

AN ANALYSIS OF THE EFFECTIVENESS OF THE MANITOBA
ENVIRONMENTAL ASSESSMENT AND REVIEW PROCESS:
A CASE STUDY OF POST-CONSTRUCTION
BIO-PHYSICAL IMPACTS

By

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EXECUTIVE SUMMARY

During the summer and fall of 1981, research was carried out by Kent Simmons of the Natural Resources Institute for the Manitoba Department of Consumer and Corporate Affairs and Environment, Environmental Assessment and Review Process (EARP). The research was undertaken to determine the effectiveness of the Manitoba EARP with respect to its assessment of the Bio-physical environment. The research was commissioned by N.B. Brandson, Chief of Environmental Assessment and Review Process.

For many years most governments have recognized the need for sound environmental planning to be incorporated into industrial and public funded development. Many governments have responded to the need by passing legislation or proposing policies that established agencies within the government to promote environmental planning. The mere existence, in government, of these agencies has, to some extent, pacified the demands of ecologically concerned citizens. There are those, however, who would suggest that our confidence in these environmental assessment processes is not well founded and that perhaps it is time for a closer look at their merits.

For this reason, this research was undertaken.

The Manitoba EARP was reviewed in two ways. The first method of review was to compare the theories

and principles of the present Manitoba process, to the concepts that have appeared in the recent literature on environmental impact assessment. The second method of review was an investigation of the actual mechanics of the present process, as illustrated by case studies of four provincial projects, with the intent of determining how these mechanics deviate from the theoretical ideal assessment process.

The four provincial projects that were reviewed in this study are:

1. Vermillion Dam Reservoir Project
2. Moose Lake Road
3. The Pas-Squaw Rapids 230 kV Hydro Transmission Line
4. Marshy Point Road.

The results of this evaluation of the Manitoba EARP, show that while the process embodies in principal, most of the recognized concepts of impact assessment, many of these concepts are insufficiently addressed. For example, the production and use of baseline data in bio-physical impact assessment and public input into the assessment process are two important concepts that appear to be deficient in the Manitoba process.

Recent research into environmental assessment has produced new innovations which enhance the usefulness of

the impact assessments. Such concepts as the preparation of assessments, according to a predetermined structural framework or "ecological reference state" has been shown to provide a basis for comparison and for establishing scientific credibility. The Manitoba process does exhibit a degree of flexibility with respect to what information any given assessment must contain. This flexibility is very useful in providing for the efficient use of personnel and resources.

Some major areas that were identified as requiring much more attention, were the lack of follow-up monitoring of environmental effects of approved projects, and the general lack of understanding on the part of both government personnel and the general public, as to the purpose and procedures of EARP.

As a result of this research into the effectiveness of the Manitoba Environmental Assessment and Review Process, it is recommended that:

1. a program be initiated to educate all Manitoba Government departmental personnel to the purpose and procedures of EARP;
2. departments engaged in the development of any construction projects be required to submit each month, a list of the projects under construction, or being planned in that department, to the EARP support staff. This list is to be compiled and submitted by the Director of the planning staff of the department. The Director of the planning staff should be the point of contact for EARP staff, should any further information be requested by EARP;

3. the departments be required to submit a project description to EARP, immediately upon request, and that this preliminary project description contain information pertinent to the early planning stages of a project.
4. provisions should be made by EARP support staff to make the list of projects submitted by the departments, public, and a method be developed to gauge the response from the public so that informed decisions can be made as to which projects should require assessment;
5. the project description for each project is to be updated each month in the monthly report from the department, and ample analysis and response time for EARP should be expected by the developer before the project can be allowed to proceed to the next stages of development;
6. all studies done by the proponent departments on the alternatives to the proposed action be made available to EARP upon request, and that provisions be made to have these studies available to the public upon request;
7. the definition of "Environment" under which the EARP functions, be redefined to include:
 - i) air, land or water,
 - ii) plant and animal life, including man,
 - iii) the social, economic and cultural conditions that influence the life of man or a community,
 - iv) any building, structure, machine or other device or thing made by man,
 - v) any solid, liquid, gas, odour, heat, sound or vibration or radiation resulting directly or indirectly from the activities of man, or,
 - vi) any part or combination of the foregoing and interrelationships between

any two or more of them, in or
of Manitoba;

8. the Manitoba EARP adopt a framework of ecological reference standards upon which the environmental assessment be based;
9. an administrative decision making framework be maintained that will ensure the flexibility of EARP;
10. the department be made to include sufficient time in their project development schedule to include EARP;
11. knowledgeable and concerned individuals within each department be identified and educated in the EARP process, and that they then become the contacts within that department for the EARP staff. These persons will respond on behalf of that department to all of EARP's requests for concerns on projects from other departments;
12. that these aforementioned contacts within each department be invited to present any concerns they may have, on any project being reviewed by EARP, to the MEARA meeting on that project;
13. some formal arrangements be made to include a representative from EARP on future committees established to deal with any emergency projects that could possibly result in environmental impacts;
14. the guidelines describing the participation of the public in EARP be redefined to provide a strong public input into the process at the private and local government level;
15. a public information campaign be established to inform the public of the role of EARP, its operation and their part in that operation;
16. the government ensure that EARP has all the authority necessary to enforce the requirements that the proponent conduct or produce any post-operational environmental studies that EARP may deem necessary;

17. our on-going programs for the evaluation of EARP be established so that the effectiveness of the process can be constantly assessed and upgraded.
18. That the government of Manitoba by adoption of the above recommendations and by expanding the personnel and budget of the Manitoba EARP support staff, demonstrate its full commitment to the preservation and enhancement of the natural environment of Manitoba for future generations.

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CHAPTER I

THE PROBLEM AND ITS SETTING

1.0 Introduction and Problem Statement

In the spring of 1981, a research proposal was made through the office of the Manitoba Environmental Assessment and Review Process (EARP). The proposed research was to determine the effectiveness of the Manitoba EARP. This research would be part of the Manitoba Department of Consumer and Corporate Affairs and Environment's general review of programs within the department. It was determined by the officials of the Manitoba Environmental Assessment and Review Process that the process should be reviewed with the intent of providing recommendations for modifying it, if necessary, so that the process could be kept as effective as possible.

It was proposed that the Manitoba EARP be reviewed in two ways. The first method of review was to compare the theories and principles of the present process, to the concepts that have appeared in the recent literature on environmental impact assessment. The second approach was an investigation of the actual mechanics of the present process, with the intent of determining how these mechanics deviate from the theoretical ideal assessment process.

The final phase of the research would attempt to determine whether these deviations from theoretical assessment process had produced detectable environmental impacts

in projects reviewed by the Manitoba EARP.

This report documents the methods used in this research, the results of research in the form of recommendations on the future direction of the Manitoba EARP.

1.1 Introduction to the Problem Area

In order to begin to understand the problems facing mankind today, or his attempts to solve them, it may be useful to examine the course mankind has taken from his prehistoric beginnings to the present day. Such an examination produces numerous examples of how man has attempted to oppose natural processes, or manipulate his environment for his own gain. These attempts met with varying degrees of success. There are many other examples where man, either through ignorance or through design, has attempted to work with nature. These attempts also met with varying degrees of success. There is considerable archaeological evidence to show that many prehistoric peoples destroyed their cultures by over-exploiting the natural resources upon which those cultures are based. As time progressed and man's technologies advanced, the examples of environmental deterioration became more numerous. With the advent of the industrial revolution came a further acceleration of impacts on the environment, and an increase in the severity of those impacts (Heer and Hagerty, 1977).

With the settlement of North America, came an ethic of environmental exploitation. Many colonists viewed

themselves as heroic explorers and conquerors of a new continent of free air, free land, and free water. Heer and Hagerty (1977) state that the emphasis during this early colonial period, and almost up until the present time, was on the individual and collective conquest of an untamed wilderness, rather than on a conservation of precious, fragile ecosystems. This cultural heritage was probably one of the greatest factors which tended to blunt environmental awareness among North Americans up until the late 1960's.

The first concerted attempts to re-evaluate the ethic of environmental exploitation came in the late 1960's. The "Environmental Crisis" was defined, and the people who once passively accepted the exploitation of their environment, now began to realize the need for some means to protect it. The people were faced with a dilemma, created by the desires for plentiful and inexpensive supplies of energy, and the conflicting desire for an unsullied and beautiful natural environment. It became evident that there were trade-offs between the obtaining of inexpensive supplies of energy and natural resources, and the maintenance and enhancement of environmental quality. These trade-offs, their evaluation and quantification became the very heart of the environmental assessment activities that were to come in the 1970's.

The 1970's were termed the "Decade of Environmental Concern" by Jain et al. (1977). This decade was ushered in by the passage of the first comprehensive, environmental

legislation to be passed by any government, the National Environmental Policy Act (NEPA) of the United States, enacted on 1 January 1970. The fact that many other countries followed the American example with similar legislation indicates the importance which has been placed on the environment in recent years. Out of this environmental concern was born the "Environmental Impact Statement" (EIS). Rosen (1976) describes an Environmental Impact Statement, as an official document that is prepared by the proponent of the proposed action or project. He said that the EIS should define and evaluate the effects on the environment of the proposed project or action and its alternatives, and should also attempt to determine the possibility of ameliorating negative impacts by creating favourable "trade-offs". Rosen (1976) continues by saying that, above all, the EIS is a tool, prepared to assist the decision maker in making sound and rational decisions regarding the environmental effects of various alternatives.

