes are popular in this area and why?

63. Land Ownership
 Crown lands (acreage, legal description, linear lake frontage)

64. Identification of private ownership as necessary. _____

Appendix 2F

Definitions and Suggested Answers to be Applied to the Beach Study

A. GENERAL

8. Boating Potential: This is a function of
- (i) size of water body.
 - (ii) interest of water body due to bays, islands.
 - (iii) boating hazards such as shallows, deadheads.

On the basis of these factors boating potential is to be rated as excellent, good, fair, or poor.

B. WATER QUALITY

9. Odour Frequency: Note the frequency of bad odour due to algae, weeds, insects. Is it infrequent or frequent?
10. Stability of Water Level: within the last five years
 - (i) not apparent
 - (ii) rising or falling
 - (a) 0-5'
 - (b) 5-10'
 - (c) +10'
12. Clarity: e.g., good, fair, or poor.
13. Shallows: Defined as surface area of water less than 3' deep.
14. Characteristics: e.g., chemical, organic, sewage, swamp etc.

C. DATA SPECIFIC TO EACH BEACH

Lake Bottom at Beach

16. Immediate Offshore Slope: The slope under consideration is from the shore to 50' out into the water.
18. Dropoffs: e.g., yes or no.
19. Materials: e.g., rocks, gravel, sand, silt, mud, spongy etc.
20. Weeds: e.g., (i) emergent (rushes and reeds).
(ii) surface (e.g., water lilies).
(iii) submergent.
Also specify if dense or not.
21. Deadfalls: e.g., yes or no.

BEACH Defined as the area between the water's edge and the bank. The bank is a line inland from the water along which there is a significant change in vegetation.

27. Materials: Note the progressive change in materials from the shore, inland to the bank. e.g., (1) gravel - 0-5 yds.
(2) boulders - 5-10 yds.
28. Vegetation: A similar progressive change in vegetation is to be noted. e.g., (1) coarse grass - 0-5 yds.
(2) scrub willow - 5-20 yds.
(3) poplar - 20-50 yds.

Immediate Backshore is defined as the area between the bank and the general terrain type found inland.

30. Width: This is measured inland from the bank.
32. General Characteristics of Terrain: e.g., knob and kettle moraine, melt-water channels, lacustrine plain, escarpment, dissected valley wall, etc.
33. Vegetation: Specify the type and size. e.g., poplar... 25'.
35. Drainage: e.g., good, fair or poor.
36. Stability: e.g., (i) minor slumping.
(ii) slumping common.
(iii) stable.
37. Break in Slope Between Beach and Backshore: Note if sufficient to make access to beach difficult. e.g., yes or no.

D. SOCIO-ECONOMIC FACTORS

Development on Beach

42. Total Number of Structures: This includes cottages, stores and hotels, etc. Do not include such things as bathhouses, playground equipment, etc., which is to be specified in 45 below.
43. Commercial Resorts or Camps:
 Number of Establishments e.g. - 2
 Number of Units e.g. - 16
 This could mean that there are 2 cabin outfits; one with 6 units and the other with 10, for a total of 16 units.
44. Stores: Note the services available. e.g., groceries, renting of boats, automobile servicing, souvenirs, restaurants, sporting goods.

45. Public Facilities: e.g., change houses, playground equipment.
46. Commuter's (i.e. day trippers) Residence(s) (centres): Note the place of residence of day-users of beach facilities above.
47. Water Supply: Note the type of water available. e.g., wells, springs, or rivers. If possible specify the quality, quantity and ease of obtaining water.
e.g. (i) quality - good, fair or poor.
(ii) quantity - adequate or inadequate.
(iii) ease of obtaining - easy or difficult.

PRESENT USE

56. Tenting: e.g., intensive or sporadic.
57. Angling: e.g., intensive or sporadic.
58. Commercial Fishing: e.g., yes or no.
61. Note reasons for popularity of other lakes. e.g., clear water for swimming; good fishing.
- 62&63. Obtain, if possible, from Rural Municipality Offices.

Appendix 2G

Shoreline Characteristics by Part of Shore and by Degree of Desirability

Part of Shore	Column A: Desirable	Column B: Useable with Limitations	Column C: Undesirable
Backshore	1. soil covered, gentle to moderate slope	2. same as 1. but limited to extent 3. elevated 4. same as 3. but limited in extent 5. marginal drainage 6. steep slopes 7. rocky 8. bedrock	9. muskeg or wet 0. rugged
Foreshore	2. sand or fine gravel beach	3. rocky or boulder beach 4. bedrock - no beach 5. rocks and boulders - no beach	6. mud or silt flats with or without weeds, muskeg, etc.
Offshore	1. moderately sloping sand bottom 2. moderately sloping firm (not sand) bottom	3. moderately sloping soft (silt or mud) bottom 4. steep slope from beach - or dropoffs	5. shallow and rocky 6. muskeg or dense weeds

Appendix 2H

Definitions to be Used in Northern Lakeshore
Classification Project

TABLE I:

- I) Backshore: Area immediately inland from but contiguous with the beach.
1. Moderate slopes are $\angle 25\%$
 2. Extent of developable area may be limited by poor drainage, rugged terrain, etc.
 3. The developable backshore, though itself in gentle to moderate slopes may be separated from the foreshore by a steep embankment.
 5. Development of the backshore may be hindered or limited due to marginal drainage, e.g. from springs. The poorly drained spots are not extensive enough to exclude development as in the case in 9.
 6. Parts of the backshore are in steep slopes ($>25\%$). The total area in steep slopes is not enough to exclude development as is the case in 0.
 7. The backshore is partly covered by rocks on the surface and immediate subsurface. Bedrock is not included. The rocks may be erratics, boulder till, etc.
 8. This bedrock is in gentle or moderate slopes ($\angle 25\%$). An area with bedrock in slopes of $>25\%$ would be classed as steep sloped (6) or rugged (0).
 9. That part of the backshore which is wet or in muskeg is such that no development at the site is justified.
 10. Steep slopes cover a significant part of the backshore such that any development is excluded.
- II) Foreshore: The zone between the water's edge and high water mark. (Code number "1" has been omitted from this category to aid clarity in the photo notations).
2. Beach: a definite bench of material deposited primarily by wave action.
- III) Offshore: 1. Moderate slopes are $\angle 25\%$.

4. Slopes here are $>25\%$. In many cases the slope is actually measured or observed and is only assumed to be steep. It should possibly be called "undetermined", but if there is a foreshore of steeply sloping bedrock it is felt that it is safe to assume that the bottom is also steeply sloping.
- 5 & 6. Both these conditions are such that they make navigation of motorboats difficult and/or hazardous, particularly at the site.

APPENDIX 3

Appendix 3AClass Guidelines¹Multiple Use Shorelands and Special Classes

Class 1 - Areas that in the regional or provincial² perspective have a very high capability for a wide variety of shoreland and other recreational activities (picture Nos. 1 and 3, pages 57 and 72 respectively).

Class 1 designation implies large-scale as well as superior quality; i.e., an area capable of accommodating a very wide range of recreational activities at the same time. Guidelines as to scale are suggested as follows:

- (a) The area should front on a water body or a lake system interconnected with navigable waterways of not under ten square miles in total useable area;
- (b) The area should contain useable water frontage not under one mile in length, of which at least 2000 feet is beach well suited to family bathing, and at least 600 feet is continuous high quality sand beach;
- (c) The area should provide backshore development sites with slopes and materials suitable for such intensive uses as car parking, building construction, playgrounds

¹ C. S. Brown, Classification of Land Capability for Recreation, Interim Manual to Guide Pilot Projects in 1965, May, 1965, pp.5-15.

² The meaning of the words "regional" and "provincial" are synonymous. However, each province was instructed to look beyond their own boundaries in framing the provincial perspective.

and picnicking; the site should contain at least 25 acres within 1000 feet horizontal distance of the shoreline and be within 150 feet elevation relative to mean water level;

- (d) A Class 1 area should contain, or have adjoining it at a rating of Class 5 or better, at least five square miles of area capable of accommodating such activities as camping, hiking, riding, hunting, nature study, recording, gathering and collecting.

Class 1S - Special areas containing outstanding natural attraction in the regional or provincial perspective.

An area placed in this class had to be truly outstanding in the region. One that would attract visitors from the region, given access and visitor facilities. The area could be a historic feature, a waterfall or scenic corridor.

A Class 1S area will normally be of very limited extent, covering only the feature itself and that surrounding land which is both suited and necessary for development of facilities required to enable optimum enjoyment of the attraction. The nature of the attraction is an important factor. In an activity area - such as a skiing area - visitor facilities and space are necessary. A scenic attraction, which people would be inclined to leave after a look, will require less visitor space. But as in Class 1 the class unit boundary will normally be within a mile of the feature.

A scenic attraction such as a mountain or glacier presents a special problem. A superior viewpoint, as well as the feature itself, may warrant a high rating. The scenic attraction may, in

fact, be a vista or a panorama which does not include any individual feature which would warrant as high a rating as the viewpoint.

Class 2 - Areas that in the day use perspective have a good capability for a wide variety of shore based and other recreational activities with only minor limitations (picture 23).

Shoreland in this class had to be capable of accommodating a full range of shore based activities despite the presence of either one dominant limitation or a combination of minor limitations with regard to quality and/or scale characteristics of the site.

The following guidelines suggest minimum scale criteria:

- (a) The area should front on a water body of not under one square mile of useable water surface;
- (b) The area should contain useable water frontage, at least one-half mile in length and a minimum of 500 feet of good quality beach;
- (c) The area should provide backshore development sites adequate in slopes, location, materials and drainage of at least ten acres within 1000 feet of the beach and 150 feet elevation relative to mean water level.

Class 2S - Special areas containing an outstanding natural attraction in the day use perspective (picture Nos. 24 and 25).

Class 2S areas are of the same nature as Class 1S except that the scale and significance are reduced in value.

No. 23



R.V.P.

An excellent beach on Little Sandy Lake. While the beach is only 2 to 3 feet wide the back-shore is ideal for development and the offshore is suitable for bathing and swimming.

No. 24



Saskatchewan Government
Lefty's Falls or Hunt Falls in Northern
Saskatchewan.

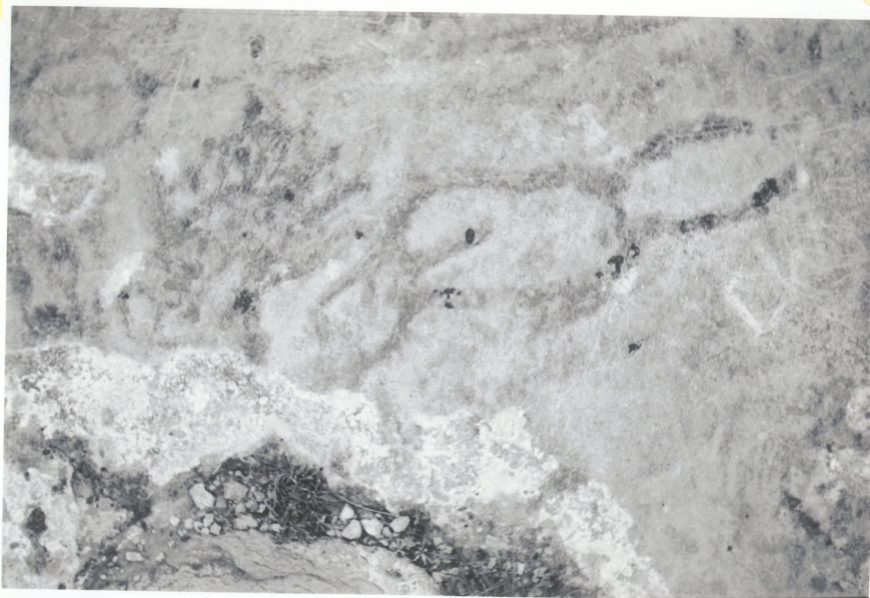
Class 3 - Water oriented areas that have capability for a variety of shore based recreational activities but with moderate to severe limitations (picture Nos. 26 and 27).

Class 3 lands front on recreational water and have a combination of terrain and cover able to accommodate only limited uses without major artificial improvement. Shoreland having limitations with regard to a lack of backshore available for development due to back marshes or steep slopes, problems of access from the backshore to the foreshore, or offshore conditions making swimming, bathing or docking difficult or impossible were normally characteristic of Class 3. In addition, a high quality beach site could be placed in Class 3 simply because of its small size.

The following are other conditions applying to Class 3 shoreland:

- (a) Water frontage with some capability for family recreation use but which does not rate Class 2 or a special class designation, will normally fall into Class 3;
- (b) The water body may be relatively small or it may be a river, and the quality of its water or the stability of its surface level may not be optimum, but it must be capable within the class unit boundaries of accommodating shore based aquatic activities such as swimming and boating;
- (c) Shorelands with steep slopes, where cottages and

No. 25



R.V.P.

This is an example of one of the many petroglyphs located on top of the rocky outcrop south of St. Victor. See also picture No. 8, page 77, for a picture of the view from this location.

No. 26



R.V.P.

Beach on Lesser Slave Lake. This is a good example of a class 3 beach; short but large sandy foreshore and good conditions for bathing and swimming.

access roads could be built at elevations not over 100 feet above mean water level will rate Class 3, provided the foreshore has some capability as a base for swimming and boat mooring or beaching, or provided access can be gained to a foreshore suited to shore based aquatic activities by walking or driving within one half mile;

- (d) Areas containing occasional small, good quality beach sites, with the intervening units of shore zone at least moderately accessible, will normally rate as Class 3;
- (e) Beaches formed by wave action and backed by marsh or lagoon, but wide enough to support limited use, will normally fall into Class 3;
- (f) Foreshore of stones, boulders or till may occur on Class 3 shoreland, provided the water's edge at normal low water level is not over 500 feet from the bank or from the nearest building site, and provided the surface materials are not a serious impediment to access to the water;
- (g) Class 3 shorelands may include a foreshore of organic or fine textured materials provided there are no offensive odours and access to water can be accommodated for boats and swimming: e.g., the soft materials are shallow and can be removed, or a short dock (less than 100 feet) from the firm ground will suffice;

- (h) Class 3 shorelands may include foreshores of bedrock and backshores incapable of supporting tree growth, provided swimming is readily accommodated.

Restricted Use Classes

This group includes four classes and applies to upland units. Therefore, the highest upland unit is Class 4 and the lowest is Class 7.

Class 4 - Areas that in the regional or provincial perspective have a high capability for a wide range of non-water oriented recreation activities (picture No. 28).

These areas have exceptional qualities of terrain and tree cover, and provide for a range of activities which are chiefly extensive in nature. They may contain streams, rivers, ponds, cold water lakes or front on water bodies which have negligible use capability.

Selecting and defining boundaries for Class 4 areas will call for exercise of judgment. The regional or provincial perspective will be applied to a greater degree probably than in the higher classes. The lands in each region or province best suited to extensive recreation activities in terms of terrain, cover and stream water are likely to rate Class 4, but regions lacking high relief will contain fewer Class 4 lands than will mountainous regions.

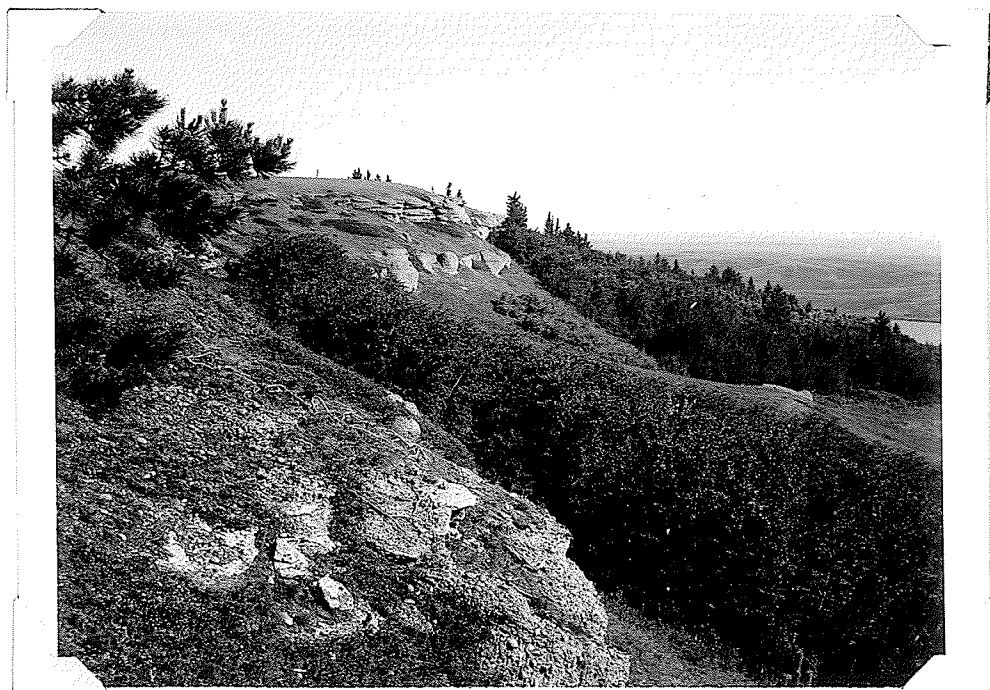
The presence of attractions which do not rate 1S or 2S may justify a Class 4 rating for an area.

No. 27



Saskatchewan Government
Shoreland along Buffalo Pound Lake. Note
besides the suitable shoreline and scenic setting
the potential of the backshore for winter activities.

No. 28



Saskatchewan Government
Truly panoramic view such as exhibited in this
picture plus outstanding badlands in the area
(relief greater than 500 feet) would have rated
class 4.

Class 5 - Areas lacking shoreland resources adequate for most aquatic activities, but with a combination of terrain and cover capable in the day use perspective for a limited variety of recreational activities (picture Nos. 29, 30 and 31).