The existence in government of agencies and departments whose responsibility it is to see that environmental concerns are considered in the planning and implementation of proposed actions or projects within their jurisdiction has, to some extent, pacified the demands of ecologically concerned citizens. However, there are those such as Schindler (1976) and Caldwell (1978) who suggest that our confidence in the EIS is not well founded and that perhaps it is time for a closer look at the merits of these processes.

1.2 The Manitoba Environmental Assessment and Review Process

This section will describe and define the Manitoba Environmental Assessment and Review Process.

1.2.1 *Origin of the Manitoba EARP*

From 1973 to 1975, the Environmental Management Division of the Manitoba Department of Mines, Resources and Environmental Management, formulated the principles and mechanics for an environmental assessment and review process.

The basic concepts, philosophies, methodologies and implementation options for this process were developed as a result of an inter-departmental analysis, as well as a comprehensive review of the then state of the art of Environmental Assessment in North America.

On September 10, 1975, the Minister of Mines, Resources and Environmental Management, tabled a cabinet paper entitled "An Environmental Assessment and Review Process for Provincial Projects" (Appendix #1) which was subsequently approved on November 12, 1975. By July 1976, a number of specific guidelines were prepared and included in the document defining the Manitoba EARP (see Appendix 1.1 through 1.4).

1.2.2 *Description of the Manitoba EARP*

As a result of the approved cabinet paper of September 2, 1976, the Manitoba EARP was adopted as policy

of the Manitoba Government. The policy required environmental assessment of all government projects significantly altering or affecting the environment. Several of the more important principals of environmental impact assessment that were included in this early definition of the Manitoba EARP are listed below.

1. Every proponent must submit a "project description" to the Environmental Assessment and Review Process prior to making any irrevocable commitments respecting proposed provincial undertakings.
2. The Manitoba Environmental Assessment and Review Agency Board (MEARA), is comprised of the Deputy Minister of the Department of Consumer and Corporate Affairs and Environment as Chairman, the Assistant Deputy Minister of Environmental Management and an Assistant Deputy Minister from the Departments of Health and Social Development, and Finance. As well, every proponent will appoint a representative to the Agency during the review period of the project. This decision respecting the need for the proponent to prepare a full environmental impact assessment (EIA) of a proposed project resides with the MEARA Board subject to the approval of the Minister of Consumer and Corporate Affairs and Environment.
3. The decision to permit, modify or disallow a proposed action resides with Cabinet.
4. If the MEARA Board decides that an EIA is required, the EIA must be completed in sufficient time to allow incorporation of all its recommendations into project planning, design, construction and operation stages as conditionally or unconditionally approved by Cabinet.
5. The proponent must conduct post-operational studies to appraise the accuracy of predictions made in the original EIA and he must take necessary steps to minimize or mitigate any unforeseen impairments.

6. In the "project description" the proponent is required to provide all information which, in their best professional judgement, will enable the MEARA Board to understand the nature and scope of the project, as well as recognize the potential environmental impacts. This information should include:
 - a. information and technical data on the proposed project;
 - b. relevant drawings, plans, photos, maps, charts, etc.;
 - c. a description and statement of the rationale for the undertaking, the alternative methods of carrying out the undertaking and the alternatives to the undertaking;
 - d. a description of all in situ facilities, and auxiliary or support structures;
 - e. information on anticipated gaseous, liquid and solid waste generation;
 - f. the manner in which compliance with existing federal and provincial environmental quality standards and regulations will be achieved;
 - g. transportation requirements respecting incoming and outgoing material, employee and customer traffic, etc., insofar as they affect contamination of the air, water or soil;
 - h. the organizational structure which would be established to administer and manage all aspects of the proposed projects.
7. For a full-scale assessment, the MEARA Board has developed four sets of guidelines, one for each area of concern in the assessment; probable and direct environmental impacts of a proposed project, probable adverse effects which cannot be avoided, alternatives and the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity (see appendix 1.2).

8. Some of the important principles of environmental assessment that are included in these full-scale assessment guidelines are that the time frame in which impacts are expected is to be detailed. The description of implications and reasons why the proposed action should be accepted must be provided. Another stipulation requests the specification of the basis upon which acceptable adverse-effect levels are deemed adequate. The alternative analysis must be structured so as to enable comparisons of environmental benefit or damage. The proponent must weigh the desirability of the proposed action against the foreclosures of future options or needs.
9. As far as public participation is concerned, any EIS and its review may be inspected by the public and any person may make a submission within 15 days to the Minister. Public hearings may be initiated by the Minister through the MEARA Board and EARP or the Clean Environment Commission prior to any Cabinet decision. Additionally, the proponent has the opportunity to introduce the citizen involvement in the initial stages of the environmental assessment.
10. Manitoba EARP's definition of "environment" as given in the Clean Environment Act, C130, S.1 (a1), (e), (i), (k),
 - . "environment means the air, water or soil";
 - . "air" means the atmosphere but does not include the atmosphere within a mine or within a building other than any building designated by the minister;
 - . "soil" includes land, earth and terrain;
 - . "water" includes flowing or standing water on or below the surface of the earth and ice formed thereon.

S.M.1972, c.76, s.1; Am.S.M.1974, c.41, s.1; S.M. 1980.c.59, ss.1 and 2.

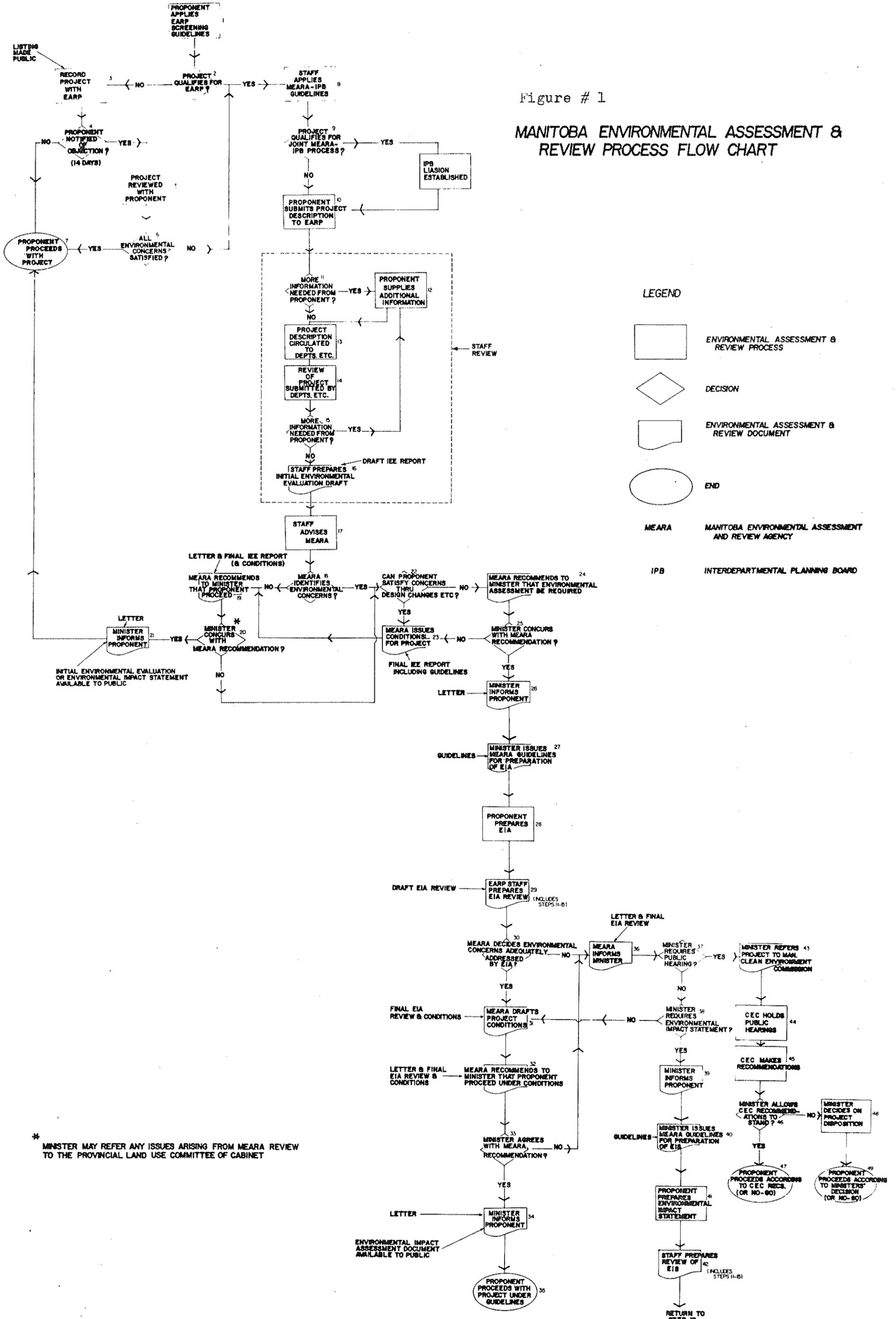
The detailed steps of the Manitoba EARP are shown in Figure #1. The main points of the process are as follows:

first, the proponent applies the "EARP Screening Guidelines" (see appendix 1.3 this report) to his proposed project in order to determine if a project description should be submitted to EARP. If, in the best professional judgement of the proponent, his project is not required to submit to EARP, there is no indication in the original Cabinet paper (Manitoba Department of Mines, Resources and Environmental Management, 1975) that the proponent has any further responsibilities to EARP. However, in Figure #1, there is an indication that the proponent is required to "record the project with EARP" and that EARP is then required to make this listing public. This flow chart (Fig. #1) was provided to the researcher by the staff of the Manitoba EARP as an official description of the Manitoba EARP. The fact that this requirement, that the proponent list his proposed project with EARP does not appear in the original cabinet approved document (Manitoba Department of Mines, Resources and Environmental Management 1975) seems to be a point that has caused EARP staff considerable difficulty in obtaining project descriptions from proponent departments. This point will be discussed further in Chapter 5 of this report.

When a project description is submitted to EARP, that project description must be in accordance with the

Figure # 1

MANITOBA ENVIRONMENTAL ASSESSMENT & REVIEW PROCESS FLOW CHART



guidelines presented in Appendix 1.1. The proponent is then invited to appoint a representative to the MEARA Board for the duration of the project review period. The EARP support staff then carries out what is termed in Figure 1, as a "Staff Review". This staff review is as follows: after the project description has been received by the EARP staff, it is reviewed by them for the adequacy of the information it contains. The EARP staff can request from the proponent, any additional information they feel will enhance the evaluation of the project even if that information was not required in the original project description guidelines. The EARP staff may also inform the proponent that detailed information requested by the project description guidelines is not required due to the special circumstances of that project. This system of direct liaison between the EARP staff and the proponent allows for more flexible and efficient review process.

When the EARP staff are satisfied that all the relevant information has been included in the project description, that project description is circulated to all the government departments who might have particular concerns about that particular project. As well, a project description is circulated to any federal government departments, private organizations or university professionals who may be able to voice opinions or concerns on the project's impacts in their given areas of expertise. The project description circulation list may vary from project to project.

Those departments or individuals, who are asked for their comments on the potential impacts of the project are given a certain period of time in which to reply to the EARP staff. This circulation procedure is an attempt to expose the particular circumstances of a project to as much expertise, and the widest variety of disciplines as possible in a reasonable length of time. The time limit for response to the EARP staff's request for comments may vary given the particular circumstances and urgency of the project. As will be seen in Chapter 5 of this report, the relatively short time limit for inter-departmental review, and considerable complexity of some of the environmental impacts being discussed, may combine to create a situation which is not conducive to a comprehensive environmental evaluation.

Once the time limit for response is up, and the majority of comments from the concerned departments have been received, the EARP staff reviews the comments and prepares an "Initial Environmental Evaluation" (IEE). This IEE is a list of all the environmental concerns voiced by the various departments, and a set of recommendations on the acceptability of the present design or operation of the project. The EARP staff also recommend whether or not a full Environmental Assessment (EA) must be carried out by the proponent on the project, culminating in an Environmental Impact Statement (EIS).

The staff review culminates with the submission of the IEE to the MEARA Board. The MEARA Board then reviews the IEE and then recommends to the Minister of Consumer and Corporate Affairs and Environment whether the project should proceed, not proceed, or proceed with changes in design. The final decisions to permit, modify or disallow proposals rest with the Minister and Cabinet. No appeal mechanism exists.

At this point, the proponent may proceed with the project but must incorporate all recommendations and conditions, applicable thereto respecting project planning, design, construction, and operation as conditionally or unconditionally approved by the Cabinet. The original Cabinet paper (Manitoba Department of Mines, Resources and Environmental Management, 1975) also states that the proponent must conduct or procure post-operational environmental studies to assess the predictions of the original impact statement and must take necessary steps to minimize or mitigate unforeseen environmental impairment. This requirement for post-operational environmental assessment, which is considered by authors such as Cook (1978), Allen and Winder (1978) and Kanerva (1978) to be of great importance to a comprehensive environmental assessment, was found in this study almost never to be enforced in Manitoba. The significance of this inadequacy of the Manitoba process will be discussed in Chapter 5 of this report.

The majority of projects that have been reviewed by the Manitoba EARP have followed this general process outline. Since the process inception in 1975, only one project has required a full EIS. Therefore, the remainder of the EARP which is devoted to the preparation of a full EIS, will not be described, but instead the reader will be referred to the remainder of the Flow Chart, Manitoba Environmental Assessment and Review Process, (Figure 1).

1.3 Research Objectives

The objectives of this research are two-fold:

1. to provide an evaluation of the Manitoba Environmental Assessment and Review Process and, as a result of this evaluation;
2. to recommend to the Manitoba Department of Consumer and Corporate Affairs and Environment ways of enhancing and strengthening the existing Manitoba Environmental Assessment and Review Process.

1.4 Delimitations of the Study

Environmental impact assessment has been recognized by Munn (1979), Jain and Hutchings (1978), and Erickson (1979) as being comprised of an analysis of impacts of a project in two major areas; the bio-physical environment and the socio-economic environment. This report will deal with the problems that the Manitoba EARP experiences in the evaluation of the bio-physical environment only. A separate report (Perry, 1982) deals with the effectiveness of the EARP with respect to the socio-economic impacts.

The further restrictions that are imposed on this study by time, money and the sources of data, are discussed in the Methods chapter (Chapter III).

1.5 Assumptions of the Study

The major assumption is that there is a perceived need, on the part of the public, for quality environmental protection, and that it is the government's responsibility to provide this environmental protection. It follows then, that there is a need for an environmental assessment and review process in Manitoba, and that it is also the responsibility of the Government of Manitoba to ensure that its EARP functions as efficiently as possible.

1.6 Definitions, Abbreviations

Environmental Assessment (EA) - is the measurement of the probable changes (positive and negative) in the various socio-economic and ecological characteristics of the environment, which may result from a proposed or impending action.

Environmental Impact Statement (EIS) - is a document written in a format as specified by the Review Agency which represents a summary of the environmental inventory and the findings of the environmental assessment.

Environmental Impact Statement Review (EISR) - is a document prepared by the MEARA Board containing the history of events associated with the project, a detailed examination of the vital environmental factors involved, including their major impacts on the social and economic sectors, and recommendations to the Minister. The Agency could recommend that the project be halted, that it proceed as planned, or that it proceed with certain qualifying conditions and terms.

Manitoba Environmental Assessment and Review Agency (MEARA) - is a group of senior civil servants appointed by the Minister of Consumer and Corporate Affairs and Environment to administer the Environmental Assessment and Review Process (EARP).

Environmental Assessment and Review Process (EARP) - is a program developed as a result of a Provincial Cabinet policy to ensure that:

- a) environmental effects are taken into account early in the planning of new provincial projects, programs and activities, and,
- b) environmental assessments are carried out for all projects which may have an adverse effect on the environment before commitments or irrevocable decisions are made;
- c) the results of these assessments are used in planning, decision making and implementation.

Initial Environmental Evaluation (IEE) - is a preliminary review of a project description by MEARA to determine if a full environmental assessment should be required or if minor changes to the project might avoid or mitigate adverse impacts.

Proponent - Government department, crown corporation, or private agency that initiates, plans or proposes a project.

Project Description - the information that is submitted to the review agency that enables the review agency to understand the nature and scope of the project (see Appendix 1.1).

CHAPTER II

REVIEW OF RELATED LITERATURE

2.0 Introduction

This chapter will attempt to relate recent literature in the area of environmental impact assessment to the problem of evaluating the effectiveness of the Manitoba Environmental Assessment and Review Process. The recent literature on environmental assessment can be divided into three convenient categories, for the purpose of establishing a background for this present study. These categories are, literature that reviews the theories of what basic principles and procedures should be incorporated into a thorough and comprehensive environmental impact assessment process. This category could be called the "Theoretical State of the Art of Environmental Assessment".

The second category of literature deals more with what processes are in place in various provinces, states or countries. Along with this inventory of assessment practices, is literature describing specific theoretical and practical problems encountered by these environmental impact assessment agencies. The second category of literature could be termed, "An Inventory of Existing Environmental Assessment Practices" and the third category could be called "Practical Problems of Environmental Impact Assessment".

2.1 Theoretical State of the Art of Environmental Assessment

By a review of the recent literature on the theoretical basis for environmental impact assessment I will, in this section, attempt to develop a flow chart of a theoretically ideal environmental impact assessment process. For the purpose of comparison, this flow chart will be of the same format as Figure 1.

2.1.1 *The Objectives of Environmental Impact Assessment*

Recently, there has been a clear need perceived by many governments to develop processes to ensure that, in the planning stages of projects, consideration is given to the environmental costs of the proposed actions. There has, since the early 1970's, been much written on what the objectives of an environmental impact assessment should be, and equally as much literature has been devoted to how these theoretical objectives should be fulfilled. The perceived objectives of an environmental impact assessment tend to vary depending on the point of view of the various participating groups. As outlined in an unpublished report by Beanlands (1981). There is a basic dilemma in

impact assessment that arises from the fact that its origins cannot be traced back to the requirement or the outputs of science. Instead, environmental impact assessment is the result of public pressure and political motivation.

Beanlands, (1981) states:

Therefore, at one end of the spectrum are the government administrators who tend to see the objectives of environmental assessment as the fulfillment of required procedures or guidelines or the attainment of prescribed standards. At the other extreme are the scientists who became involved in the development and review of impact assessment documents but often doubt whether it is an acceptable forum in which to rigorously apply the scientific method. In industry, the objective of environmental impact assessment is tied directly to project approval and licensing. Caught in the middle are the consultants who are expected to practice good science in a politically motivated system.

The general objectives of an environmental impact assessment, are expressed in a definition of an EIA given in Munn, (1979).