Limitations in scale, variety of relief, cover capability, drainage or severe shoreland conditions could reduce a Class 4 to a Class 5.

Land in this class contains infrequent attractions of moderate quality; terrain and cover will be moderately attractive; ponds or streams may be present or shorelands with extremely severe use limitations.

Areas will normally, but not necessarily, be extensive. Limitations in scale and variety of relief, in cover capability, in surface materials, or in drainage reduce the quality and attractiveness of the area to such a level that it is of significance only to those within day-use travel distance.

Class 6 - Areas with severe limitations but with some capability in the local perspective for a narrow range of extensive type activities (picture No. 32).

Lands in this class will generally have limited potential even on an extensive use basis although water bodies or some lands in this class will lack recreational water, though they may contain sloughs, marshes or intermittent streams or front on unuseable shorelands.¹ Topography will be monotonous. Tree

¹ Special conditions.

No. 29



Saskatchewan Government
Duck Mountain. The background gives some indication of the knob and kettle topography but unfortunately, does not show the scattered small lakes and ponds in the area. The beach in the foreground rates class 2.

No. 30



Saskatchewan Government
Badlands south of Big Muddy Lake. Picture 11, page 80, is a view of the east side of the three badland peaks in the upper left hand corner.

No. 31



R.V.P.

Turtle Mountains, Manitoba. Note the knob and kettle topography and the shallow nature of the lakes. Also note the broadleaf tree cover as compared to the mixed cover in the Duck Mountains.

No. 32



R.V.P.

Dry valley south of the Big Muddy complex. There are frequent rock outcrops of shale and some scrub tree cover in north facing coulees.

cover may be monotonous, too dense for penetration or too sparse or dwarfed to be useful or attractive. Specific attractions are lacking, but the landscape, natural or cultural, may present occasional pleasing vistas and offer moderately pleasant touring opportunities. Hunting, walking and picnicking may be accommodated. Class 6 units will usually be extensive.

Class 7 - Areas with extremely limited or no natural capability for any type of recreation.

An area of this nature may simply lack attractions.

Special Conditions

Shorelands which have very severe limitations hindering or prohibiting shore based aquatic activities require special consideration:

- (i) Certain shorelands which do not meet minimum shore based use capability may rate Class 1S or 2S because of scenic qualities. A prominent high headland, or a rugged or high scarp face coastline offering outstanding vistas and being reasonably accessible by land, may rate these classes;
- (ii) In exceptional instances, outstanding rugged headlands or coastlines, more or less inaccessible overland, may warrant special class rating because of scenic or unique quality when viewed from offshore or from nearby shorelands;
- (iii) Rugged shorelands not reasonably capable of overland access will normally not rate special designations. Fiord-like coastlines or those with steep slopes rising abruptly over 100 feet elevation, will usually be included in adjoining

upland class map units, though their presence may raise the classification of adjoining lands from 6 to 5 or from 5 to 4;

- (iv) Similar treatment should be given shorelands fronting on extensive tidal or flood water flats, or shallow water or marsh lake margins;
- (v) Shallow water or marsh lake margins or islands, with outstanding waterfowl use characteristics, may warrant Class 1S or 2S, though not because of hunting use capability alone;
- (vi) Shorelands fronting on waters too cold, or too windswept for normal shore based aquatic recreation activity will rate Class 4 or lower, unless in a special scenic category.

Forest Land: Continuous, fairly dense though not impenetrable forest, with little topographic variety and infrequent surface water, has little capability for recreational use and will normally rate Class 6. If it has particularly good natural capability for hunting, Class 5 may be appropriate.

Stream courses: Though in relatively uninteresting terrain, may warrant special designation, possibly Class 4 or 5, compared with Class 6 or 7 for the adjoining lands. The nature of the terrain bordering the stream will determine the lateral boundaries of the higher class unit, but the influence of the stream should seldom extend over one half mile.

Appendix 3B

Attraction Symbols

- A. Gravel beach, up to one inch screen size, suited to bathing and wading.
- B. Sand beach suitable for bathing and swimming.
- C. Sheltered waterway suitable for small boat use such as canoe tripping.
- D. Local waters which normally reach summer temperatures suited to bathing and swimming on predominant by cold water coasts or lakes.¹
- E. Areas with an outstanding cover complex or virgin forest.
- F. Waterfalls.
- G. Glaciers.
- H. A site or area of known historic or prehistoric significance.
- K. Surface water of limited scale - too small for the complete range of aquatic activities but suitable as a focus for campsites, picnic sites and/or water supply. May also be used with Class 3, in complexes, to indicate one or more small bodies of water suitable for cottage sites but where aquatic activities are severely limited by size (area) of the water body.²
- L. Unusual landforms other than mountains.
- M. Mountains.
- N. Variety of local relief.
- R. Unusual rock formations.
- S. Areas with climate, terrain and surface cover suitable for skiing.
- T. Thermal springs.
- U. Upland wildlife areas.
- V. Observation sites from which superior views of landscape may be obtained.
- W. Water based wildlife areas.

¹ This symbol should be used only where water too cold for bathing or swimming is the rule.

² K should only be used with Class 3 in complexes involving Classes 4, 5 and 6. It should not be used with Class 3 in single class designations, nor in complexes involving Class 1 or 2.

Appendix 3C

Limitation Symbols and Explanations

Climatic Limitation

- c. These may be: excessive summer rainfall, a high frequency of strong winds; low summer temperatures combined with excessively cold water for swimming; a snowfall regime detrimental for skiing; or a rainfall regime not adequate to maintain tree growth.

Water Limitations

- d. Water depth inadequate for some aquatic activities.

Note - This limitation may cover any of the following conditions:

- (i) The water body, over a part or all of its area, is, at normal or low water levels, sufficiently shallow to cause hazards to some boating activities which the water body, in view of its size, might otherwise support, or to be liable to undesirable turbidity from bottom disturbance by wind or motor boat action.
- (ii) The offshore condition of the shoreland being classified hinders aquatic activity because of shallows or offshore bars at normal or low water levels.
- (iii) Submerged or emergent reefs constitute a hazard to boating.

- f. Water area inadequate for aquatic activities such as motor boating and water skiing.

Note - Delete "sailing" from the examples in this definition. The useable water area at normal or low water levels is below a reasonable minimum size for boats of usual pleasure boat size to operate to good advantage.

- j. Fluctuating water levels.

Note - Seasonal, cyclical or tidal fluctuations in water levels hinder optimum recreational use of the shore zone by - exposing

intensive beach flats; creating offshore shallows; hindering boat dock operation; or bringing poor offshore bottom conditions within reach of bathers.

k. Normal summer water temperatures too cold for swimming.

Note - This condition may be a deterrent to swimming or may practically prohibit swimming. It may merely shorten the swimming season or eliminate it. Local custom is the best guide, possibly supported and projected by temperature tests or records. If this condition prevails over an extensive coast line or water body, it should be noted on each map without being incorporated into each symbol.

n. Poor water quality due to natural aquatic nuisances, weeds or pollution - mineral or organic.

Note - These conditions may include algae, submergent, surface or emergent weed growth, pests such as blood suckers or organisms causing skin infection, in addition to natural mineral pollutants.

p. Pollution of water caused artificially.

Note - Only an apparently long term or frequently occurring condition should be noted.

z. Rapids or waterfalls a limiting factor.

Note - Though such features are a hindrance to boating activity, they will normally constitute an attraction. In instances, however, non-spectacular rapids particularly, if at frequent intervals, may constitute a hindrance in a waterway of potential boating significance.

Shorezone Limitations

a. Beach activities limited by steep slopes offshore.

Note - Bottom gradients, greater than 15%, or approximately 1 in 7, inward from the water's edge at any recurring water level, may be considered to constitute a limitation to some forms of shore-zone activity. The range and number of activities possible will shift with the gradient. Optimum gradients are between 2 and 5%. Lower gradients may hinder boating activity and favor family

bathing, while the reverse effect results from higher gradients. The ideal frontage offers a wide range of gradients with a preponderance in the optimum range.

Classes 1 and 2 shoreland should contain frontage of optimum bathing zone gradients. Class 3 land will often be so classified because of a shortage or lack of bathing zone in the optimum range.

- *b. Bank or slope over 40% rising from high water mark to an elevation from 5' to about 25' relative to apparent mean water level or more level terrain.
- *g. Bank, slopes over 40%, bluffs or cliffs rising to over 25' elevation from the high water mark to more level and useful terrain.

*Note - This assumes a rise of less than 5' from high water mark is not in itself a significant limitation. The use of these two limitations will indicate two degrees of severity of backshore limitation imposed by topography. Additional guidelines provided later in this section should enable much more accurate mapping of shoreland conditions.

- h. Use of foreshore or offshore zones restricted due to coarse gravel, boulders or rock.

Note - This definition has been altered slightly. Should not be used unless condition is a real limitation to either bathing, swimming, boating or dry beach use. That is: a smooth bedrock surface, or scattered readily removed stones or boulders do not constitute a significant limitation.

- i. Foreshore non-existent at normal summer water levels on inland waters or at summer mean high tide in tidal waters.
- l. Beach or foreshore suited to bathing is limited in length.

Note - Changed wording.

- m. Use of foreshore or offshore zone limited by organic soils, mud or extensive tidal flats.

Note - Original wording has been changed. Local judgment must be exercised in determining at what stage of tide the exposure of flats constitutes a significant limitation.

- q. Narrow foreshore, under 15' wide at normal summer water levels in inland waters, or at summer mean high tide in tidal waters.
- s. Foreshore materials of till, silt, clay or stones.
- #. Backshore development restricted by presence of open water or lagoon.

Note - A lagoon or barachois, behind a sand or gravel beach ridge, will hinder some kinds of backshore development. If swampy in nature, it may constitute a serious limitation. On the other hand, it may provide warm water swimming or safe boat moorage, and could be shown as an attraction as well as a limitation.

- *. Natural accumulation of offensive organic debris on foreshore due to wind or current action.

Note - To be used only when such an accumulation is known to exist under summer conditions and to constitute an actual limitation to shore based aquatic activities.

Other Limitations (Upland and Shorezone)

- e. Erosion hazard a limitation. (No Comment)
- o. Lacks level or gently sloping area suitable for constructing support facilities.

Note - May be used for shorelands with "b" or "g" to indicate limited development site. May be used on Class 3 lands without "b" or "g" to indicate a relatively narrow (suggest under 100' width) strip of development site between bank and slopes over 40%. May be used in upland units associated with special features or ski areas.

- r. A stony or rocky surface a hindrance to use or development.

Note - May be used to describe surface materials elsewhere than foreshore and offshore locations.

t. Steep slopes hindering access or use.

Note - May be used in upland areas only to indicate a severe limitation particularly respecting access. "o" denotes a lack or shortage of site of gradients suited to development, while "t" will usually denote a more extensive condition where serious access problems exist, whether or not development sites exist.

u. Level, monotonous landscape.

Note - This limitation will normally be associated with Classes 6 and 7.

v. Soil incapable of supporting shade tree growth under natural conditions.

Note - To apply to arid areas, or areas of extensive exposed bedrock, or infertile or polluted soils, or natural barrens.

w. Impaired drainage a hindrance to use or development.

Note - May be used to describe any pertinent condition of fore-shore, backshore or upland, but only when the condition is a significant hindrance to recreational use.

x. Uses limited by dense tree cover.

Note - To be used if the natural forest condition at the time of survey is such that forest penetration on foot is moderately to severely restricted because of dense tree growth. Should not be used if the condition results from a young stand of species in which natural thinning processes can be expected to alleviate the condition.

y. Serious insect problem.

Note - To be used only in unusual local situations. General conditions can be described in small scale map texts.

@. Presence of permanent highway or railway structures a limitation to recreational use of land.

Note - Permanent highways and railways can limit or restrict the practical capability, particularly of the shorelands, and should be considered an additional limiting factor. They will reduce the class of a unit only when its otherwise natural capability is fairly marginal without them.

Appendix 3DCriteria for Establishing Physiographic UnitsRELIEF - Red Lines

1. Upland (generally over 500' relief)
2. Strongly rolling to hilly
- 2A. Spillways, valleys, escarpments, over 300' relief
3. Gently to moderately rolling
- 3A. Spillways, valleys, escarpments, 100' to 300' relief
4. Mixed undulating and rolling
- 4A. Spillways, valleys, escarpments, under 100' relief
5. Flat depressional land; Gently to moderately undulating.

TREE COVER - Blue Lines

1. Over 75%
2. 25% to 75%
3. 5% to 25%
4. 1% to 5%
5. Under 1%

Appendix 3ECriteria for Final Capability Classes 1965Class 1

- (1) Water body with over 5 sq. miles useable area
- (2) No real limitations
- (3) Backshore 2 - 2 - (25 acres) - 3 - 3
- (4) Foreshore at least 1 mile useable
4 - 7 (1500' gravel)
2 - 7 (over 600' sand)
- (5) Offshore (3 to 5) - (2 to 3) - 4

Class 1S

Special areas containing outstanding natural attraction in the regional perspective. Might also be a special use area - e.g., skiing - of a very high standard. Normally very limited extent - the feature itself and surrounding land both suited and necessary for the development of facilities required for the optimum enjoyment of the attraction. Could be a viewpoint rather than the feature itself which warrants this rating.

Class 2

- (1) Water body with over 1 sq. mile useable area
- (2) Only moderate limitations
- (3) Backshore 2 or 3 - 2 - (10 acres) - 4 - 3
- (4) Foreshore at least $\frac{1}{2}$ mile useable
2 or 3 - 7 (500' of sand or sand and fine gravel)
- (5) Offshore (3 to 5) - (2 or 3) - 4

Class 2S

Special areas containing outstanding natural attraction in the day perspective. Similar to 1S except scale and significance reduced to more local level. Boundary more likely to be within $\frac{1}{2}$ mile of feature.

Class 3

Remaining shoreland with potential for at least swimming and some form of boating. If it cannot support these minimum activities it is not classified as shoreland. Such "land", however, might have a special attraction - e.g., natural history - due to the existence of its water. This would be indicated by a notation - e.g., "W" (water based wildlife area) - which would be sufficient to upgrade this area from perhaps Class 7 to Class 6.

Class 4

- (1) Land with relief 1, cover 1 to 4
- (2) There must be a specific recreation attraction indicated by a notation
- (3) Special case - Level with high capability but not meeting 2S, Class 4 and not classified as shoreline. For example, it could be an area with relief 2A siding on a river. Water is likely to be the focus of interest with the background land being sufficiently attractive to warrant classifying the whole area as Class 4.

Class 5

- (1) Land with relief 3, cover 1 to 4
- (2) There must be a specific attraction or relief 3, cover 1 to 3
- (3) Limitations such as "monotonous landscape" will reduce the area to Class 6.

Class 6

- (1) Land with relief 3, cover 1 to 4
or relief 2, cover 5; relief 5, cover 1 to 2
- (2) Any remaining land with a specific attraction

Class 7

- (1) Remaining land

Appendix 3F

Shoreline Physical Classification

BACKSHORE

ACCESS TO WATER

- 2. No problem
- 3. Some problem
- 4. Difficult

EROSION & FLOOD
HAZARD

- 2. No serious hazard
- 3. Moderate hazard
- 4. Serious hazard

FORESHORE

MATERIALS

- 2. Sand
- 3. Sand and fine gravel
- 4. Gravel
- 5. Boulders
- 6. Mud, boulders, rubble
- 7. No beach
- W. Weeds

WIDTH

- 2. 100' +
- 3. 75'-100'
- 4. 50'-75'
- 5. 40'-50'
- 6. 30'-40'
- 7. 20'-30'
- 8. 10'-20'
- 9. 0'-10'

TREE COVER

- 2. Excellent
- 3. Adequate
- 4. Poor
- 5. Nil

VIEW

- 2. Panoramic, variety
- 3. Above average
- 4. Average for region
- 5. Poor for region

OFFSHORE

SLOPE

- 2. 0%-3%
- 3. 3%-7%
- 4. 8%-11%
- 5. 12%-14%
- 6. 15% +

MATERIALS

- 2. Sand
- 3. Gravel and shingle
- 4. Clay, silt, mud, rubble
- 5. Boulders
- 6. Bedrock
- W. Weeds

SHELTERED

- 2. Excellent
- 3. Adequate
- 4. Exposed
- 5. Too exposed

Appendix 3GSHORELAND FORM

Name of water body _____

Meridian _____ Township _____ Range _____ Section _____

Map Sheet _____ Photo _____ Site No. _____

BACKSHORE

1. Dominant landscape _____ 17. Access from road _____

2. Width of backshore _____ 18. Distance to road _____

3. Relief of backshore _____ 19. Distance to highway _____

4. Slope of backshore _____ 20. Present use _____

5. Terracing _____ 21. Extent of development _____

6. Soil stability _____

7. Erodability _____

8. Susceptible to inundation _____

9. Aspect _____

10. Tree cover _____

11. Species _____

12. Plant communities _____

13. Faunal assemblage _____

14. Potable water _____

15. Scenic quality (external) _____

16. Scenic quality (internal) _____

FORESHORE

22. Access from backshore _____

23. Beach length _____

24. Beach width _____

25. Beach slope _____

26. Materials _____

OFFSHORE

27. Slope _____

28. Materials _____

29. Vegetation _____

30. Approach to shore _____

31. Exposure _____

CAPABILITY

32. Bathing _____ 38. Parking areas _____

33. Boat launching _____ 39. Scenic viewpoints _____

34. Boat landing _____ 40. Natural history areas _____

35. Picnic sites _____

36. Campgrounds _____ 41. Skiing _____

37. Playing fields _____ 42. Golf courses _____

Appendix 3HFORM FOR WATER

Name or number of water body _____

Meridian _____ Township _____ Range _____ Section _____

Map sheet _____ Photos _____ Water body rating _____

-
1. Type _____
 2. Navigable length _____
 3. Maximum width _____
 4. Minimum width _____
 5. Mean depth _____
 6. Maximum depth _____
 7. Shoreline configuration _____
 8. Shoreline length _____
 9. Water colour _____
 10. Turbidity _____
 11. Odour _____
 12. Pollution _____
 13. Salinity _____
 14. Weeds _____
 15. Algae _____
 16. Temperature _____
 17. Stability _____
 18. Connection with other water bodies _____
 19. Navigational hazards _____
 20. Accessibility _____
 21. Distance from urban centre _____
 22. Present use _____
 23. Development _____

Appendix 3IFORM FOR LAND

Meridian _____ Township _____ Range _____ Section _____

Map Sheet _____ Photo _____ Site No. _____

Physiographic Unit _____

Dominant Land Form(s) _____

1. Relief _____
2. Slope _____
3. Slope stability _____
4. Terracing _____
5. Drainage _____
6. Susceptible to Inundation _____
7. Tree cover _____
8. Species _____
9. Plant communities _____
10. Faunal assemblage _____
11. Potable water _____
12. Scenic quality (external) _____
13. Scenic quality (internal) _____
14. Access by road _____
15. Distance to highway _____
16. Distance to urban centre _____
17. Present use _____
18. Extent of development _____

CAPABILITY

19. Skiing _____
20. Playing fields _____
21. Golf courses _____
22. Natural history areas _____
23. Scenic Viewpoints _____
24. Picnic grounds _____
25. Campground _____
26. Highway rest stop _____
27. Small air field _____
28. Area suitable for ponding _____

Appendix 3JVariety of Shorelands Placed in Class 3 in 1965

No. 33



R.V.P.