An Environmental Impact Assessment is an activity designed to identify and predict the impact on the biogeophysical environment and on man's health and well-being, of legislative proposals, policies, programs, projects, and operational procedures, and to interpret and communicate information about the impacts.

I feel that this definition should be extended to include the contention of Jain, et al. (1977), that the ultimate utility of the EIA is to ensure that environmental considerations are made part of the agency (federal, state/provincial or local) decision-making process.

2.1.2 *The Administration of Environmental Assessment*

It would be beyond the scope of this report (and this researcher) to describe in detail the structure of the ideal administrative entity charged with the responsibility of reviewing environmental impact assessment. However, this aspect of the environmental assessment and review process is considered by many to be of the utmost importance to the effective operation of the process. I will (here only) offer a brief review of some of the more important theoretical components of an ideal EIA administrative entity.

2.1.2.1 The Decision-Making Process

An environmental assessment and review process exists for one major purpose (Erickson 1979), that is to help decision-makers plan, design, manage and regulate projects and programs. The ultimate products of any environmental assessment process are, therefore, decisions. The agencies or bureaucracies that administer an EARP must ensure that the components of their decision-making apparatus will be sensitive to and respond to the data they are given about the total human environment. Bradley (1973) and Etzioni (1967) discuss the three generally accepted models for decision-making. They are (a) the Rational Model, (b) the Incremental Model, and (c) the Mixed Scanning Model. Etzioni (1967) reviews and contrasts the first two models

in a purely theoretical context, then proposes the third as a more useful model than the first two. Bradley (1973) examines these three models from the point of view of their usefulness in environmental resource management. Bradley also proposes a fourth model for decision-making he calls the ecological model. I will not attempt here to discuss the theoretical basis for these decision-making models but instead, only relate some of the pros and cons of each, with respect to their usefulness as a basis for making environmental management decisions.

Etzioni (1967) states that the rationalistic approach to decision-making requires that the decision-maker become aware of the problem, posit a goal, carefully weigh alternative means, and choose among them according to his estimates of their respective merit. This approach as a basis for environmental decisions requires tremendous quantities of information, most of which are not available. Also, there is seldom a firm set of values that could provide the criteria for evaluating the alternatives. Most often, goals are not formulated by clear, rational, logical debate involving all groups concerned, but rather evolve from a complex history of vaguely-expressed public opinion, faculty interpretations, and political opportunism (Bradley, 1973).

The incrementalist approach has been referred to as the "science of muddling through", by Lundblom (1959). The model is sometimes also referred to as the strategy of

"disjointed incrementalism". In this approach, the decision-maker focuses only on those policies which differ incrementally from existing policies, rather than attempting a comprehensive survey and evaluation of all alternatives. The advantage is that only a relatively small number of alternatives are considered, and that for each alternative, only a restricted number of "important" consequences are evaluated. As a result, this reduces the scope and cost of information collection and evaluation. The problem confronting the decision-maker is continually redefined, and incremental adjustments form the basis for attack on the problem. Etzioni (1967) contends that disjointed incrementalism is a typical decision-making process of pluralistic societies, as opposed to the master planning of totalitarian societies. Each of these models offers some insight into decision-making about environmental impacts. However, Bradley (1973) contends that the two models taken individually are incomplete and incapable of providing a conceptual framework for decision-making in an area so diverse as that of environmental conservation.

The "Mixed Scanning" model is an attempt to integrate the two previous models. Mixed scanning can incorporate both incremental and fundamental policy decisions. These two levels of analysis provide for an economical yet thorough examination of the problem. In brief, mixed

scanning involves first, a generalized monitoring of ecosystems in which information of a relatively gross type is collected. This truncated review of major environmental (and social) sectors then leads to an in-depth analysis of problems revealed by the truncated surveys. While mixed scanning might miss areas in which only a detailed analysis could reveal trouble, it is less likely than incrementalism to miss obvious trouble spots in unfamiliar areas. Using this "integrative" decision model provides a better basis for the effective handling of the myriad of extremely complex problems found in the man-environment relationship and the use and conservation of environmental resources (Bradley, 1973).

2.1.2.2. Some Principles of an Administrative Procedure

Munn (1979) discusses several important principles that should be employed when designing an administrative procedure required to support an EARP. Some of these principles are:

- (a) There must be a decision-making process (of the mixed-scanning type) with well-defined terms of reference at the management level where the proposal or project description is being considered.
- (b) The final responsibility for the decision should rest with a responsible person (or group). In a democratic society this person is usually an elected official.
- (c) Environmental considerations should be included throughout the entire planning process.

- (d) Since predictions, particularly of ecological and sociological factors, are often uncertain, EARP should be considered as an adaptive process, with review and up-dating of the environmental assessment periodically (perhaps every two years) after the project/action has been completed.
- (e) There should be some mechanism for examination of not only specific projects or proposals, but also for regional development plans, or for projects in aggregate. As well, within the decision-making body, it would seem desirable to develop the concept of impact assessment at the program or policy level.
- (f) In each jurisdiction, it must be decided whether the EIA should be undertaken by the proponents, by an independent body, or by a small team drawn from proponents' environmental scientists, and representatives of the decision-making body.
- (g) There should be some mechanism for the review of the EIA to ensure its compliance with guidelines, and for its scientific credibility.
- (h) Public participation in the review of the environmental assessment is often desirable as the perceptions of specialists may differ from those of the public. Ways in which this could be accomplished include:
 - (1) the appointment of private citizens to the review authority;
 - (2) the establishment of regional planning committees to include members of the public;
 - (3) the canvassing of elected representatives;
 - (4) public hearings;
 - (5) seminars or workshops.

2.1.3. *Impact Prediction and a Conceptual Framework for Impact Assessment*

Munn's (1979) definition of impact assessment implies that an EIA should attempt to determine the nature, magnitude and significance of potential environmental impacts. He adds that it is also important, not only to estimate changes in environmental quality, but also to estimate the rates of these changes. The collection of baseline data is recognized by most authors as the basis for prediction. Beanlands (1981), claims baseline studies should be designed to establish a statistical basis for use in the prediction of impacts and the development of a monitoring program. It was the conclusion of the "Workshop on the Philosophy of Environmental Impact Assessments in Canada" (Environmental Protection Board, 1973) that the process of impact assessment consisted of three steps:

- (1) the identification of an activity which has potential to alter the environment,
- (2) the measure of the initial state of the environment and of the magnitude of the activity, and
- (3) the evaluation of what changes (impacts) the activity had on the environment.

Fisher and Davis (1973) also identify environmental baseline evaluation as a primary step in impact evaluation.

The question becomes, what data do we gather? The type of data to be collected depends on the fundamental approach of the impact assessment. Erickson (1979) says the basic problem in any impact assessment is to decide

whether to proceed (within the strict constraints of budget and time) more in the direction of "analysis", or more in the direction of "integration". Analytical data are defined as specific information of a quantitative or inventory type. For example, information on pH, alkalinity, temperature, or flora and fauna. An integrative approach tends to "pull the pieces together". Odum (1977), highlights this problem:

...science should not only be reductionist in the sense of seeking to understand phenomena by detailed study of smaller and smaller components, but also synthetic and holistic in the sense of seeking to understand large components as functional wholes (and that) an important consequence of hierarchical organization is that as components ... are combined to produce larger functional wholes, new properties emerge that were not present or not evident at the next level below.

As I discovered in this study, there appears to be no generally accepted operational definition for environmental impact assessment in Manitoba, although there is some direction from the principles and procedures laid out in the policies and guidelines. Beanlands (1981) contends that this is a universal fault of most of the EARP processes in Canada.

Bailey (1973) makes the same criticism of several of the methods used to gather information for impact prediction. Generally, these "Resource Evaluation Techniques", have provided a limited basis for including environmental factors at higher levels in the decision-making process. Often their

objective was simply to identify where a given development should take place, based on a consideration of environmental factors. These approaches vary in sophistication from simple overlays of single factor maps, to approaches involving the quantification and computerization of environmental information, including aesthetic values.

The interpretation of the data produced by these methods, Bailey (1973) points out, is often valid only under the given set of cultural values or socio-economic conditions. Any changes in these conditions must necessitate a reassessment of the data. Bailey (1973) agrees with many other authors that these approaches use, for the most part, only selected landscape parameters which are not systematically integrated into a "Holistic Framework" or which are not related to an ecological concept that permits inferences about ecological processes which, in turn, provide the basis for environmental impact predictions.

Beanlands (1981) contends that the environmental assessment process should be based on a set of "ecological reference standards". These standards should be used to judge the scientific and technical merits of the EARP process, and would also form a common basis for comparison among different impact assessments.

For the purpose of this study, I will base the "Ideal EARP" on a set of ecological reference standards which are listed below.

- (1) The guidelines for environmental impact assessment should incorporate an ecological approach.
- (2) Aspects of ecological theory such as energy flow, nutrient cycling, species diversity, succession, ecosystem resilience, etc., should form the basis for assessment design, ie. data gathering, analysis and interpretation.
- (3) The specific approach taken and the resulting assessment design should be carried out on a project-specific basis.

2.1.3.1 Terms of Reference of the Impact Assessment

The term "Biogeophysical environment" in Munn's (1979) definition of EIA, suggests another very important principle of environmental assessment, that is the definition of what "environment" is. The definition of "environment" in the legislation or policy of a government that establishes an EARP, ultimately determines the scope and jurisdiction of that EARP. As a result, some of the most basic practical problems of an EARP can be avoided if "environment" is defined in the proper manner. If the definition of environment is too narrow, the EARP will not be able to enforce its jurisdiction over proposed projects whose impacts are on attributes of the environment that lie outside the definition. For example, in Manitoba's case, the definition of environment is restricted to "air, water and soil", (Manitoba Department of Mines, Resources and Environmental Management, 1975) and the definition of an impact is restricted to any contamination of air, water

or soil. This type of definition severely limits the scope and power of the Manitoba EARP.

On the other hand, in Ontario, the environment is defined in the Environmental Assessment Act R.S.O. 1975, (s. 1 (c)), as:

"Environment" means,

- i) air, land or water,
- ii) plant and animal life, including man,
- iii) the social, economic and cultural conditions that influence the life of man or a community,
- iv) any building, structure, machine or other device or thing made by man,
- v) any solid, liquid, gas, odor, heat, sound, vibration or radiation resulting directly or indirectly from the activities of man, or
- vi) any part, or combination, of the foregoing and the interrelationships between any two or more of them, in or of Ontario.

The all-encompassing nature of the Ontario definition has caused problems for the administrators of the Ontario act, in that the Ontario assessment authorities have been swamped with preliminary proposals from hundreds of government projects that, according to the rigid legislation, must be reviewed. This has forced the Ontario Minister of the Environment to exercise his ministerial discretion in exempting a great number of projects. As can be seen from these two examples, the definition of environ-

ment can ultimately determine the ease, efficiency and effectiveness of the EARP process.

2.1.4. *The Significance of Environmental Impacts*

The interpretation of what constitutes a significant environmental impact forms the core of environmental impact theory. Yet, it is one area upon which the principal actors in environmental impact assessment, government officials, ecologists and economists have yet to sufficiently agree. Many authors such as Beanlands (1981), Erickson (1979), Skutsch and Flowerdew (1976) and Matthews (1975) have commented on the importance of this issue in the comprehensive environmental impact assessment.

Almost all government requirements for the preparation of an EIA, whether they be guidelines, policy or legislation, make some reference to "significance" in the clause that defines what projects are required to submit to the environmental impact assessment and review process. For example, in Manitoba, the policy document states that all government funded projects that could produce a significant impact on air, water, or soil are required to submit a project description to the Manitoba EARP, (Manitoba Department of Mines, Resources and Environmental Management, 1975). No definition of the nature and extent of biological or economic changes that constitute a significant impact, or potential for such an impact, on the ecosystem is given.

2.1.4.1. Significance and Acceptability

Throughout the literature on this topic of significance, many authors (Buffington, et al. 1980, and Van Winkle, et al. 1975) have made the distinction between two related concepts. They are the concepts of "significance" and "acceptability". These two terms are often used interchangeably by many, therefore, it is necessary to distinguish between the two.

I have taken "significance" of an environmental impact to refer to ecological significance. That is, the distinction between a significant impact and an insignificant impact is based entirely on ecological factors. For example, these ecological factors have traditionally included such concepts as stability of the ecosystem or the ability of a species to regenerate. It should be realized that while this ecological significance tends, ideally, to be quantitative, or at least as quantitative as present ecological theory and methods will allow, there is still some degree of value judgement involved. Each ecologist, by the very nature of his profession, places a high value on the environment and its components. Therefore, his estimation of significance is, to some degree, biased towards the preservation of the environment. This has important implications for his assessment of what level of impact is significant when hard quantitative data on the effect of the impact is lacking.

I have taken "acceptability" to mean a change or impact which is in agreement with societal norms. This is to say that an unacceptable impact, in some way, violates society's, or some portion of society's, system of values.

Clarifying the distinction between the concepts of significance and acceptability also seems to clarify somewhat, the responsibilities of some of the actors in the environmental impact assessment process. The role of the ecologist then, is to determine what constitutes a significant impact, while it is the responsibility of the political decision-makers to determine whether that environmental impact is socially acceptable.

Using a slightly different approach, Sharma (1976) also attempted to make the distinction between these concepts of significance and acceptability. He proposed that the significance of environmental damage could be evaluated from three main perspectives: statistical, biological, and socio-economic. Sharma appears to take biological significance to mean "ecological significance" as defined above, and socio-economic significance to be equivalent to social acceptability as defined above. However, his definition of "statistical significance" seems to be an attempt to totally remove all subjective value judgements from the "biological significance" definition, and in doing so, he creates a totally new category of significance.

The statistical evaluation of significance becomes purely quantitative. This fact necessitates the use of

appropriate experimental designs of environmental impact studies and statistical methods for the treatment of data on biological parameters. One benefit of the use of statistical significance is that it would restore scientific validity to environmental impact statements. This is something that many authors have recently been critical of. However, the major drawback of statistics is that there is no light shed on why certain biological parameters change due to the impact, nor do they indicate whether statistical significance also implies ecological significance.

Beanlands (1981) presents a discussion of the value of the statistical significance concept in environmental assessment. The concept of statistical significance has its origins in the fact that EIA's should attempt to isolate man-induced perturbation (impacts) from natural variation. This concept of the variation in natural systems, independent of man's activities, is very important to the design of environmental assessments. Briefly, Beanlands (1981) defines statistical significance as:

... a statistically defined change in some environmental attribute measured before and after the project.

This definition implies, from the operational point of view, that there be some measurement to test for change. The

detection of a departure from baseline condition implies that baseline conditions be known.

2.1.5 *Ecological Impacts*

Within the literature there is no general concensus on a definition for significance of an environmental impact from a purely ecological point of view. Definitions proposed range from general concerns on the loss of ecosystem stability or the reduction of assimilative capacity, to specific concerns on such things as loss of breeding habitat, local extinction of species or reduction in primary productivity. There are some underlying themes which appear to be fundamental to a discussion of ecological significance.

2.1.5.1. Boundaries

The ecological impact (or environmental impact) can be defined with respect to its boundaries in time and space. Defining these boundaries is very important in defining the scope of an environmental impact assessment.

With respect to the parameter of time, the effects of an environmental impact can be felt for only a short period (short term impacts) or can be felt for a very long period (long term impacts). With respect to the space boundary, an environmental impact may be felt only locally or its effects may extend for many miles. As well, the impact causing agent itself can be of a variable nature. That is, the level of the impact may be directly related

to the level (quantity) of the impact causing agent. Finally, the level (or significance) of the impact depends on the environment or the part of the environment being insulted. The environment can be categorized as well. The general biological environment can be examined at either the organism, population, community or ecosystem levels. I believe that it can be safely assumed that different organisms, populations, communities and ecosystems, will react to a given impacting agent in different ways, and to different degrees.

We can use these parameters to explore the concept of significance. At the organism level, the shortening of a lifespan or death due to an environmental insult, is a significant impact. Mortality of a fish due to entrainment in the sluice of a hydrogenerating dam is of significance to the organism. At the population level, this mortality may be of little significance, unless the mortality level exceeds the resiliency provided by the compensatory responses of the population. Significant community-level impacts are expected to follow from significant population-level impacts. An impact on the community, as a whole, can be expected if major shifts in the relative abundance of a given species alters inter- or intra-species relationships. It is not inconceivable, however, that even the total disappearance of a species may not result in any detectable change in the functioning of a community.

2.1.5.2. The Inertia and Resilience of Ecosystems

Two ecological theories or concepts that have a direct relationship to the concept of ecological significance are inertia and resiliency. Westman (1978) defines "resilience" as the degree, manner and pace of restoration of the initial structure and function of an ecosystem after disturbance. He describes "inertia" as a property of ecosystems distinct from resiliency which is the ability of a system to resist displacement in structure or function when subjected to a disturbing force. Cooper and Zedler (1980) have proposed a definition of resilience that seems to embody Westman's inertia concept. They define resilience as a measure of a system's ability to absorb environmental stress without changing to a recognizably different ecological state. They go on to describe "stability" as the ability of a system to return to its initial equilibrium state after a temporary disturbance. I think that the key feature of Cooper and Zedler's "resilience" definition is that it implies the ability of a system to reorganize itself under stress and to establish alternative energy flow pathways that enable it to remain viable after perturbation although, perhaps with a somewhat modified species structure. If survival and adaptation are the driving forces in the living world and not the ability to resist change, then Cooper and Zedler's resiliency definition can be of some use in the discussion of significance. The basic idea is

simply that some ecosystems or communities are more resilient than others, then a given environmental impact will be most significant in the less resilient ecosystems. Therefore, a measure of the resiliency of an ecosystem (as defined by Cooper and Zedler, 1980) should provide some indication of the significance of a given environmental impact on that ecosystem. This concept could be very useful in the planning of projects such as pipelines or hydro lines, where alternate routes would take the project through different ecosystems. The route of choice would be the route through the most resilient ecosystem.

A problem arises, however, when one attempts to obtain some form of measure of the resilience of an ecosystem. Cooper and Zedler (1980) point out that the degree of ecosystem or species response to a given environmental stress is a composite of many partially independent reactions. For example, such ecological responses as mortality, changes in birth rate, displacement (emigration and immigration), changes in behaviour and disruption of ecosystem interrelationships (eg. predator-prey interactions) must be considered in evaluating resilience of ecosystems or species populations. Since different properties of ecosystem structures such as those mentioned above, will not vary at the same rates, the ecosystem parameters chosen for study will have a crucial influence on the degree of resilience observed. Cooper and Zedler (1980) suggest that perhaps the

most important element in species' resilience, is its birth rate or its re-establishment rate. Some species are ill-equipped to recover from a temporary reduction in numbers.