A beach on Granite Lake. Excellent backshore for development. The 5% slope and sandy materials offshore provide good conditions for bathing and swimming.

No. 34



R.V.P.

Northeast end of Long Lake. An offshore slope of less than 1% with materials of mud, boulders and gravel plus a flooded backshore allow only very limited use of this length of shoreline.

No. 35



R.V.P.

This beach on Fife Lake is over 500 feet long but the foreshore is coarse gravel, the offshore has some soft spots and the water is subject to an algae problem. Also the backshore while dry, is treeless and barren.

No. 36



K. Kirby

This length of shoreline at the south end of Basic Lake provides a scenic view of the lake and surrounding countryside. Unfortunately, the water level has been dropping steadily and the water is alkaline in nature. Note writer in lower center portion of the picture.

No. 37



R.V.P.

Pipestone Reservoir. This small lake has surrounding backshore with nil to adequate tree cover but the foreshore and offshores are weedy and muddy which greatly hinders bathing or swimming. However, power boating is possible.

No. 38



R.V.P.

Ice pressure boulder shoreline on Candle Lake. While the backshore is excellent for development, use of the foreshore is limited due to frequent heavy wave action and ice damage.

No. 39



R.V.P.

Tulabi Lake. Good backshore for development; relatively flat, well treed, soil over bedrock, no problem of access, fairly steep gradient offshore.

No. 40



R.V.P.

One of the many beaches on Armit Lake. The backshore is developable and the beach can be used for bathing and swimming. However, there is a problem of access from both ends.

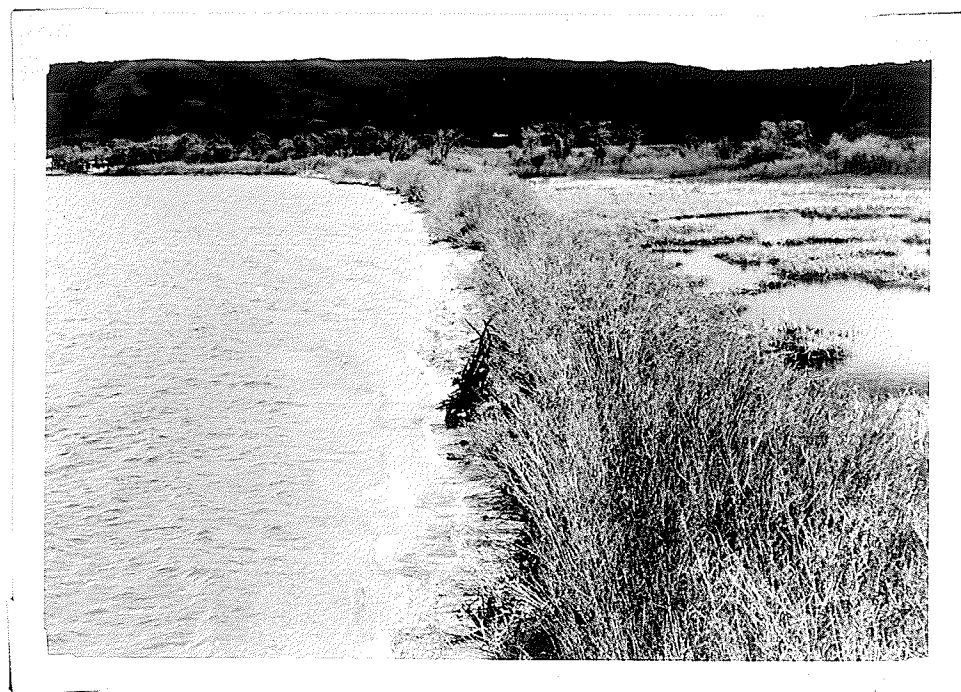
No. 41



R.V.P.

This beach is located on the south end of Big Quill Lake. Unfortunately, the water is extremely alkaline and the rest of the shoreline is composed of large mud flats.

No. 42



R.V.P.

Coarse gravel materials built on a narrow pressure ridge which is very exposed are the main limitations of this beach at the east end of Crooked Lake.

No. 43



Saskatchewan Government
The only attraction on Old Wives Lake which is
alkaline and shallow is the large number of Gulls.

No. 44



R.V.P.

These cliffs on Fife Lake provide an excellent
vantage from which to view the lake. While there is
no problem of access from the water to the shoreline
the cliffs prevent access from the backshore and are
subject to severe erosion. Note coal seam in lower
right hand corner.

Appendix 4ALand Capability Classification for Recreation

The national system requires that only the capability class and the kinds of recreation features be indicated. As outlined herein it contains only these elements and a separation of all units between shorelands and uplands (for computer purposes). This section describes each of the seven classes.¹

Class 1

AREAS IN THIS CLASS HAVE A VERY HIGH CAPABILITY
FOR OUTDOOR RECREATION

Class 1 lands constitute the highest quality resources for outdoor recreation in the region and have natural capability to attract and sustain very intensive use. They may be shorelands with excellent natural capability for public beach and shore based recreation uses; or lands with an excellent natural capability for professional and amateur skiing; or lands which provide viewing opportunities, or contain special interest features of highly outstanding and unique quality; or any combination of these.

Lands which have high capability for intensive use through two or more seasons due to the presence of two or more recreation features each of which would independently rate Class 2 may in instances rate Class 1.

¹ C. S. Brown, Outline of the Canadian Land Capability Classification for Outdoor Recreation, Prepared for Canada Land Inventory, March, 1966, pp.6-8.

APPENDIX 4

Class 2AREAS IN THIS CLASS HAVE A HIGH CAPABILITY
FOR OUTDOOR RECREATION

Class 2 lands are not of the highest quality for recreation in the region, but are relatively outstanding and capable of attracting and sustaining moderately intensive use. Modest improvements to the resource base may be necessary to realize the full potential. They may be shorelands with good natural capability for public beach and shore based recreation activities; or lands with good natural capability for competitive and amateur skiing; or lands which provide viewing opportunities or contain special interest features of outstanding quality; or any combination of these.

Class 3AREAS IN THIS CLASS HAVE A MODERATELY HIGH NATURAL
CAPABILITY FOR OUTDOOR RECREATION

Class 3 lands will normally have limited capability for intensive use of a public nature without significant capital inputs but are more likely to attract and sustain a high total annual use. They may be shorelands with moderate to high capability for shore based activities such as swimming, boat launching and camping, or for intensive private or commercial lodging use; or lands with capability for moderate to high total annual use associated with particular recreation attractions or exceptional viewing opportunities; or any combination of these.

Class 4AREAS IN THIS CLASS HAVE A MODERATE CAPABILITY
FOR OUTDOOR RECREATION

Class 4 lands will not normally engender intensive use without major capital inputs, but may engender moderately high total annual use in dispersed activities. They may be shorelands with low to moderate capability for private lodging or camping associated with access to water suited to boating and/or swimming though some improvements will be necessary for access to, or use of, the water. They may be shorelands with moderate to good capability for lodging fronting waters with low capability for shore based activities other than viewing. Or they may be lands with good to excellent capability for dispersed activities, including shorelands or other lands with high scenic quality on an extensive scale, but lacking capability to rate higher.

Class 5AREAS IN THIS CLASS HAVE A MODERATELY LOW CAPABILITY
FOR OUTDOOR RECREATION

Class 5 lands lack the natural aesthetic quality or the recreation features to engender intensive use, but may have moderate to good capability for a number of dispersed activities. They may be pleasant for touring, walking or riding or good for hunting, stream fishing or gathering and collecting. They will seldom warrant capital improvement except in a high demand situation. They may provide a fully satisfactory buffer zone for an intensive use area.

Class 6AREAS IN THIS CLASS HAVE A LOW CAPABILITY
FOR OUTDOOR RECREATION

Class 6 lands lack natural aesthetic quality and recreation features, but may have low to moderate capability for one or more dispersed activities. They will normally be uninteresting and may present serious restrictions and offer little incentive to exploration or use.

Class 7AREAS IN THIS CLASS HAVE A VERY LOW CAPABILITY
FOR OUTDOOR RECREATION

Class 7 lands will have practically no natural capability for any popular types of recreation activity due to an almost complete lack of recreation features. They may, however, have some capability for very specialized activities with recreation aspects such as study of biological or other phenomena or gathering of specimens, or they may merely provide open space.

Appendix 4B

Shoreland Conditions to be Considered when Applying the New Classes

COMPONENT PARTS OF SHORELAND	BACKSHORE	FORESHORE	OFFSHORE	WATER BODY
Physical Considerations	Suitability for development a) area b) slope c) erosion d) stability e) access f) aesthetic quality i.e. vegetation cover, terraces	a) materials b) length c) width d) erosion conditions e) exposure	a) slope b) materials c) condition of bottom d) vegetation condition	a) size of water body or length of useable shoreland b) water quality c) temperature of water d) exposure - wind, current, ice
Class	a) min. 25 acres within 1000' b) relatively level c) no serious hazard d) stable e) no problem f) outstanding on a regional and provincial scale	a) sand and fine gravel 1000 ft. b) no stipulation c) no serious hazards d) sheltered or minor problem	a) 2-5% sand and gravel b) firm c) non	a) 6 sq. mi. or 10 mi. b) good c) ideal for bathing, swimming, etc. d) if present they must be very minor
1 Conditions of rest of the classes are relative to class 1	a) smaller area within 1000' b) variable c) may be some problem d) same as c e) same as c f) important on a provincial scale	a) may be coarser shorter 300' b) no stipulation might not be any at high water periods c) possible problems d) possible small problem	a) 1-7% could be coarse sands and gravels b) firm c) could be a minor problem	a) smaller b) good c) same as class 1 d) minor problem
2 A combination of minor limitations could reduce a class 1 to a 2	a) at least 10 acres within 1000' b) variable c) minor problem d) minor problem	a) wide range 100 for B, otherwise no stipulation b) no extensive flats except of sands and	a) for B could be >8% other wide range b) wide range but prefer materials not preventing bathing	a) complete range b) may be some problem c) same as class 1 d) could be exposed but must not be serious
3 A number of minor limitations or one				

limitations could reduce a class 1 to a 2 3 A number of minor limitations or one major one could reduce a class 2 to a 3	d) same as c e) same as c f) important on a provincial scale a) at least 10 acres within 1000' b) variable c) minor problem d) minor problem e) possible problem f) pleasant	d) possible problems e) possible small problem a) wide range b) 100 for B, otherwise no stipulation c) no extensive flats except of sands and gravels d) could be e) some problem possible	d) could be a minor problem a) for B could be >8% other wide range b) wide range but prefer materials not preventing bathing c) firm d) could be a weed problem but not serious. Could extend to foreshore but must be minor	a) complete range b) may be some problem same as class 1 c) could be exposed but must not be serious
Usually a combination of fairly serious limitations 4	a) a wide range of backshore types, i.e. marsh to excellent backshore b) wide range c) could be serious d) same as c e) same as c. Cliffs or steep banks f) generally not very attractive relative to other sites	a) wide range b) no stipulation c) range from no foreshore to large extensive flats d) could be serious e) could be exposed	a) complete range b) everything from mud to boulders c) could be soft d) could be serious or extensive	a) complete range or just a small lake 180 acres b) could be poor c) cold water could be the major limitation d) could be a serious problem
Major limitations 5	In the case of class 5 shoreland, limitations will tend to be serious and numerous. In most cases the backshore will be capable of supporting only extensive activities and minor development or large developments at a great cost. A typical 5 shoreland would be a water body fronting on a marsh or swamp.			
Shoreland is not thought of as a base for shore based activities 6	A class 6 shoreland will no longer serve as a backshore may be excellent for building or viewing example is the alkali lakes in southeast Saskatchewan.			

Appendix 4CComparison of Class Designation Between
the 1965 and 1966 Systems

<u>Picture No.</u>	<u>Location</u>	<u>Page</u>	<u>Class 1965</u>	<u>New Class</u>
1	Fishing Lake	57	2	1
2	Regina Plain	57	7	6
3	Candle Lake	72	1	1
4	Candle Lake	72	3	3
5	Crooked Lake	75	3	2
6	Long Lake	75	3	3
7	Willow Bunch	77	6	6
8	St. Victor	77	2S	3
9	Big Muddy	79	5	5
10	Big Muddy Lake	79	6	6
11	Badlands	80	5	3
12	Carlyle Coulee	80	5	4
13	Moose Mountain	82	5	4
14	Rockglen	82	6	6
15	Round Lake	89	3	2
16	Tulabi Lake	89	3	5
17	Madge Lake	90	3	3
18	Long Lake	90	3	5
19	Anglin Lake	100	3	6
20	Moosomin	100	3	5
21	Candle Lake	102	3	2
22	Fife Lake	102	3	4
23	Sandy Lake	153	3	2
24	Lefty's Falls	153	2S	3
25	St. Victor	155	5	3
26	Lesser Slave Lake	155	3	3
27	Buffalo Pound Lake	158	3	3
28	Cypress Hills	158	4	2
29	Madge Lake	160	5	4
30	Big Muddy Lake	160	5	3
31	Turtle Mountain	161	5	4
32	Rockglen	161	6	6
33	Granite Lake	177	3	3
34	Long Lake	177	3	5
35	Fife Lake	178	3	3
36	Basis Lake	178	3	4
37	Pipestone Reservoir	179	3	4
38	Candle Lake	179	3	4
39	Tulabi Lake	180	3	3
40	Armit Lake	180	3	3
41	Big Quill Lake	181	3	5
42	Crooked Lake	181	3	4
43	Old Wives Lake	182	3	6
44	Fife Lake	182	3	4

Appendix 4D¹Suggested Bench-Marks and Guidelines
For Capability Classes 1 to 6

No attempt is made in this outline to provide comprehensive guidelines for all classes. Limits, bench-marks or examples are provided as general guides only. They are not intended for rigid application. In instances, they are necessarily subjective. Additional guidelines can be added with the experience of another field season.

Class 1 shorelands:

- (a) The water body should have a surface suitable for family boating and related activities of six square miles or ten miles navigable length.
- (b) The unit should contain 1000' or more of beach within a quarter mile length (i.e., if not continuous beach then nearly so) of gradients between 1% and 7% (the optimum is 2 - 5%) and materials of sand or fine gravel (up to pea size), and with water temperatures and quality suitable for bathing and swimming.
- (c) There should be at least 25 acres of land well suited to construction of facilities and to intensive backshore uses in terms of slopes and materials within about 1000' of the main beach and readily accessible from it.

¹ C. S. Brown, Outline of the Canadian Land Capability Classification for Outdoor Recreation, Prepared for Canada Land Inventory, March, 1966, pp.11-15.

Class 1 ski areas:

Conditions of slope and vertical drop (at least 2000 feet) should meet international competition standards, average snow conditions should provide a long season of use, and surrounding terrain should accommodate intensive novice, intermediate and spectator use.

Other Class 1 recreation features should be truly outstanding and unique in their natural capability to attract very large numbers of people under perfect market conditions. They should be of regional or national significance.

Class 2 shorelands:

- (a) Water body should have a surface suitable for at least limited boating of one square mile or two miles length.
- (b) The unit should contain at least 300' of continuous beach, with materials of pebbles, fine gravel, sand or firm till, gradients not over 8%, and water suitable in terms of quality and temperature for bathing and swimming.
- (c) There should be at least 15 acres of land suited to development and intensive use in terms of slopes and materials within a quarter mile of the main beach and reasonably accessible to it.
- (d) A combination of minor limitations, or one or two moderate limitations in site quality, as well as a size limitation, may reduce a natural beach shoreland unit to Class 2. Usually, such limitations can be overcome with improvements, but not necessarily.

A Class 2 shoreland must have natural capability in terms of water, beach and backshore to accommodate intensive beach activity, or have extensive sloping backshore exceptionally well suited to tiered lodging development plus a beach useable for bathing, if not suited to very intensive use.

Class 2 ski areas:

Conditions of slope and vertical drop need not meet international competition requirements, but will normally be the best or second best (if a Class 1 area exists) in a province or sub-region. It will have good natural snow conditions in a normal winter, good range of slope conditions, satisfactory surface materials and, usually, runs dropping not less than 600 feet. Area in useable slopes and surrounding terrain must be adequate to accommodate large numbers of skiers at the same time.

Other Class 2 recreation features should be outstanding in the provincial or sub-regional perspective and capable of attracting use from throughout the sub-region.

Class 3 shorelands:

- (a) If bathing beaches are present, they will be small (under 300') in length, or steeper than 8%, or very flat, or of rock, boulders, cobbles or clay, or be backed by swamp or open water. No limitation will be severe enough to prevent swimming or boat launching at frequent intervals along the shore.
- (b) Access from the shore to backshore development site may be

moderately difficult, but not severely so except perhaps for shore distances.

- (c) Backshore materials, slopes and drainage will allow fairly intensive cottage or other lodging development without severe limitation in access or shade tree growth capability.
- (d) The water body may be small, possibly down to 160 acres, if a lake. Water quality, temperature or currents must not prevent swimming.
- (e) Water frontage with nearly continuous capability for family recreation or cottage use, but which does not rate higher, will normally rate Class 3.

Corridors of land which provide very attractive outlooks at frequent intervals or continuously, usually of seascapes, may rate Class 3. These may be shorelands or uplands, depending on location in relation to the shore. The margins of the Cape Breton Island plateau, which now accommodate the Cabot Trail, may in places provide an example of Class 3.

Class 4 shorelands:

- (a) These lands may have capability for lodging use under moderately severe limitations. Possible shore conditions include extensive flats, severe boulder or rock conditions, soft bottom, poor drainage or serious weed conditions. The water body may be small, or shallow, or a river, or contain poor quality water. Limiting conditions, either singly or in combination, should however, not be of such severity that access to and use of the water for swimming and/or boating

cannot be accommodated under natural conditions, or made moderately attractive through capital improvements.

- (b) Backshore conditions may prevent intensive lodging use; or allow it only with considerable improvement - due to slope, materials or drainage limitations.
- (c) Offshore sand bars generally accessible only by boat, or too narrow to accommodate vehicle access, may rate Class 4.
- (d) Shorelands with good scenic or aesthetic quality, but with swimming or family boating more or less prohibited due to cold water temperature, severe currents or wind exposure, may rate Class 4.

Class 4 uplands:

- (a) These include land fronting on streams or rivers with good capability, normally through a long season, for a variety of dispersed activities such as camping, nature study, riding, hiking, hunting, etc., and as a base for angling or canoeing.
- (b) They include uplands with frequent attractions and opportunities for dispersed types of activity, though they will usually be restricted to better quality lands of this type in a province or sub-region. Normally, surface water will be fairly frequent, terrain will be rugged and interesting, offering frequent views, and natural forest cover will be attractive and readily penetrable.

Class 5, 6 and 7 shorelands will have practically no capability for usual types of shore based recreation due to extreme ruggedness or inaccessibility, to extensive marsh, very

extensive flats, or some combination of these. In these instances, the shoreland capability is determined largely by the adjacent land capability, and should be classified accordingly. Frequently, however, proximity to a water body, regardless of shore capability, will enhance the scenic quality of the adjacent land sufficient to lift it one class.

Class 5 uplands will frequently form a strip along a small stream in otherwise uninteresting terrain; or they may be extensive uplands with some topographic, and possibly, land use variety and interest, or level to rolling parklands rich in wildlife. They must have good capability for one or more popular dispersed types of activity. If they are forested, the forest must be more or less penetrable, or offer other compensatory attractions.

Class 6 uplands will normally be relatively uninteresting and extensive with infrequent attractions and poor scenery. They may have no serious limitations other than absence of attractions, or their low rating may be due in part to extreme access limitations. They will often have moderate to good hunting capability. Tree cover may be monotonous, too dense for penetration or too sparse or dwarfed to be useful or attractive. Specific attractions are lacking, but the landscape, natural or cultural, may present occasional pleasing vistas and offer moderately pleasant touring opportunities. Hunting, walking and picnicking may be accommodated.

Appendix 4E

Revised Attraction Symbols¹

- B Bathing beach: wet and dry beach conditions suited to family bathing, at normal water levels, in terms of water quality, beach slopes and beach materials.
 - D Shoreland with deeper water inshore suitable for swimming or boat launching.
 - N Shoreland suited to family cottage or other lodging use.
 - Y Boating area: shorelands providing access to a water body capable of accommodating popular forms of family boating activity.
 - A Angling area: land providing access to water with natural capability for production or harvesting of sport fish.
 - C Canoeing area: land providing direct access to a stream, river or other waterway with good natural capability for canoe tripping.
 - W Wetland: with significant capability for wildlife viewing or hunting.
 - T Thermal springs.
-
- J Gathering and collecting: areas offering particular opportunities for such activity.
 - K Camping: terrain suited to organized camping (generally to be

¹ C. S. Brown, Outline of the Canadian Land Capability Classification for Outdoor Recreation, Prepared for Canada Land Inventory, March, 1966.

used only when such terrain exists near, or in the same unit with another attraction).

- S Skiing areas: slopes and climatic conditions capable in normal seasons of providing skiing opportunities.
- O Upland with significant capability for wildlife viewing or hunting.
- M Upland area containing frequent small water bodies.
-
- Z Major permanent, non-urban, man-made structures of recreational interest.
- Q Patterns of topography and land form, or land and water, exhibiting interesting diversity of landscape.
- E Areas exhibiting representative and unique types of natural vegetation.
- L Natural landform features of particular interest - other than rock formation: such as hoodoos, slump zones, eskers, sand dunes, badlands, etc.
- H Historic site: an historic or prehistoric site or feature of a level of significance recognized by provincial or national government authorities.
- P Areas exhibiting pleasing or interesting diversity of cultural landscape patterns.
- R Rock formation of interest; such as caves, crevasses, exposed stratification, folding, fossil deposits, etc.
- V Viewpoint or overlook: a promontory or vantage point which provides a superior view of a feature, landscape or seascape; or a corridor or other area which provides frequent good viewing opportunities.

- G Glacier or area offering a glacier view or experience.
- F Waterfalls or rapids.
- X Recreation features of particular interest or use capability not included more specifically elsewhere.

Appendix 4FExamples of the Guidelines to the Use of
the Sub-Classes or Attraction Symbols¹C. CANOE TRIPPING

1. Definition: land fronting and providing direct access to waterways with capability for canoe tripping.
2. Associated Activities: primitive camping, angling, scenic viewing, wildlife hunting and viewing, gathering and collecting, and recording.
3. Characteristics:
 - 3.1. The waterway must be of sufficient length and average summer flow to enable its use for canoe tripping.
 - 3.2. Water quality is an important criterion.
 - 3.3. Variations in water course, i.e., in width, current, gradient and direction, are attributes, given reasonable navigability or portaging capability.
 - 3.4. Variations in shore and backshore, tree cover, profiles and materials are desirable and scenic terrain is an attribute.
 - 3.5. The absence of conspicuous evidence of human activity along part or all of the waterways is an attribute.
 - 3.6. Natural capability to support fish and wildlife is most desirable.
 - 3.7. The "C" symbol presents obvious mapping problems. The

¹ Canada Land Inventory, ARDA, Outline with Guidelines of the Canadian Land Capability Classification for Outdoor Recreation, February, 1967, Ottawa.

capability must be related to land but the activity takes place on a waterway which will normally extend beyond the land unit boundaries. The "C" symbol may be placed on any or all units fronting on or straddling the canoeing waterway, given natural capability for access from the unit to the waterway. The omission of the "C" from any unit on a waterway indicated nearby to have canoe tripping capability will not imply a change in the waterway capability.

4. Classification:

Canoe tripping is normally a highly dispersed activity. Therefore, any land unit fronting on or containing a portion of a canoeing waterway will not rank highly due to this feature.

4.1. As a dominant feature:

Class 4C is possible in very special circumstances on a long unit which fronts a stretch of canoeing water with outstanding capability for fast water canoeing with strongly complementary features suited to associated day-use activities.

Class 5C will indicate a waterway with very good to moderate capability for canoe tripping in most respects and without any serious limitations. A minimum waterway length of 10 miles is suggested. Capability for associated dispersed activities may be complementary. A full season of adequate water flow is desirable.

Class 6C will indicate moderate to poor capability.

- 4.2. As a subordinate feature: Canoe tripping could be a subordinate feature of a unit of any rank. It is likely to appear as a subordinate feature in Classes 4, 5, or 6.

Y. FAMILY BOATING

1. Definition: shoreland adjacent to water suitable for popular forms of family boating activity.
2. Associated Activities:
 - 2.1. Primary: boat launching, boat mooring, boat beaching, boat travel, water skiing, fishing, swimming, sailing.
 - 2.2. Secondary: viewing, sunbathing, picnicking, camping, gathering and collecting, cottaging.
3. Characteristics:
 - 3.1. Family boating is concerned with a variety of activities on small water bodies or sheltered portions of large water bodies. These include activities associated with both land and water. Family boating is essentially "day boating". Therefore, boat launching opportunities are important, as well as parking space for cars and trailers.
 - 3.2. Areas providing launching opportunities are focal points for family boating, particularly if the back-shore enables development of support facilities and road access.
 - 3.3. A shoreland unit lacking reasonable capability for overland access to the shore can have capability for

family boating provided it lends itself to boat beaching, landing or mooring. Availability of back-shore suited to use in associated activities by boating families arriving by boat will complement boat landing capability.

- 3.4. Normally a shoreland unit well suited to family boating use will have high capability with respect to other features such as a bathing beach, lodging or organized camping. Only when family boating is the obvious dominant use will the "Y" symbol be used in a dominant position.

4. Classification:

Family boating is normally a fairly dispersed type of activity and, therefore, any land unit fronting on a family boating waterway will not usually rank high due to this factor. However, there will be exceptions.

4.1. As a dominant feature:

Where a shoreland unit is highly suited to use as a boating headquarters, and is relatively unique in this respect on a waterway well suited otherwise to family boating, very intensive use of that unit could be generated and sustained because of family boating.

There are all degrees of this capability. Thus "Y" may be a dominant feature of units ranking from 1 to 6.

Class 1. An extreme instance of the condition described in 2.1. above may warrant class 1 ranking.

The water body or adjacent water area would

be excellent for family boating. The land unit would provide an ideal natural range of boat launching, beaching and mooring conditions on a large scale. Good natural capability for overland vehicle access, and extensive backshore suitable for complete support facilities would be necessary. The site would be unique on the water body, or within a wide radius if on a large water body.

Class 2. Ranking may apply to a unit ideally suited to boat launching, beaching and mooring, to provision of access and support facilities, located on a waterway with minor limitations to family boating, or with fairly frequent comparable sites; or to a unique site on an excellent boating waterway but with minor limitations in the site capability.

Class 3. Ranking may apply to a shoreland unit with particular capability for use as a focal point for family boating activity but in which one or more of the site, the backshore, the shore, or the water body, have moderate limitations.

Class 4. May apply to a shoreland fronting a water body suited to family boating activity which provides access between land and water for boating activity at fairly frequent intervals but which lacks individual locations or sites

with capability for more intensive use.

Class 5. Shorelands fronting water with family boating capability, but with only occasional moderately low capability sites for land to water access, may rank class 5Y.

Class 6. Shorelands, fronting water with family boating capability, but with very limited capability at infrequent sites for water to land access may rank class 6Y.

4.1.1. Shorelands classified as 5Y or 6Y will obviously have very limited or minimal capability for recreation activity other than as a possible stopping place for boating parties with moderate to severe limitations.

4.2. As a subordinate feature:

Shoreland units fronting a waterway with capability for family boating and which provide access between land and water for family boating purposes may indicate family boating as a subordinate feature of capability classes ranking from 1 to 6, depending on the capability of the unit for other activities.

APPENDIX 5

1964 Shoreline Inventory System

Photo No. 1



Long Lake YC 229-7

Code Description - taken from original 1964 field photographs
(photo No. YC 229-7 Long Lake, Saskatchewan).

- A. Boulder beach with gravel and grass behind, 30-40' loamy bank behind, above is a 100 yard wide terrace.
- B. Similar to A but narrower beach (up to 35') and dense offshore weeds.
- C. Beach and boat launching site developed by Saskatchewan village. Parking space on terrace, 25 slope. Offshore 6% slope and stony with mud. Unsuitable for beaching boats.
- D. Terrace usually 100 yards wide.
- E. Some clearing of boulder beach by cottages on terrace 20-30' above water.
- G. Usually dense weeds offshore, boulder beach 20-40' wide to bank. Boat houses built into bank.
- H. Dance hall, Saskatchewan beach village.
- J. Developed public beach - imported sand and boulders cleared, store cottages on terrace behind.

1964 Shoreline Inventory System

Photo No. 2



Long Lake YC 226-41

Code Description - taken from original 1964 field photographs
(photo No. YC 226-41 Long Lake, Saskatchewan).

- A. Boulder, gravel and sand shoreline about 50 feet in width and 10% slope; high 100% slope dissected valley wall; rocks offshore.
- B. Cottage on valley wall or on small terraced areas.
- C. Gravel and sand material onshore and offshore, onshore slope of 5%, offshore slope of 8%.
- D. Flat bottomed coulee where exists a spring; due to poor drainage, cottage is built on hillside.