2.1.5.3 Rare and Endangered Species

Much environmental policy and legislation which has been enacted in the past few years has been directed towards the protection of rare or endangered species. Since such effort has been directed towards the preservation of these animals, it can safely be assumed that the public must feel that the plight of these animals is significant. By general definition, an endangered species is one which, in the opinion of biologists, is approaching the lower reproductive limit of the species. That is, the population level is becoming so low, it is approaching a point beyond which the population will not be able to replace itself (ie. an ecologically significant point). This is usually a local population phenomenon, however, should enough isolated populations be lost, global extinction is a possibility.

In this context, one can speak of the "marginal significance" of the loss of one more member of a population. As Fisher and Krutilla (1974) point out, in a large population the loss of one member is of little significance, that is, it has a low marginal significance. However, the loss of the last viable mating pair, hence the genetic information essential to survival of the species, is of great marginal significance, as I have demonstrated in Figure #2.

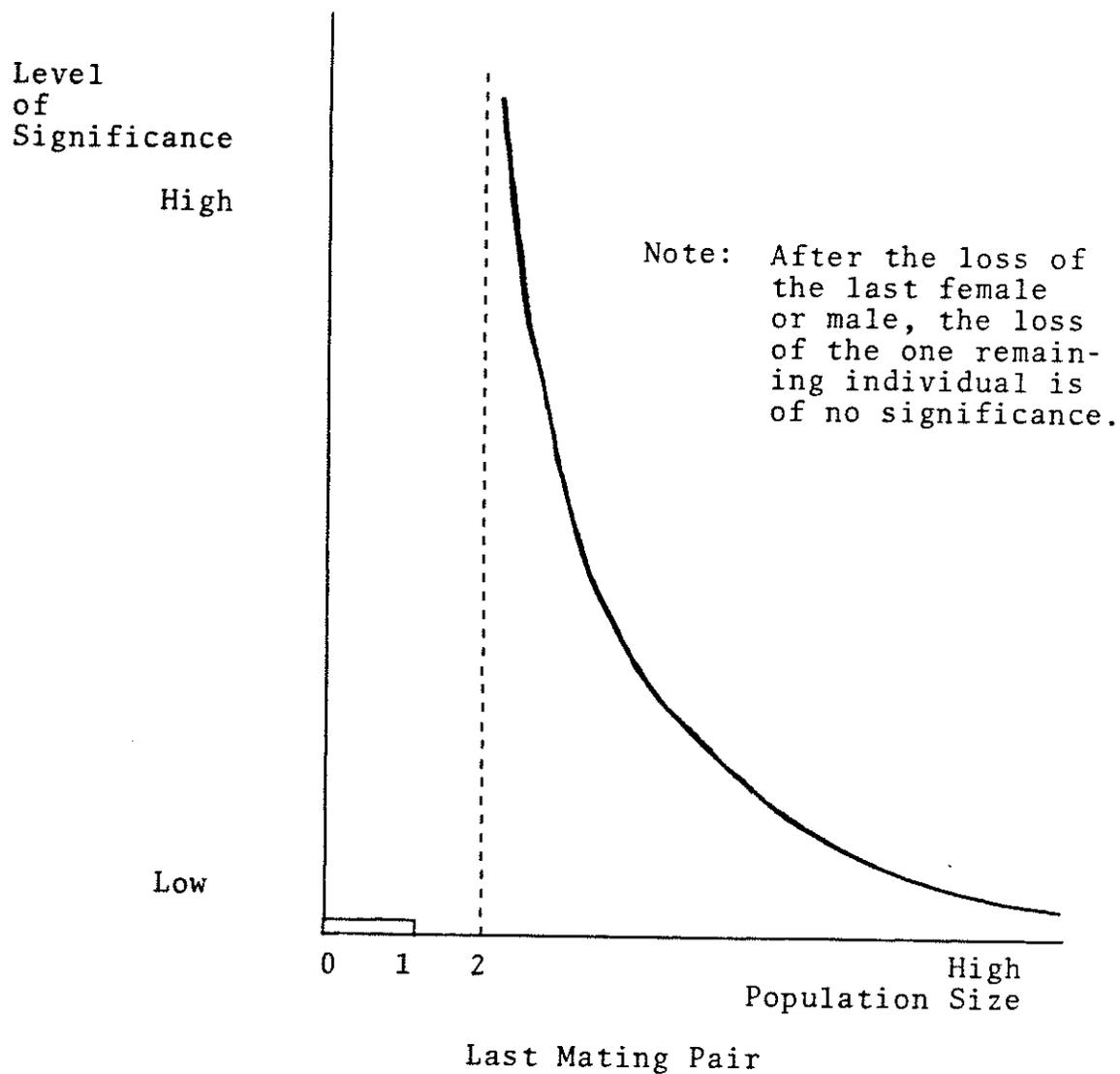


Figure #2.

Marginal Ecological Significance
of the Loss of a Single Member of
a Population.

This argument for the significance of a rare or endangered species must, logically, be extended to that species' habitat. It is widely recognized that habitat destruction is one of the principle pressures on the population levels of such endangered species. As a result, some ecosystems may take on added significance simply because of the important species they contain. The next step should be to apply this "rarity" criteria for significance to entire ecosystems. An ecosystem that would otherwise be relatively insignificant, may acquire a greater importance simply because of its small size and the accompanying greater probability of elimination.

Cooper and Zedler (1980) give a few of the characteristics of the ecosystem or species that should be considered in determining their significance:

1. role of the local ecosystem in regional ecosystem function, or importance of the species in ecosystem function;
2. uniqueness and isolation;
3. actual and potential aesthetic value;
4. actual and potential scientific value;
5. relative size or rarity;
6. prospects for continued persistence.

It must be realized that the significance of a specific ecosystem, as described above, is a subjective value judgement of its biological importance. In a more general view, the public considers ecological significance to be a

function of the importance of a given ecological unit to man. In this respect, one can see that there is a continuum between the definitions of ecological significance and social acceptability.

I do not wish to dwell too long on the problem of subjectively valuing ecological units, except to say that, to many ecologists, biological importance is equivalent to closeness to a natural or pristine state. Natural ecological units are valuable to the ecologist simply because of their pristine states. These ecosystems provide baseline information by which ecologists can compare the degree of environmental impact of disturbed areas. As well, these ecological reserves may provide sanctuary for the "gene pools" of species that could be used in the restoration of disturbed ecosystems.

2.1.5.4 Reversibility or Irreversibility

Reversibility or irreversibility are concepts which relate to the response of an ecosystem to an insult. They are extensions of the idea of resiliency of an ecosystem. If an impact permanently changes the structure or function of an ecosystem, then that impact has caused what can be termed as irreversible change. If the resiliency of the ecosystem is high, that is, if the ecosystem can return itself to its original undisturbed state, then the significance of that particular impact on that particular ecosystem would be less than it would be if the impacting agent caused an irreversible change.

At this point, it is important to bring into the analysis again, the idea of time. If an ecosystem recovers very slowly, then in a short-term planning horizon, an impact on that ecosystem could be considered significant. Conversely, if an ecosystem has compensatory mechanisms that allow it to rebound to its original undisturbed state very quickly, say over the course of one or two seasons, then an impact on that ecosystem is of less significance.

Fisher and Krutilla (1974) raise the point that it may be possible to apply scientific technological knowledge that accumulates with time, to speed up the restorative process in disturbed ecosystems. This is, no doubt, possible in many cases. This raises one further question with regard to the authenticity of the restoration. If the aim is to simply restore some type of lost outdoor recreation facility, it should be possible to replicate most of the original features in such a way as to satisfy the bulk of the demands of those seeking outdoor recreation. When we consider the extraordinary natural environments that are prized for their scientific research applications, or unusual scenic or natural features, restoration would seem to be a much less attractive method of reducing the significance of an impact on these ecosystems.

For the purpose of the development of an ideal environmental assessment process, the analysis of the ecological

significance of an environmental impact should contain the following elements:

1. Resilience of the ecosystem.

Some measure or ranking of the resiliency of the ecosystem should be made, considering factors such as:

- a. Time: how long the ecosystem is expected to remain disturbed.
- b. Space: how large an area is expected to be affected by the impact.
- c. Recovered state: how close to the original undisturbed equilibrium state is the recovered ecosystem expected to be.
- d. Restorative capability: given the existing technology, how close to its original state can the ecosystem be brought.

2. Rarity of ecosystem or its components.

A full examination of the ecosystem to be impacted should be made with respect to those factors listed earlier as taken from Cooper and Zedler (1980).

2.1.6 *Impact Assessment Methodology*

There are many different methods by which the characteristics of the environment, that could be impacted by a project can be identified. Each of these methods approach the identification of environmental characteristics or environmental attributes, from a different perspective, but all have one basic characteristic. That is realization of the necessity of reducing the number of environmental attributes to be examined, in order to make the EIA more

more manageable. Jain, et al. (1977) contend that duplicative, redundant, difficult to measure, or obscure environmental attributes can be eliminated in favor of those that are more tractable. This procedure is valid only if the remaining environmental attributes reflect all aspects of the environment, and remain within the bounds of the ecological reference standards.

These methods of reducing the multidimensionality of the environment have become the "nuts-and-bolts" workings of the environmental assessment and review processes. Jain, et al. (1977) provide an overview of some of the impact assessment (IA) methods that have been developed. They have placed the various (IA) methods into six general types based upon the way in which the impacts are identified. A full description of the rationale of each IA method would be inappropriate here, but it is felt that a brief review of the various approaches to Impact Assessment is needed to fully realize the problems faced in the evaluation and prediction of environmental impacts. For a recent examination of some of these methods, the reader is also referred to Bisset (1980), Sondheim (1978) and Dooley (1979).