1965-67 Shoreline Inventory System

Photo No. 3



Carlyle Lake
Code Appendix 3F

A 16500-147
page 173

1965-67 Shoreline Inventory System

Photo No. 4

Kenosee Lake
Code Appendix 3FA 16502-98
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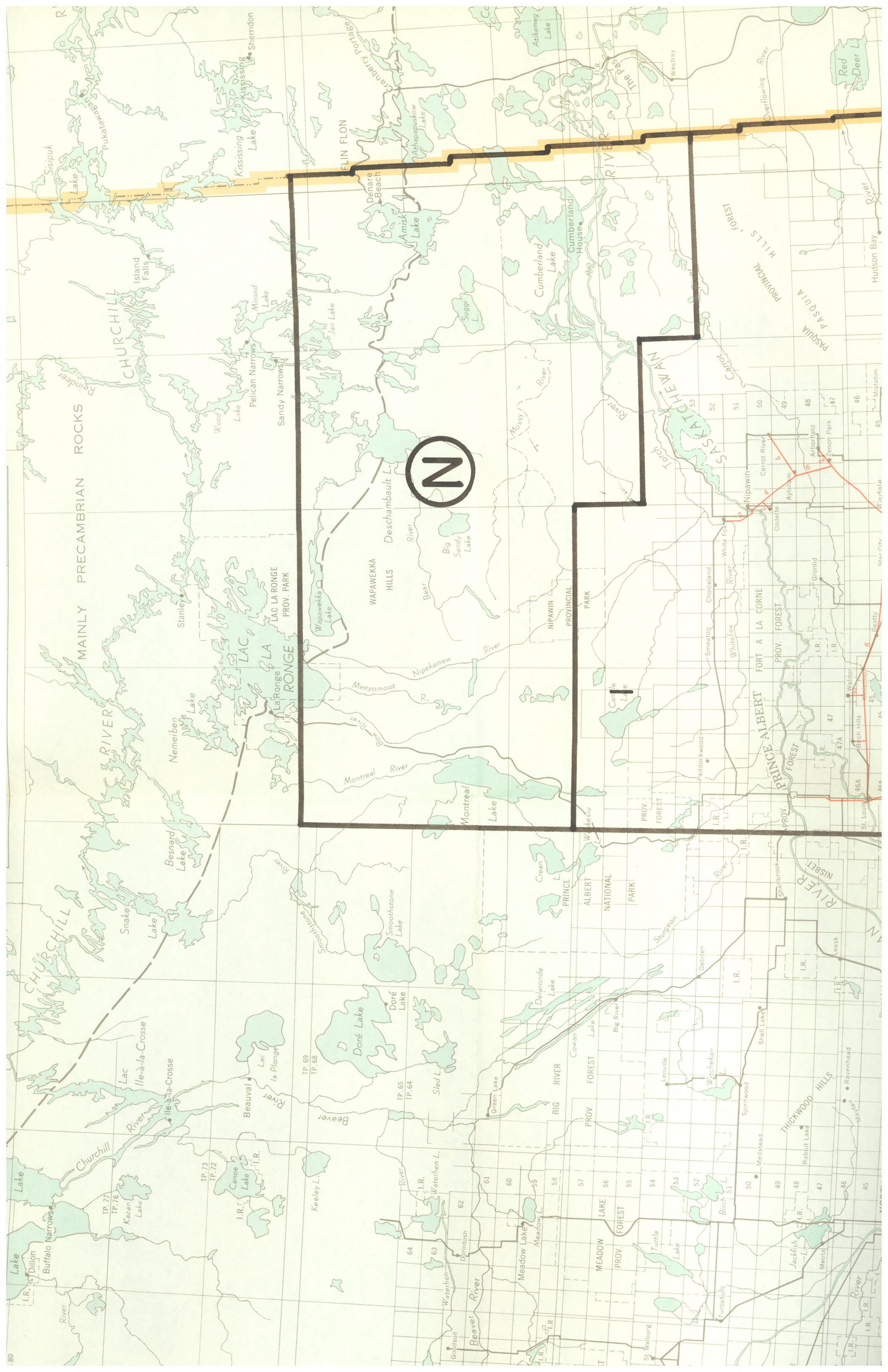
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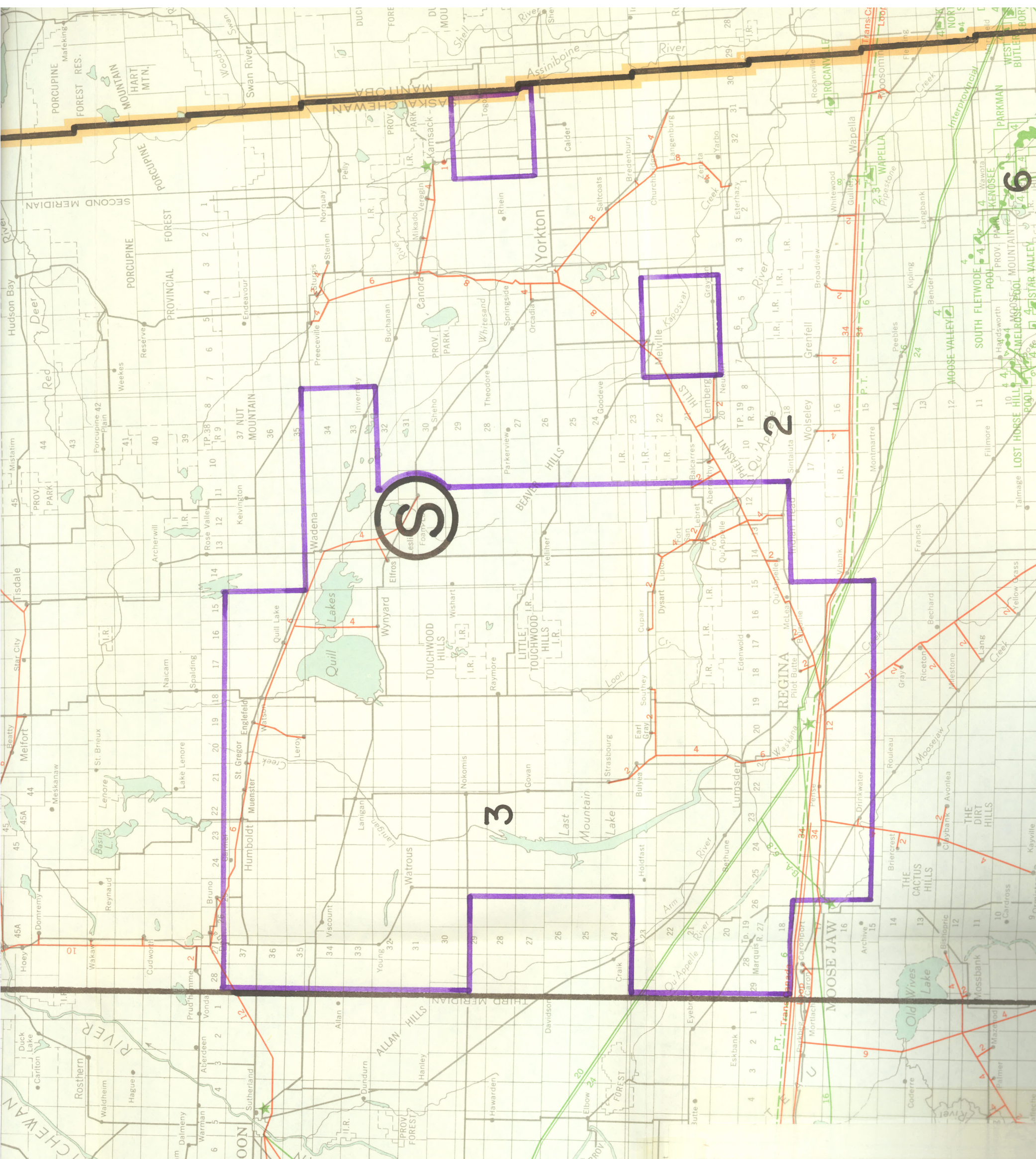
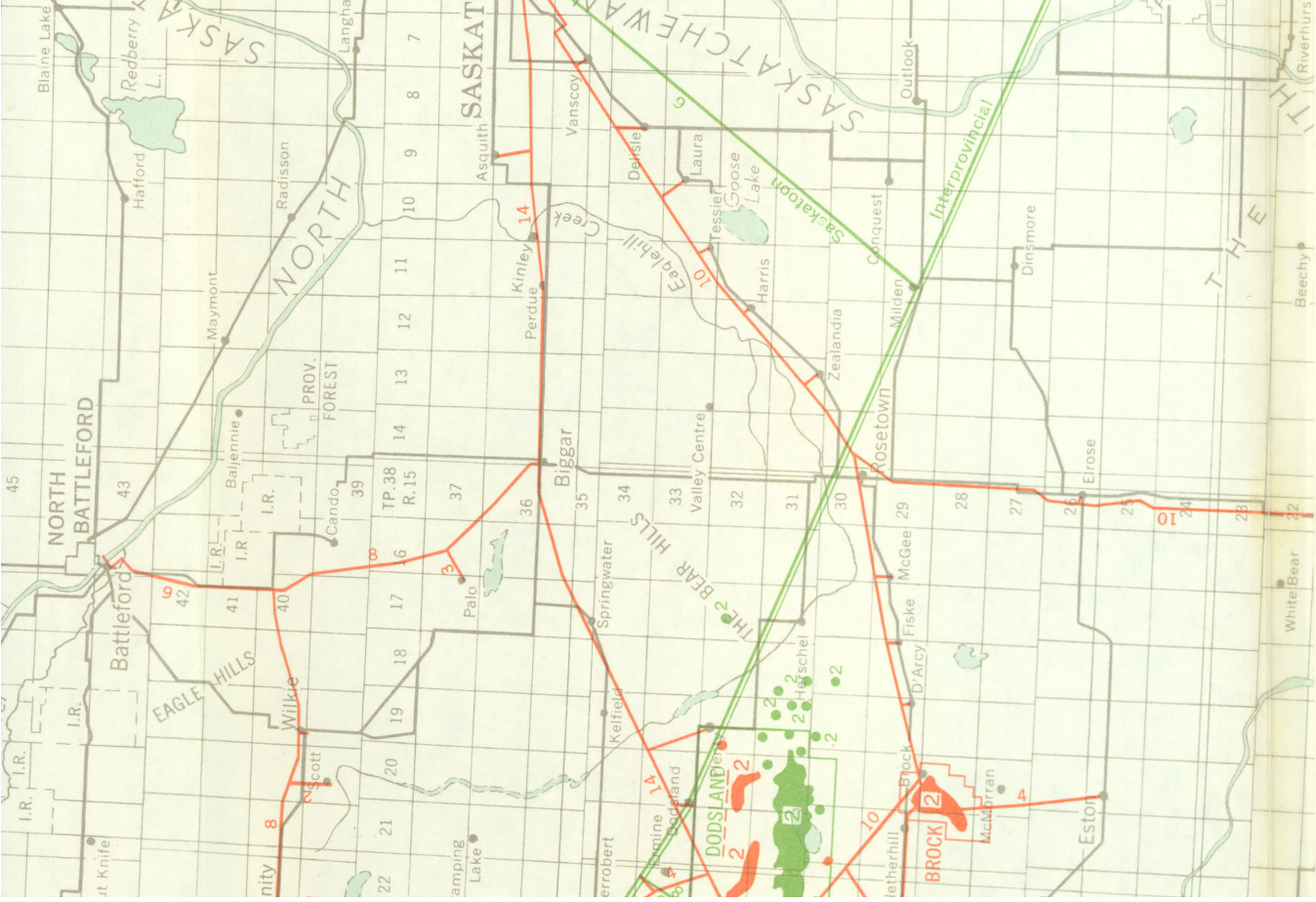
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Saskatoon Star-Phoenix, August 28, 1965, page 14.





KEY

Thesis area

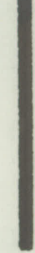
Northern Region

Southern Region

1964 pilot study area

1965 and 1966 study area

Areas discussed in chapter 8



KEY

Thesis area

Northern Region

Southern Region

1964 pilot study area

1965 and 1966 study area

Areas discussed in chapter 8

Candle Lake

Qu'Appelle Valley

Long Lake (Last Mountain)

Big Muddy Valley

Carlyle Coulees

Moose Mountain

Fife Lake

NIES

Inches

LIQUID LINES

Pipe Line Ltd.

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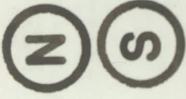
an Pipe Line Company
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Lines Limited

1 2 3 4 5 6 7



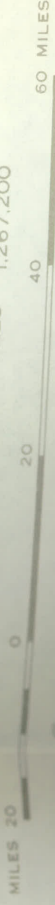
MAP IO44A
(EIGHTH EDITION)

SASKATCHEWAN AND WESTERN MANITOBA

SHOWING OIL AND GAS FIELDS AND OIL AND GAS DISCOVERIES

INFORMATION TO APRIL 1, 1965

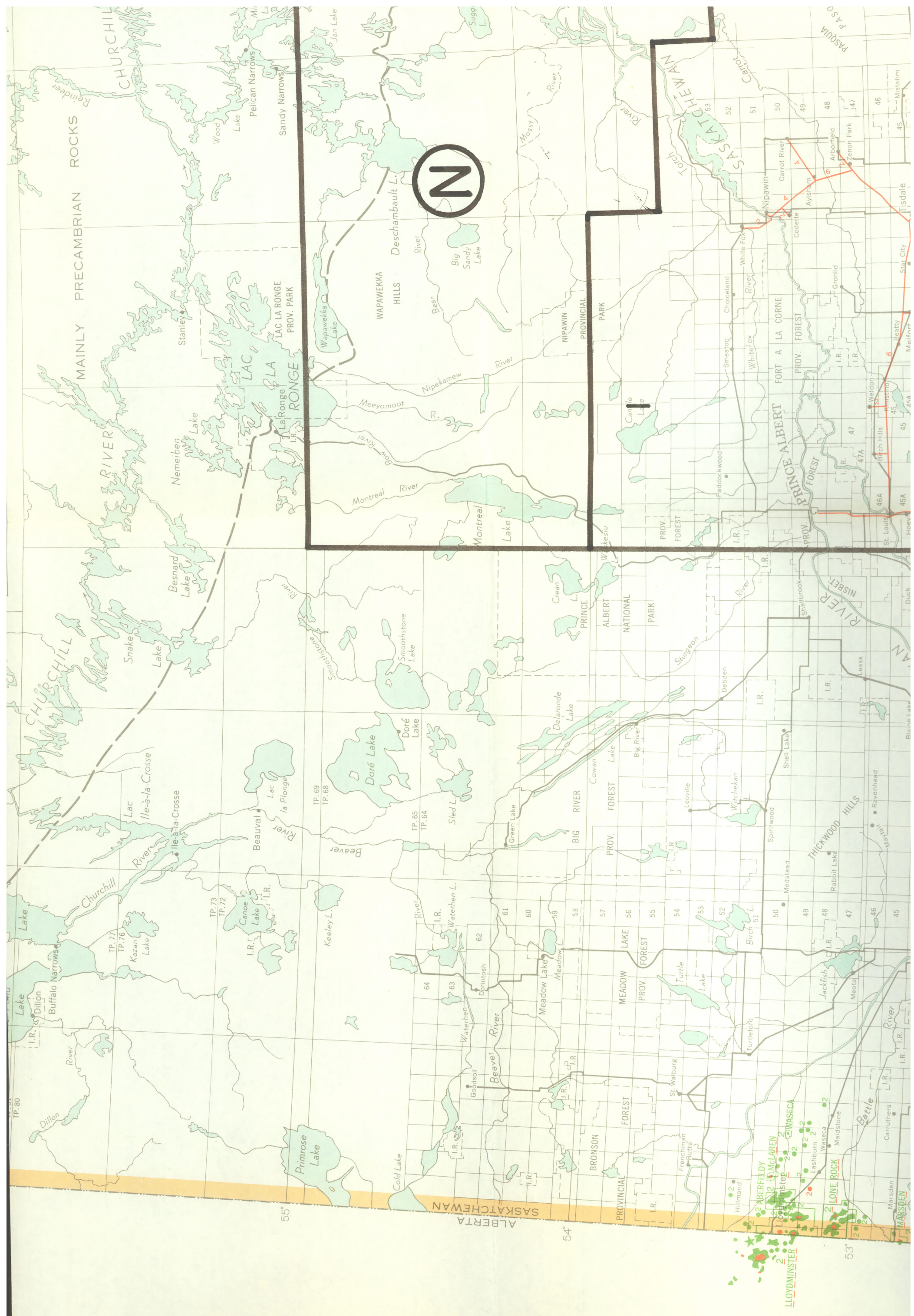
SCALE: ONE INCH TO TWENTY MILES = $\frac{1}{1,267,200}$

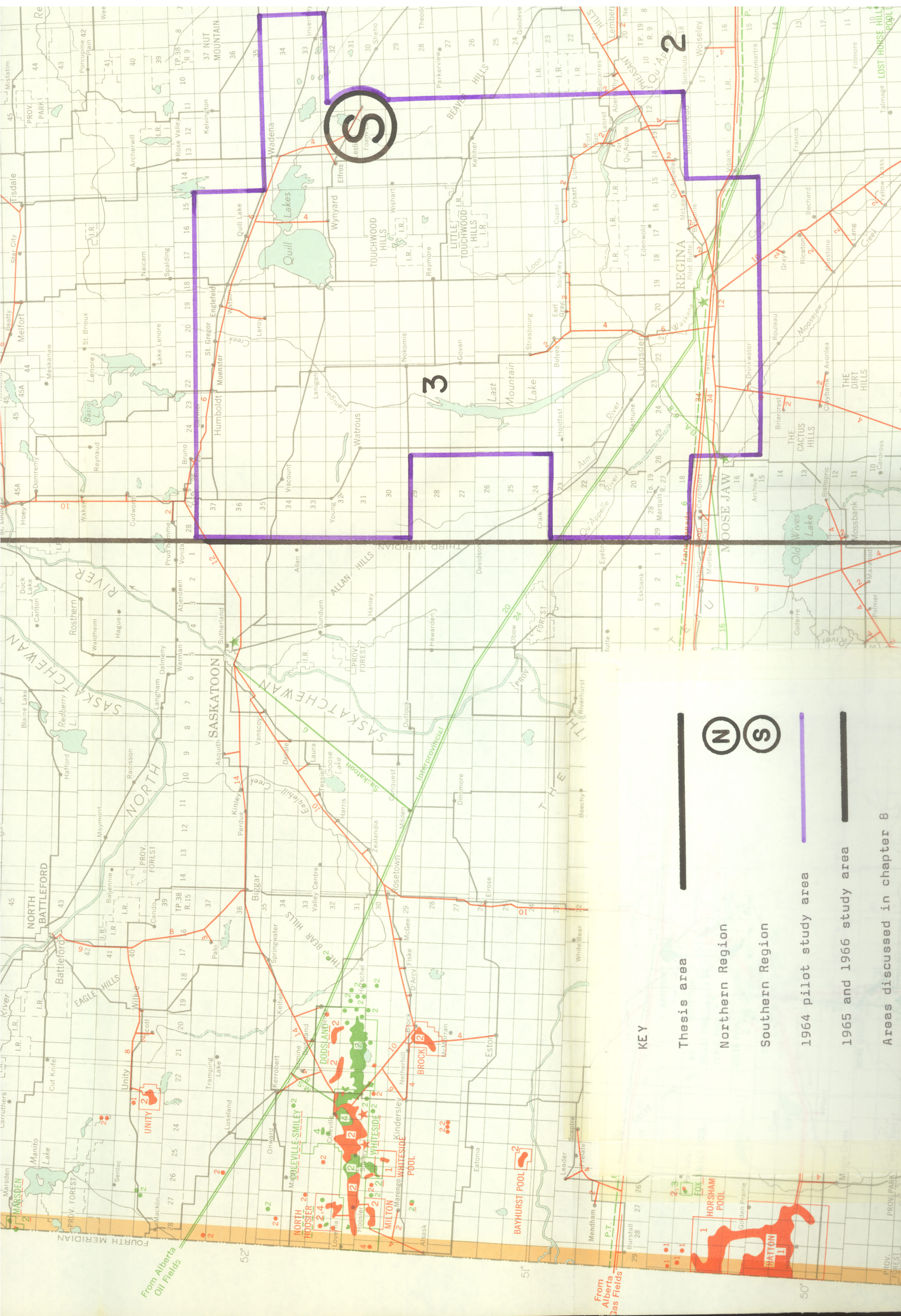


Cartography by the Geological Survey of Canada, 1965

- Oil Field or Pool . . . MID
- Oil Discovery *
- Oil and Gas Field
- Provincially Defined Oil
- Provincially Defined Gas
- Oil Pipeline
- Natural Gas Liquids Pipe
- Multiple Parallel Oil an
- Crude Oil Refinery
- * Disc

STRATIGRAPHIC
Shown by red or
1. Upper Cretac
2. Lower Cretac
3. Jurassic
4. Mississippian
Compiled by Brian Ma
provincial authorities





Thesis area

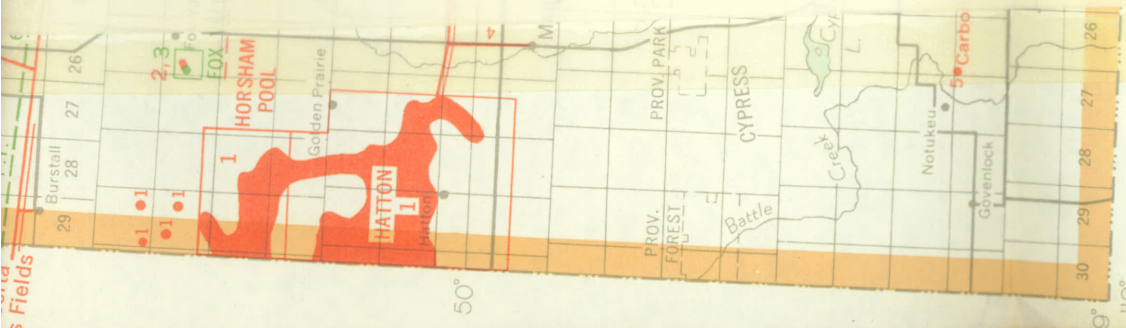
Northern Region

Southern Region

1964 pilot study area

1965 and 1966 study area

Areas discussed in chapter 8



KEY

Thesis area

Northern Region

Southern Region

1964 pilot study area

1965 and 1966 study area

Areas discussed in chapter 8

Candle Lake

Qu'Appelle Valley

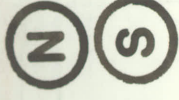
Long Lake (Last Mountain)

Big Muddy Valley

Carlyle Coulee

Moose Mountain

Fife Lake



1 2 3 4 5 6 7

COPIES OF THIS MAP MAY BE OBTAINED FROM THE DIRECTOR, GEOLOGICAL SURVEY OF CANADA, OTTAWA, ONTARIO

PIPELINE COMPANIES

Diameter of Pipeline in inches

CRUDE OIL AND NATURAL GAS LIQUID LINES

B.A.	B-A Saskatchewan Pipe Line Ltd.
Interprovincial	Interprovincial Pipe Line Company
K.P.	Key Pipe Line Co. Ltd.
M-S	Mid-Saskatchewan Pipelines Dept., Royalite Oil Company, Limited
P.T.	Petroleum Transmission Company
P.P.	Producers Pipelines Ltd.
Saskatoon	Saskatoon Pipe Line Company, Ltd.
S.S.P.	South Saskatchewan Pipe Line Company
T.P.	Trans-Prairie Pipelines Ltd.
W.P.	Westspur Pipe Line Company

GAS PIPELINES

Saskatchewan Power Corporation operates all the natural gas pipeline systems for the gathering, transmission and distribution of natural gas in the province of Saskatchewan

Inter-City Gas Limited
Trans-Canada Pipe Lines Limited

MAP IO44A
(EIGHTH EDITION)

SASKATCHEWAN AND WESTERN MANITOBA

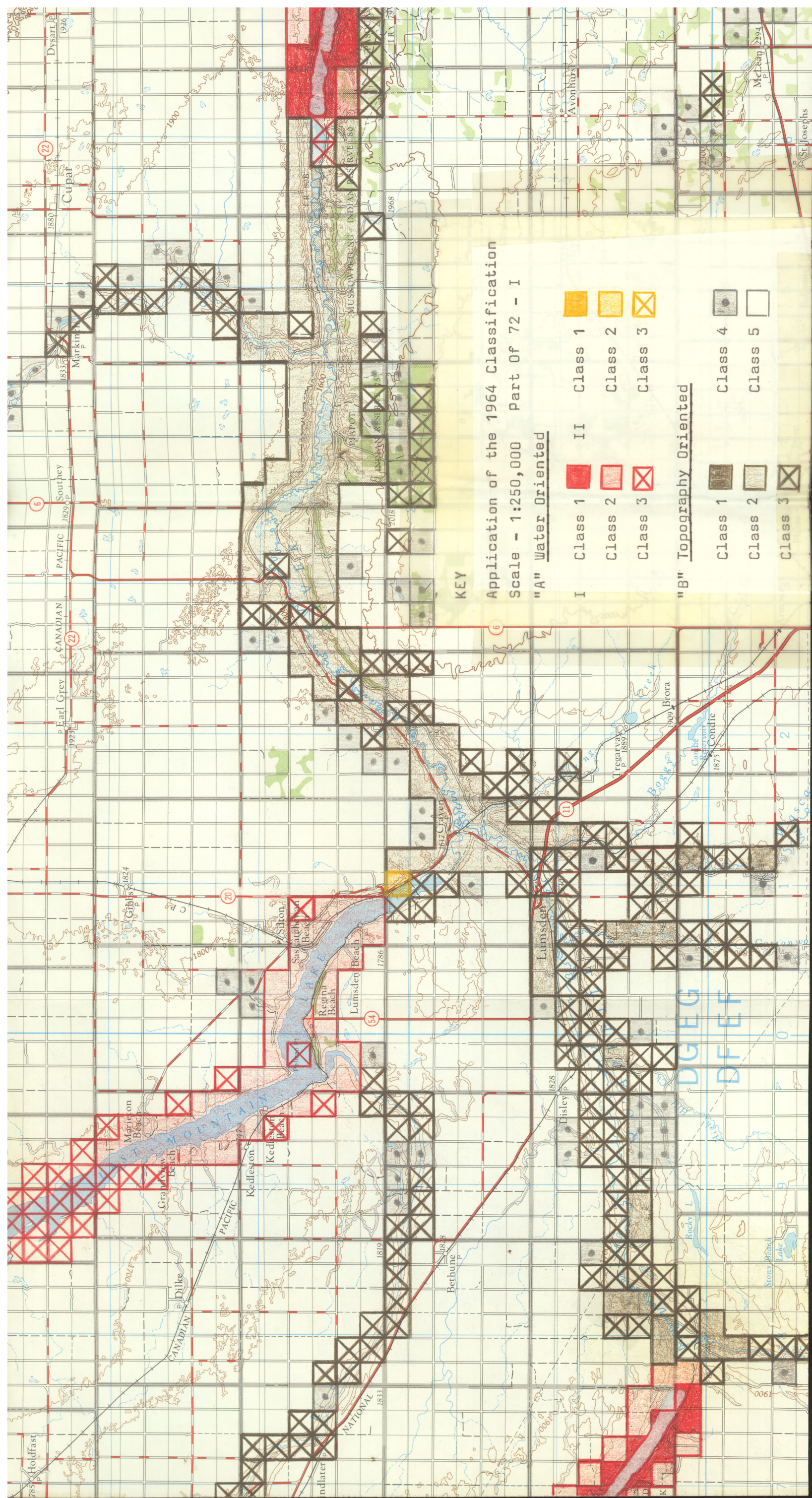
SHOWING
OIL AND GAS FIELDS
AND
OIL AND GAS DISCOVERIES

INFORMATION TO APRIL 1, 1965

SCALE: ONE INCH TO TWENTY MILES = $\frac{1}{1,267,200}$

MILES 20 0 20 40 60 MILES

Cartography by the Geological Survey of Canada, 1965



KEY

Application of the 1964 Classification
Scale - 1:250,000 Part Of 72 - I

"A" Water Oriented

- | | | | |
|---|---------|----|---------|
| I | Class 1 | II | Class 1 |
| | Class 2 | | Class 2 |
| | Class 3 | | Class 3 |

"B" Topography Oriented

- | | |
|---------|---------|
| Class 1 | Class 4 |
| Class 2 | Class 5 |
| Class 3 | |

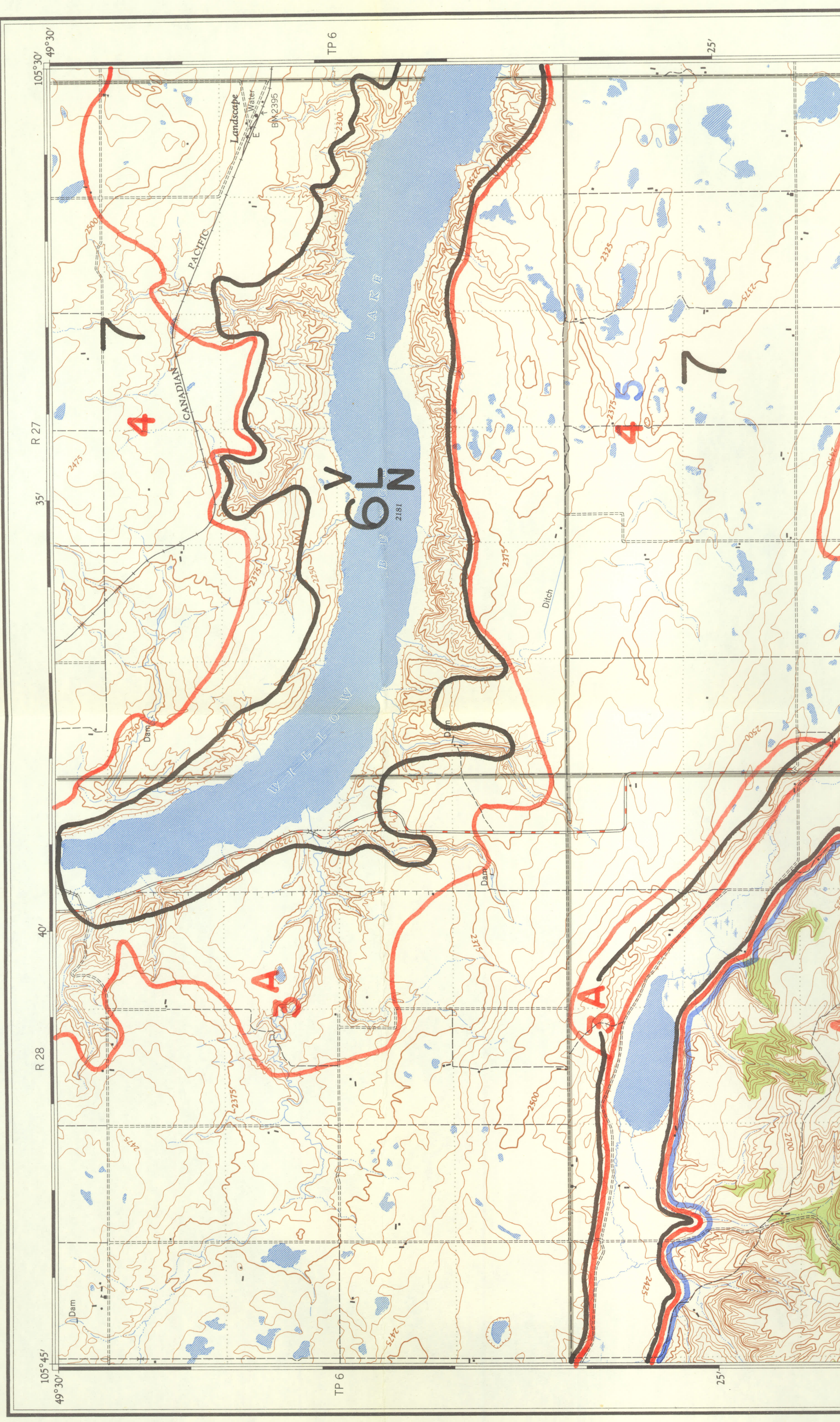
CANADA
MINES AND TECHNICAL SURVEYS
SURVEYS AND MAPPING BRANCH

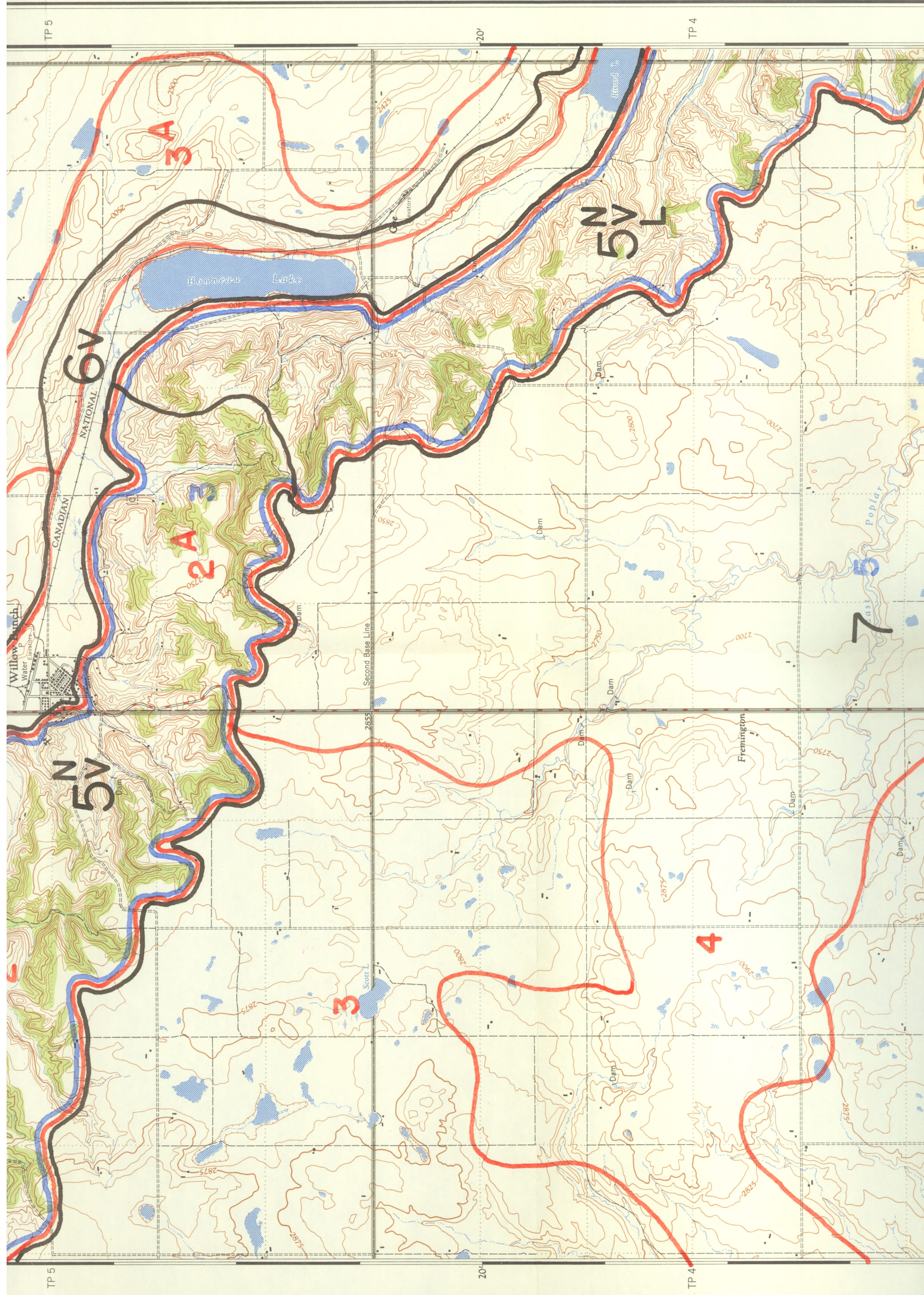
FIRST EDITION

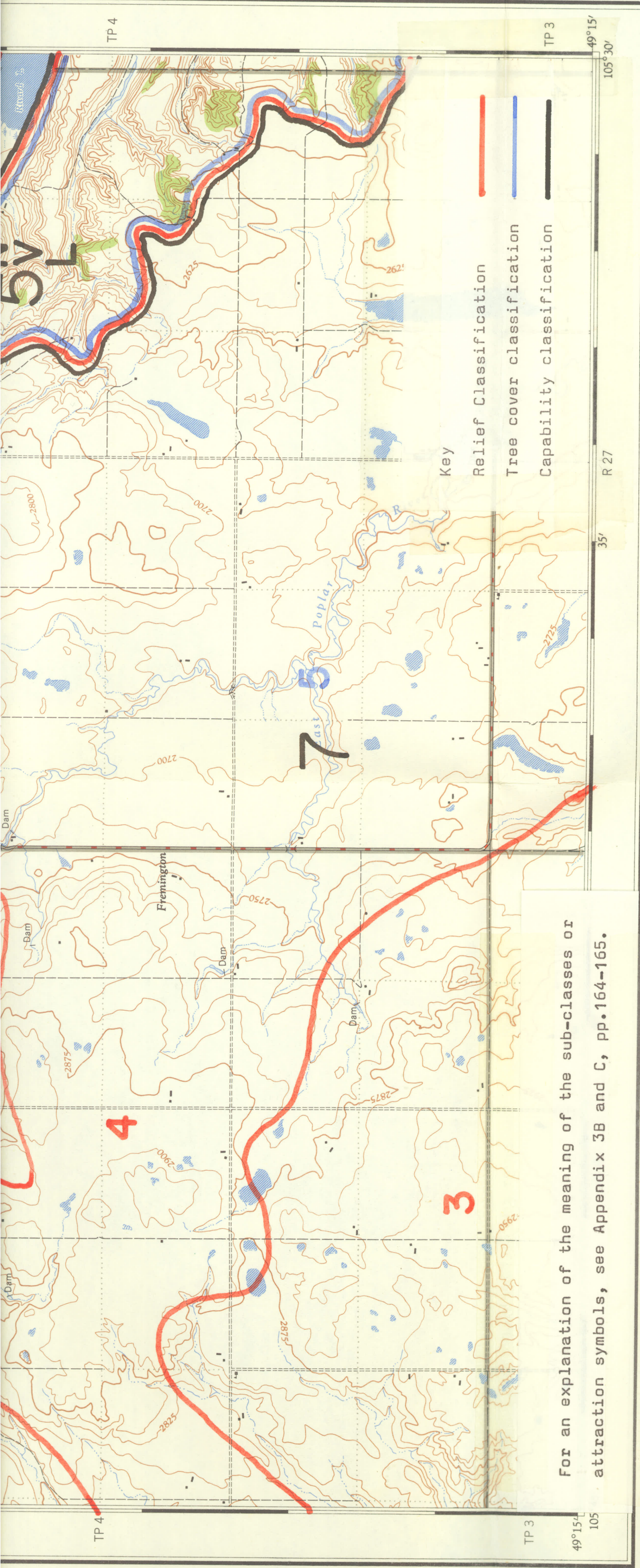
CANADA SHEET 72 H/5 EAST HALF

1:50,000

NATIONAL TOPOGRAPHIC SERIES







For an explanation of the meaning of the sub-classes or attraction symbols, see Appendix 3B and C, pp.164-165.