Ad Hoc

- These methods simply suggest broad areas of possible impacts (e.g. impacts upon flora and fauna, impacts on lakes, forests). These methods do not attempt to define specific parameters to be investigated.

- Overlays* - These methods identify environmental characteristics (eg. physical, social, ecological, aesthetic) and place these on a set of maps of the impact area. The maps are overlaid to produce a composite characterization of the regional environment. Impacts are identified by noting the impacted environmental characteristics within the project boundaries.
- Check Lists* - This type of method prepares a list of environmental parameters to be investigated for possible impacts. They do not require establishing direct cause-effect links to project activities.
- Matrices* - These methods incorporate a list of project activities with a list of potentially impacted environmental characteristics. The two lists are related in a matrix which identifies cause-effect relationships between specific activities and impacts.
- Networks* - These methods work from a list of project activities to establish cause-condition-effect relationships. They are an attempt to recognize that a series of impacts may be triggered by a project action.
- Combination
Computer-Aided* - These methods use a combination of matrices, networks, analytical models, and a computer simulation approach, to establish cause-effect relationships and to quantitatively determine potential environmental impacts.

Depending upon the specific needs of the user and the type of project being assessed, one particular methodology may be more useful than another. The method chosen should, above all, produce data that can be integrated into a holistic analysis of the project's impacts on the environment.

2.1.7 *The Ideal Environmental Assessment Process Flow Chart*

The flow chart (Figure #3) summarized the main principles that should be included in an ideal environmental assessment and review process. This process is not a definitive process, but is meant to illustrate the relationships between the individual functions in the planning/assessment/decision-making process. At each major function there will appear a reference of that function to the text, eg. (Section 2.2).

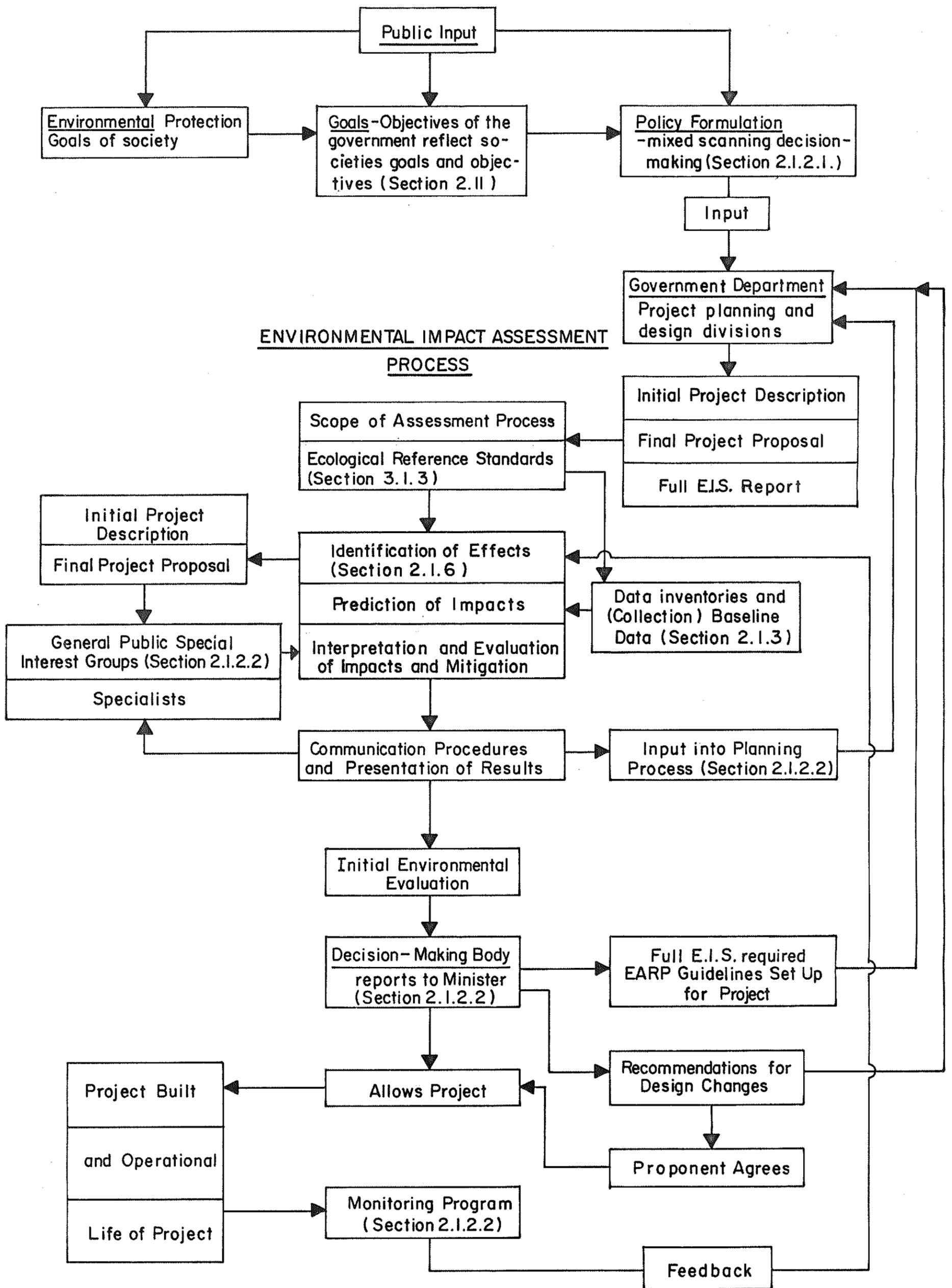
2.2 Examples of Environmental Impact Assessment Procedures

This section will describe very briefly, some of the approaches to impact assessment taken by the USA, Canada, Britain and Japan. These examples illustrate a variety of national responses to widespread concern about the environmental impacts of development.

It seemed fitting that the 1970's, which were termed by some, the "Decade of Environmental Concern" (Jain, et al. 1977), were ushered in by one of the first and most comprehensive pieces of environmental legislation yet enacted. On January 1st, 1970, the President of the United States signed the National Environmental Policy Act (NEPA) PL 91-190, into law. The main purpose of this legislation as set forth in the NEPA Act (1970) was:

To declare a national policy which will encourage productive and enjoyable harmony between man and his environment;

Figure 3.
An Ideal Impact Assessment Flow Chart.



to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and establish a Council on Environmental Quality.

This act led the way for many governments in North America and the rest of the industrialized world to develop specific environmental policies or legislations. Nearly half of the states in the United States had enacted state environmental policy acts by 1975 (Jain, et al., 1977). Many other states, as well as many cities, have followed suit since then.

During October 1970, a new Department of the Environment was created in Britain. The British approach was different than that of the Americans. Britain consciously avoided specific legislation or regulations requiring environmental assessments, but instead, government departments were expected to explicitly incorporate environmental considerations in everyday routine (Krueger and Mitchell, 1977).

In Canada, the provinces and the Federal Government developed different procedures of implementing the generally accepted goals of environmental impact assessment. These general goals for environmental impact assessment processes, were stated in a discussion paper for the Canadian Council of Resource and Environment Ministers in 1978 as being:

1. identifying and evaluating all potentially significant environmental effects of proposed developments at a stage when

alternative solutions, including remedial measures and the alternative of not proceeding, are available to the public and decision-makers; and

2. ensuring that the proponent of development undertakes to implement the means of avoiding or mitigating any adverse potential environmental effects prior to the granting of any approval to proceed with the proposed development.

(Canadian Council of Resource and Environmental Ministers discussion paper, 1978)

The various governments in Canada have applied these concepts differently in order to meet their particular needs and circumstances. These needs and circumstances are so varied that a common approach to environmental impact assessments in Canada is obviously impractical. There are many texts and publications that address the issues and procedures of environmental assessment in Canada. Krueger and Mitchell (1977), describe the environmental impact assessment practices of many of the governments of Canada. Estrin and Swaigen (1978) have prepared an exhaustive review of the Ontario Environmental Laws. Each government has produced publications on their environmental policies and practices. The reader is directed to a list of these publications in Appendix #II.

The government of Japan has approached the problem of reducing environmental impacts of new development in two ways:

1. by locating polluting activities in areas where harm to the environment would be least, by means of regional planning (positive control); and
2. by preventing the siting of pollution activities in areas where harm to the environment would be unacceptable, by means of EIA's (negative control).

(Munn, 1979)

At the Federal level, an office of EIA was created within the Environment Agency in 1974. EIA's used in the negative control approach are carried out by local authorities or by competent ministries of the federal government, under policy guidelines prepared by the Federal Environment Agency. This procedure was an extension of pollution control laws established as early as 1965. There is no legislative basis for EIA at the federal level. However, EIA acts are now being passed at the prefectual and municipal levels.

2.3 Recent Work on the Analysis of Impact Procedures

During the review of the environmental impact literature, it soon became evident that very little effort has been directed towards evaluating impact assessment procedures. One of the most notable papers that has been prepared on impact assessment in recent years is the paper by Rosenberg et al. (1981). This paper characterized an "ideal" environmental impact assessment (EIA) and used it to review the contemporary status of EIA's for several major activities and areas of development, and to identify successes, failures and future needs in EIA. Day et al. (1977) suggests that

reasons for this lack of hindsight analysis would include traditional emphasis on new ventures rather than past lessons; most agencies' unquestioning commitment to particular ways of utilizing resources; institutional reluctance to undergo potentially self-critical analysis, and the public's traditional willingness to accept what is given rather than what is needed.