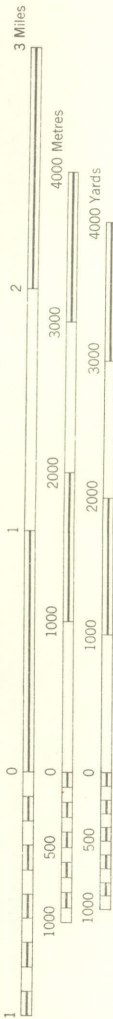
Produced by the Surveys and Mapping Branch,
Department of Mines and Technical Surveys, 1954,
from air photographs taken in 1947.
Printed by the Army Survey Establishment, R.C.E.,
Department of National Defence, 1955.

WILLOW BUNCH

SASKATCHEWAN
WEST OF SECOND MERIDIAN

SCALE 1:50,000

1.25 inches to 1 mile approximately



CONTOUR INTERVAL 25 FEET

Elevations in Feet above Mean Sea Level
North American Datum 1927

Copies may be obtained from the Map Distribution
Office, Department of Mines and Technical Surveys,
Ottawa, at 25 cents each.

REFERENCE

- Roads:
- hard surface, all weather.... more than 2 lanes 2 lanes
 - hard surface, all weather.... less than 2 lanes
 - loose surface, all weather.... 2 lanes or more less than 2 lanes
 - loose surface, dry weather....
 - winter; cart track..... Winter road
 - trail or portage.....
 - Railway: normal gauge, single track.....
 - Boundaries:
 - provincial (monument).....
 - township surveyed; unsurveyed....
 - Section line.....

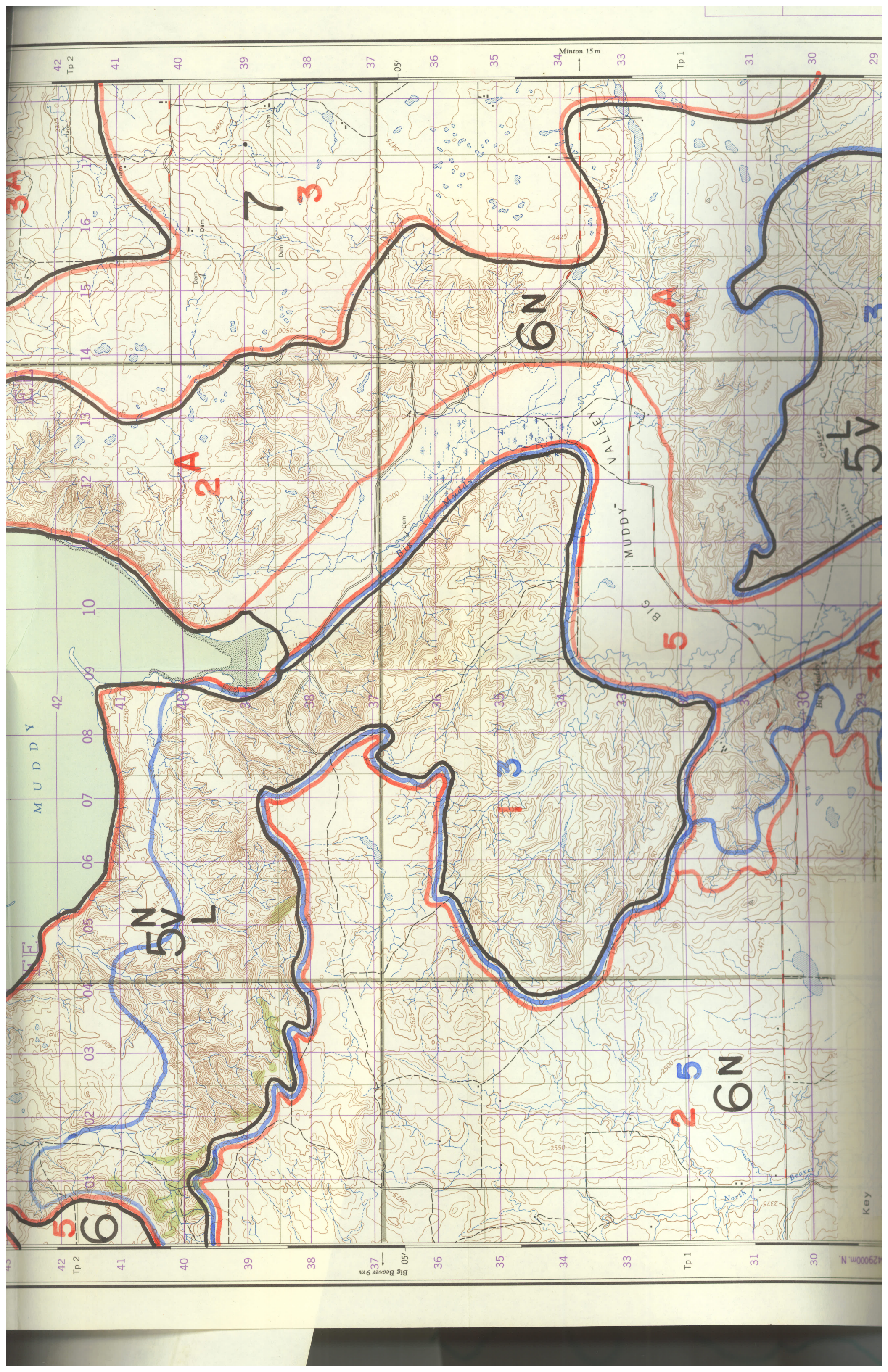
REFERENCE

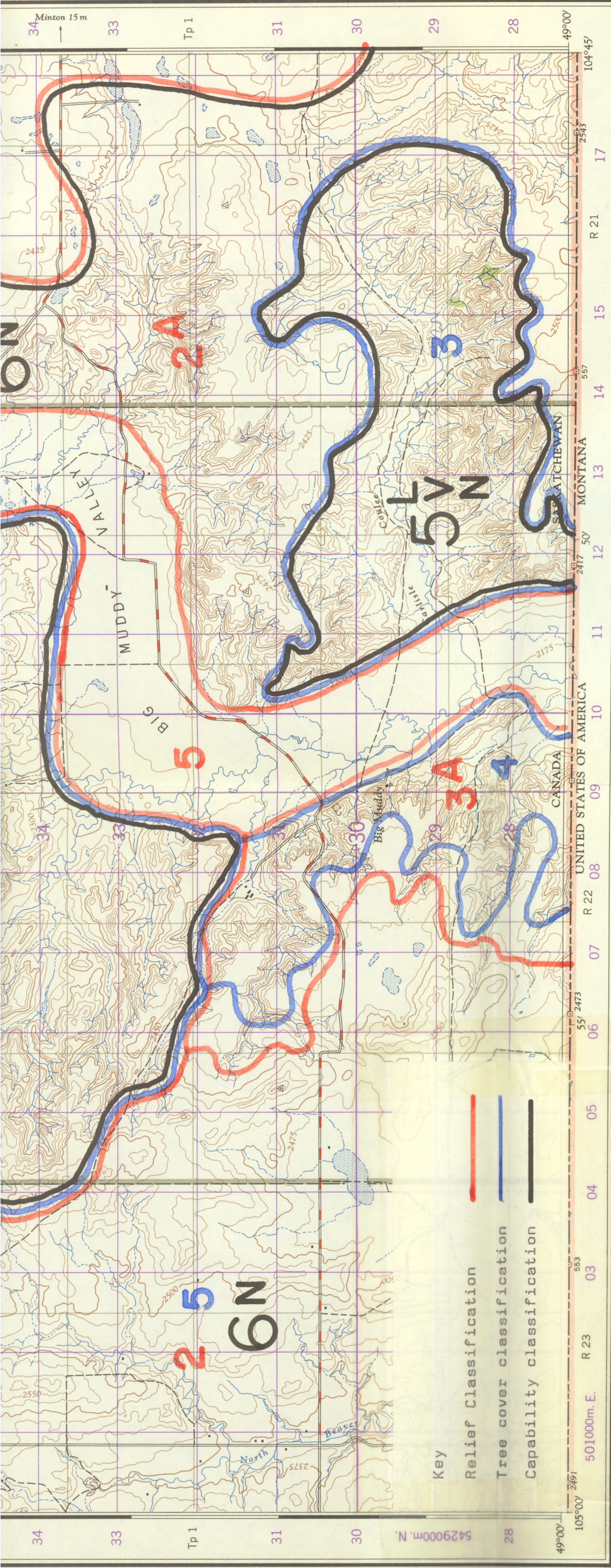
- Power transmission line.....
- Telephone line.....
- Horizontal control point.....
- Building.....
- School; Post Office.....
- Church; Cemetery.....
- Streams:
- intermittent or dry.....
- indefinite.....
- Marsh or Swamp.....
- Contours.....
- Forest.....

MAGNETIC DECLINATION 16°31' EAST
AT CENTRE OF MAP 1954
Annual magnetic change 3'30" westerly

106°30' 49°45' 7
LIMERIC
WOOD MOUNTA
CANOPU
INC
49°30' 106°30'

WIL
72F





Compiled, 1959, by the SURVEYS AND MAPPING BRANCH, DEPARTMENT OF MINES AND TECHNICAL SURVEYS, from air photographs taken in 1955. Field surveys 1951. Culture check 1959. Printed 1962.

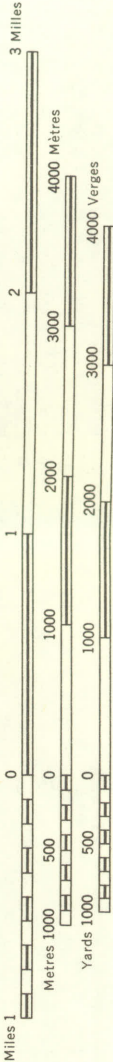
Compilée en 1959, par la DIRECTION DES LEVÉS ET DE LA CARTOGRAPHIE, MINISTÈRE DES MINES ET DES RELEVÉS TECHNIQUES, d'après les photographies aériennes prises en 1955. Travaux exécutés sur le terrain en 1951. Vérification des ouvrages 1959. Imprimée en 1962.

WEST OF SECOND MERIDIAN - OUEST DU DEUXIÈME MÉRIDIEN

MINTON SASKATCHEWAN

SCALE 1:50,000 ÉCHELLE

Roads:		Routes:	
hard surface, all weather	more than 2 lanes plus de 2 voies	pavée, toute saison	2 lanes 2 voies
hard surface, all weather	less than 2 lanes moins de 2 voies	pavée, toute saison	moins de 2 voies
loose surface, all weather	2 lanes or more 2 voies ou plus	de gravel, toute saison	less than 2 lanes moins de 2 voies
loose surface, dry weather		de gravel, période sèche	
cart track		de terre	
trail or portage		sentier ou portage	
Railway, normal gauge, single track		Chemin de fer (voies uniques) (écartement normal)	sidings voies d'écartement
Horizontal control point, with elevation		Point géodésique avec cote	station gare
Bench mark, with elevation		Repère de nivellement avec cote	454 Δ BM 157 →



CONTOUR INTERVAL 25 FEET
Elevations in Feet above Mean Sea Level
North American Datum 1927
Transverse Mercator Projection

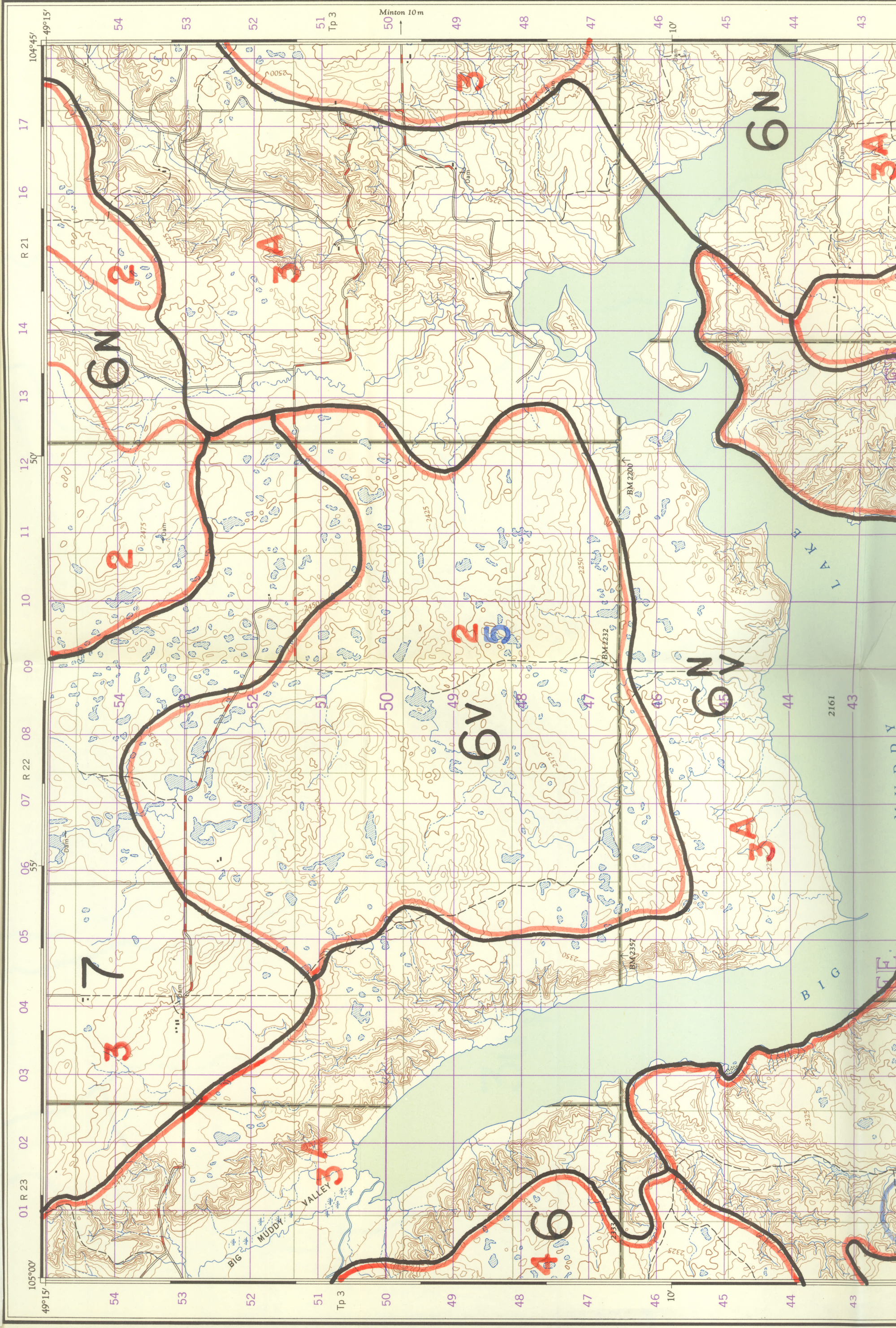
ÉQUIDISTANCE DES COURBES: 25 PIEDS
Élévations en pieds au-dessus du niveau moyen de la mer
Réseau géodésique nord-américain unifié (1927)
Projection transverse de Mercator

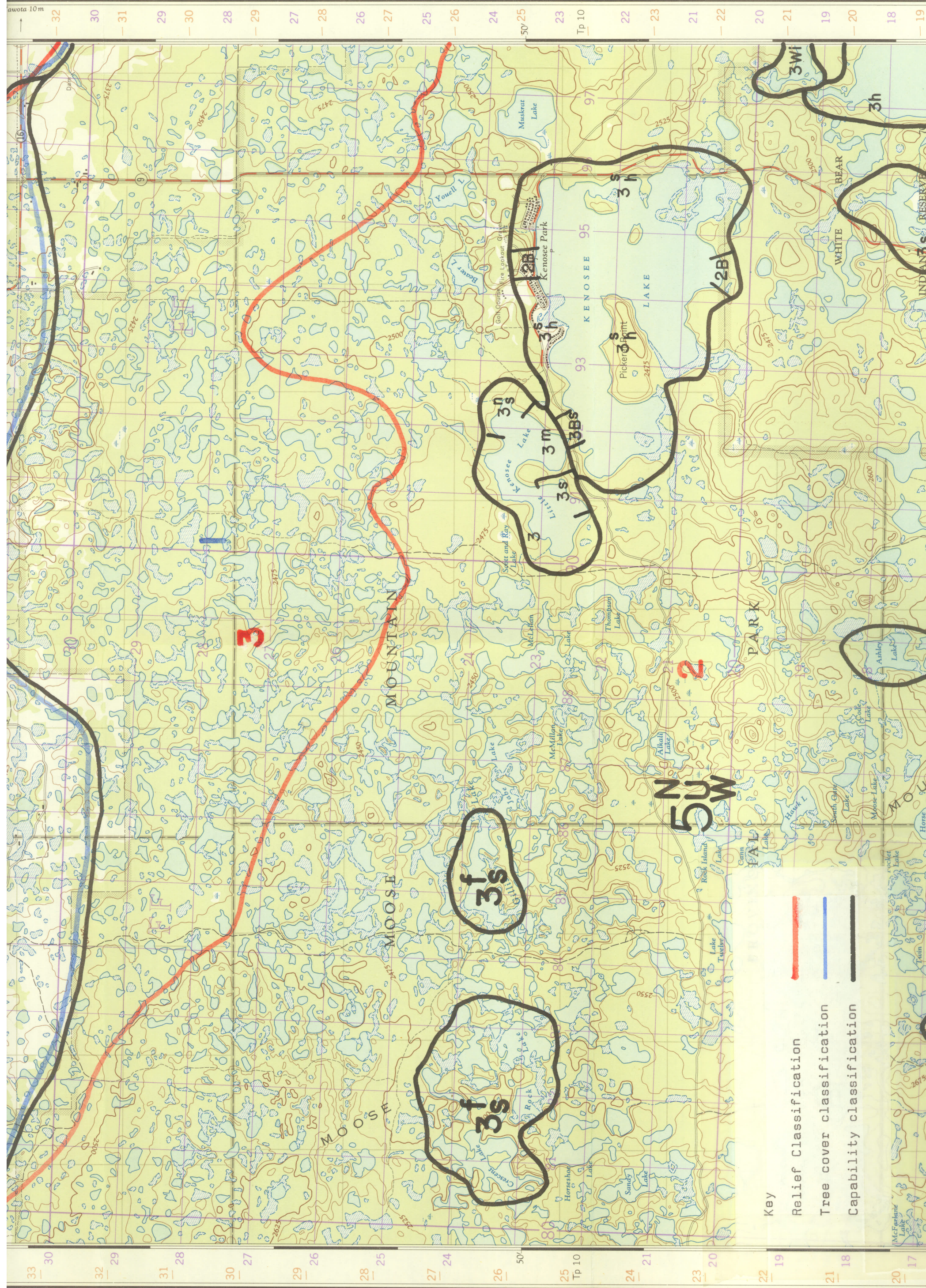
MAGNETIC DECLINATION 15° 44' EAST
AT CENTRE OF MAP 1962
Annual change (decreasing) 3'

DÉCLINAISON MAGNÉTIQUE AU CENTRE
DE LA FEUILLE EN 1962: 15° 44' EST
Variation annuelle (décroissante) 3'

Building	Bâtiment	Barn	Grange
School	École	Post Office	Bureau de poste
Church	Église	Cemetery	Cimetière
Mine or Open cut	Mine ou fosse à ciel ouvert	Phare	★
Lighthouse	Phare	Ligne de transport d'énergie	
Power transmission line	Rivière avec pont	Rivière avec pont	
River with bridge	Stream, intermittent or dry	Cours d'eau intermittent, ou à sec	
Stream, intermittent or dry	Lake intermittent; indefinite	Lac intermittent; rive imprécise	
Lake intermittent; indefinite	Marsh or Swamp	Marais ou marécage	
Marsh or Swamp	Depression contours	Courbes de cuvette	

For an explanation of the meaning of the sub-classes or attraction symbols, see Appendix 3B and C, pp.164-165.





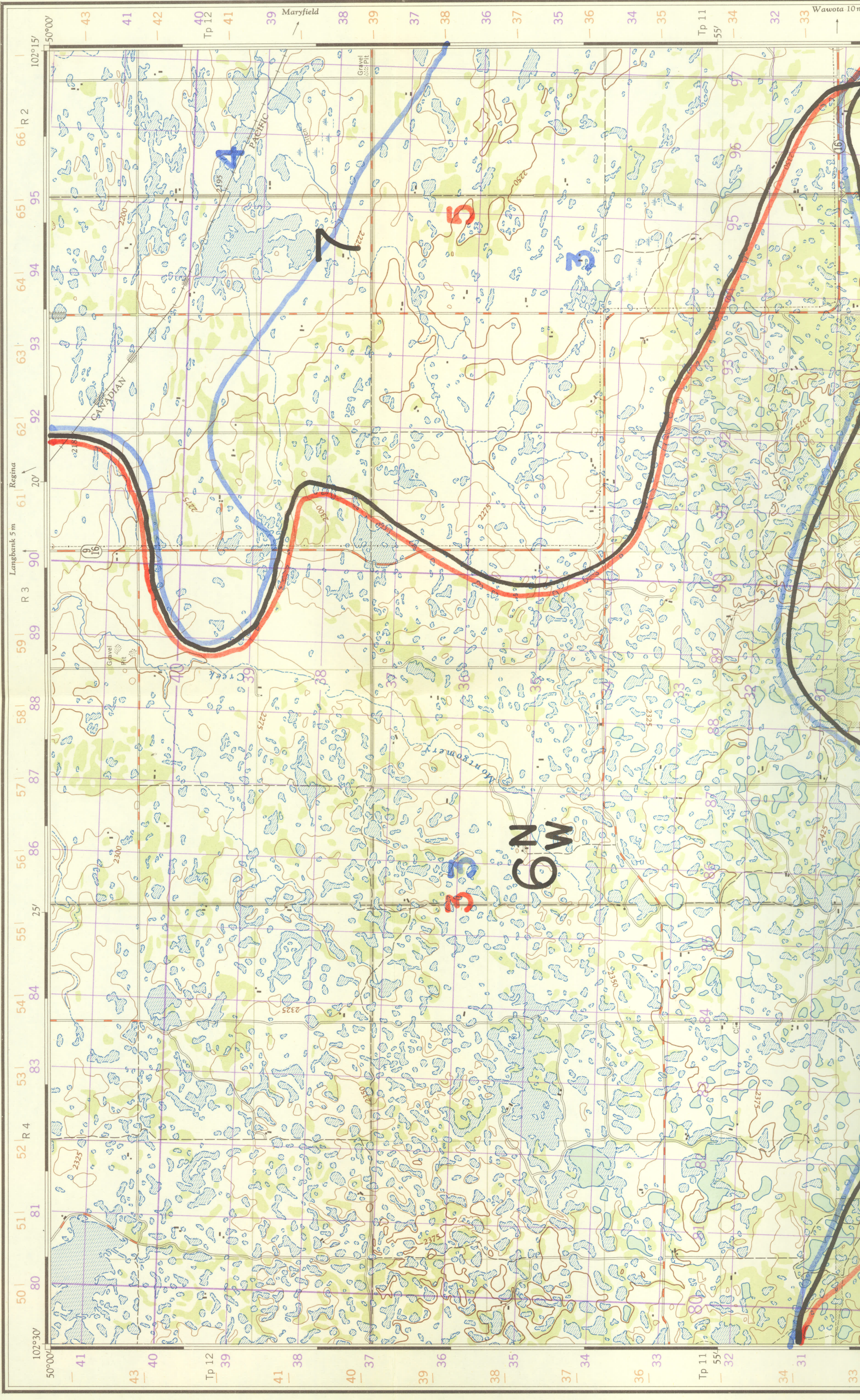
CANADA

62 E/16 W

1:50,000

EDITION 1

62 E/16 W



PROVISIONAL MAP

72 H/4 E

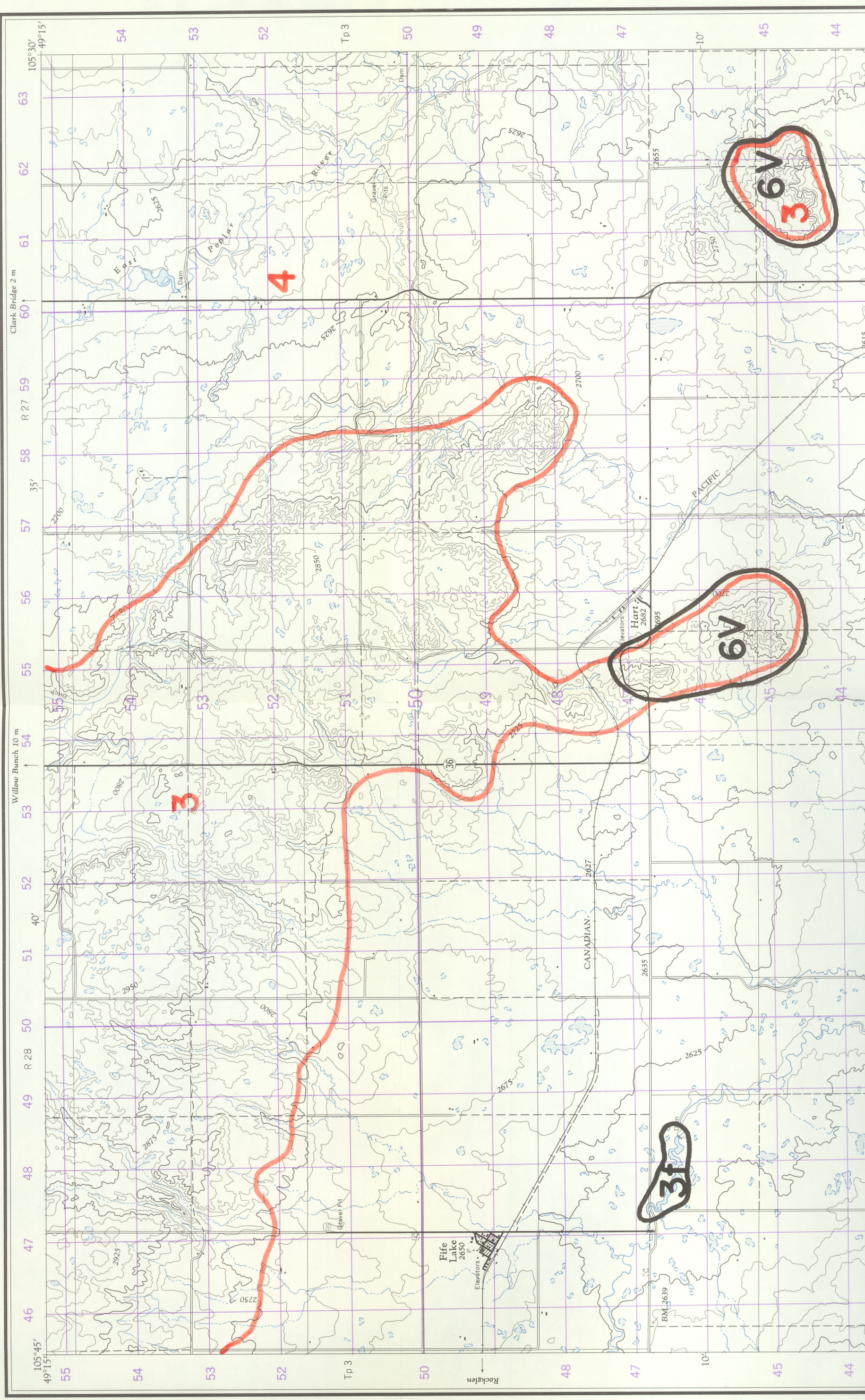
1:50,000

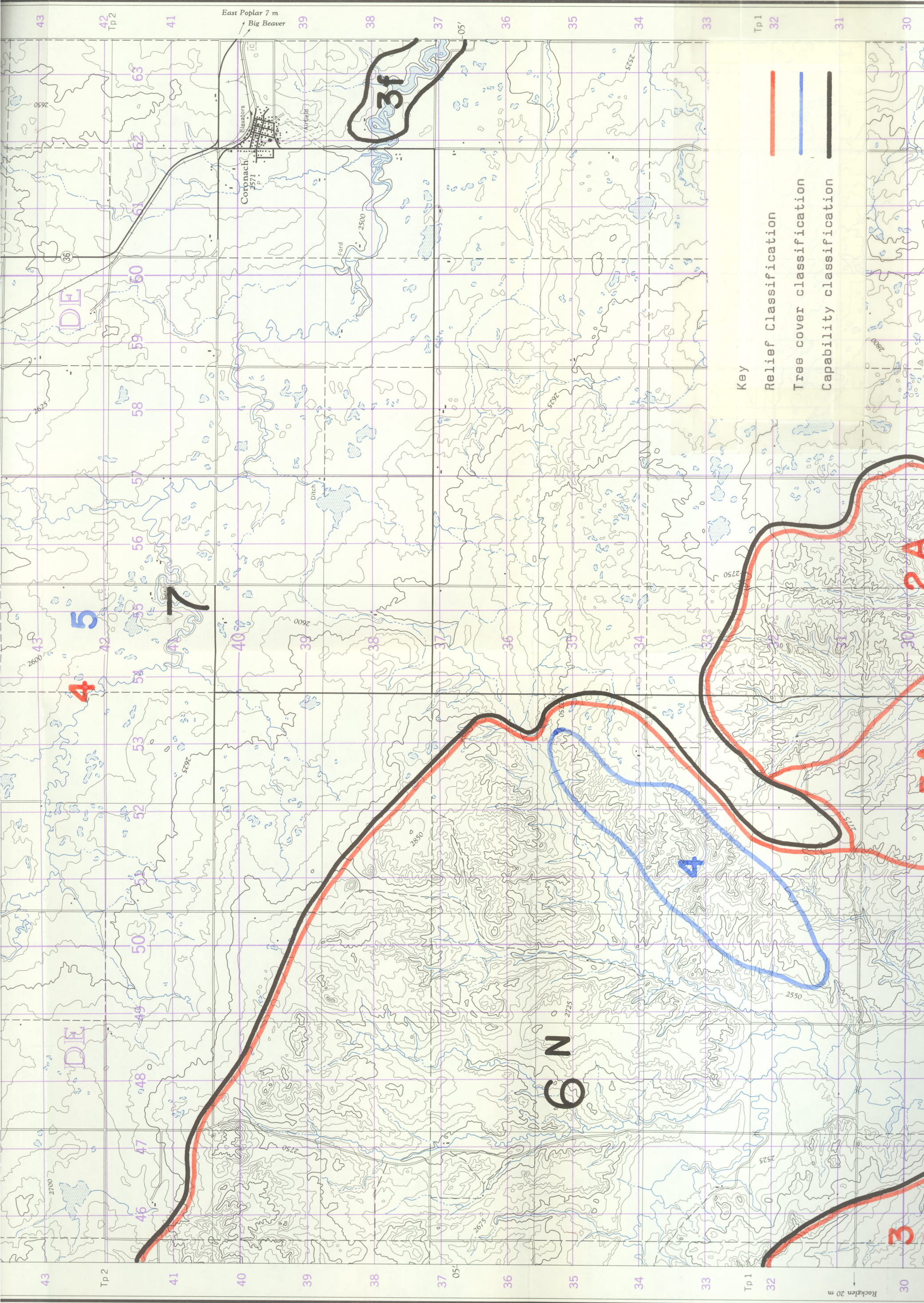
CANADA

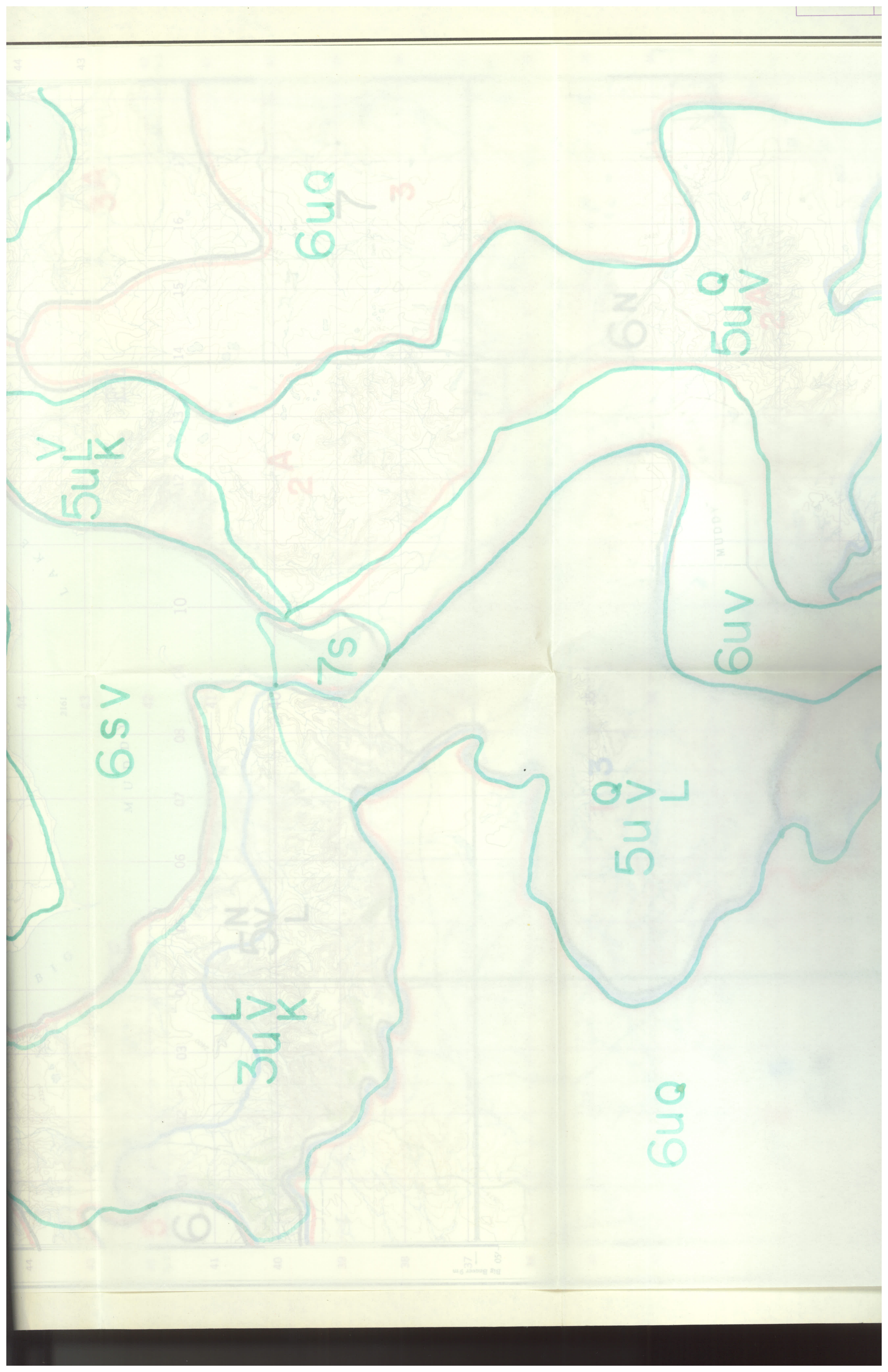
CARTE PROVISOIRE

EDITION 1

72 H/4 E







6sv

5ulv

3ulv

5ulv

7s

6uq

3

2A

6uv

5uq

5uq

6uq

6N

2A

CANADA

72 H/2 W

1:50,000

EDITION 1

72 H/2 W