There are some researchers that have concerned themselves with various aspects of the evaluation of impact assessment processes. G. Beanlands of the Institute for Resource and Environmental Studies at Dalhousie University, was at the time of the writing of this report, conducting research into the ecological basis for environmental impact assessment in Canada. Beanland's research, which is summarized in Beanlands (1981), utilizes a workshop approach to define and elaborate the basic ecological principles which should underlie the design of, or approach to, environmental impact studies, including related baseline data programs, specific impact studies and follow-up monitoring. The workshop approach was used in order to assess the practical implications of implementing those principles in terms of data collection, analytical procedures and interpretation of results. I was most fortunate in being able to attend the Manitoba Technical Workshop for the Beanlands study held in Brandon, Manitoba. The workshop was most enlightening with respect to the value of an ecological basis for impact assessment. However, Beanlands (1981) does not attempt to analyze the effectiveness of any given EIA

procedure. Part of Beanlands' research did include, however, a survey of several specific impact assessments conducted by various EIA agencies in Canada, to determine to what extent these EIA agencies incorporated ecological principles into the design of the EIA's. Where Beanlands' research is very interesting and valuable, it sheds only a very minimal amount of light on what direction my research into the effectiveness of the Manitoba EARP should take.

Other researchers who have addressed the issue of hindsight evaluation of environmental impacts have been Day, et al. (1977). They describe a method for the systematic hindsight evaluation of resource management programs and environmental impact assessments. The approach employs a seven-part model which examines:

1. social values and objectives;
2. project environment;
3. institutional arrangements;
4. project actions;
5. project impacts;
6. process and adequacy; and
7. utilization of findings.

It appears that the major purpose of Day's model is to provide information that can be used to improve the effectiveness of future projects of the kind being evaluated. The model has little application to an evaluation of impact assessment processes.

Since the work by Rosenberg et al. (1981) was unavailable at the time of the development of this study, the methods of this research were developed independently of all other research into impact assessment.

CHAPTER III

METHODS

3.0 Introduction

As described in Chapter II of this report, there exists in the theoretical literature on Environmental Impact Assessment, a general process for EARP which, if followed, would yield the "best possible environmental review". The method used in this research was to document as precisely as possible what the actual review process was for a number of related projects, so that those reviews could be compared to this "theoretical best review". It was also possible to show how practical problems encountered in the real world assessment procedure contributed to the reduction in the quality of the review.

The first phase of the research was to develop a working knowledge of the Manitoba Environmental Assessment and Review Process. This was obtained by surveying the publications of the Manitoba EARP and conferring with the EARP staff.

The next phase of the research was to review the literature on environmental assessment and compile a flow chart illustrating the important principles that should be included in an ideal impact assessment process. This literature review (Chapter II) pointed out many areas where impact assessment has traditionally been deficient and, as a result,

provided a basic trail that this analysis was to follow. The literature review did not provide any specific information on how the analysis of EARP should be undertaken. As a result, the present analysis was developed independently of any previous work in this area.

To gain a full understanding of how effective the Manitoba EARP has been, ideally each project that has been reviewed by EARP should be re-examined to ensure that the original assessment was sufficient, and that no unforeseen impacts have occurred. This follow-up procedure has been suggested by Day, et al. (1977) as vital to the effective operation of an environmental assessment process. A full review of all projects on the files of Manitoba EARP is clearly beyond the scope of this study. It was decided, therefore, to select only a representative number of projects and use them in the analysis. Implicit in this choice of projects is the assumption that, at some future date, the remaining projects should be reviewed as well.

3.1 Criteria for Selection of Projects to be Reviewed

In the primary stages of this analysis, criteria were developed which were used as the basis for the selection of the projects to be used in the analysis. The criteria were used only as a general guide for selection. The

types of projects that could be selected for study ultimately depended on what types of projects had actually been reviewed by EARP. Since the same projects were reviewed in both this Bio-Physical study and the Socio-Economic studies of Perry (1982), the criteria for selection were developed according to the objectives of both studies.

Criterion #1 - In order not to exclude the possibility of acquiring bio-physical information (ie. deleting actual environmental damage) that could be useful for the evaluation of EARP with respect to its effectiveness in predicting environmental impacts, the projects chosen should have been operational for a number of years.

Criterion #2 - In order to test EARP's flexibility in assessing different types of projects, the projects chosen should represent a cross-section of the project types reviewed by EARP.

Criterion #3 - An important part of the analysis of the EARP was an evaluation of the effectiveness of the pre-screening guidelines which the proponent applies to his project to determine whether the project qualifies for EARP. If these guidelines are inadequate or inadequately applied to the project, there should be projects that did not go through the EARP that have shown some environmental impacts. It may be possible to identify such projects and use them as tools for the analysis of the effectiveness of the EARP.

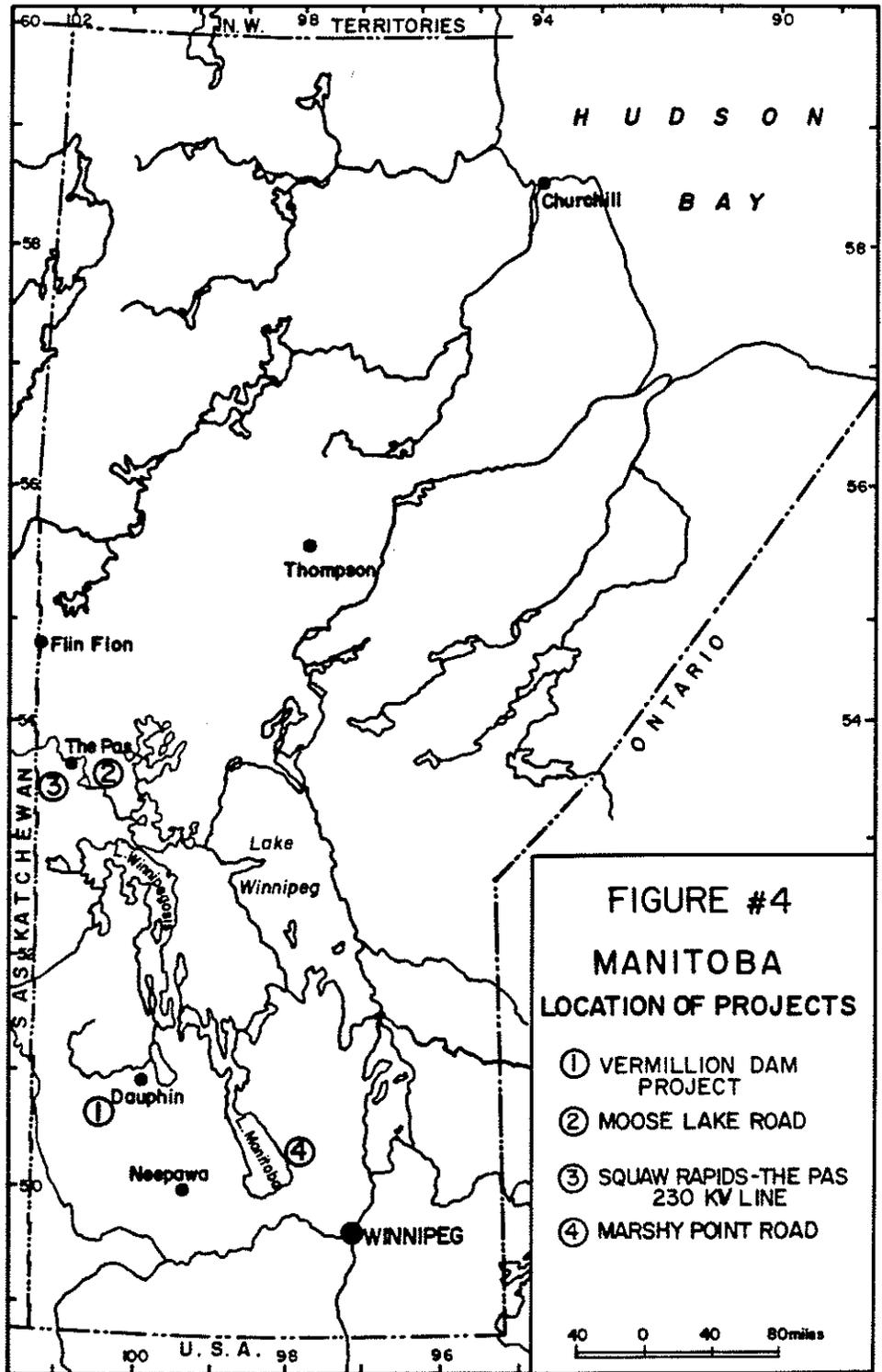
Out of approximately 75 projects listed in the EARP files, three projects were initially selected according to the above criteria. These projects were:

1. Vermillion Dam Reservoir Project (Dauphin)
2. Moose Lake Road (The Pas)
3. Squaw Rapids - The Pas 236 kV Hydroelectric Transmission Line (The Pas)

A fourth project which was not listed in the EARP files was selected in late June. This project was the Marshy Point Road (Oak Point). This project was not reviewed by EARP but, as a result of the construction of the project, a significant environmental impact occurred. The project also represented a special category of "emergency" type projects which are rushed through the planning stages and are implemented with a minimum of review. This project was reviewed to illustrate the potential role of EARP in the review of emergency projects. Figure #4 shows the general location of the projects that were reviewed in this study.

3.2 Documentation of Original Review Process

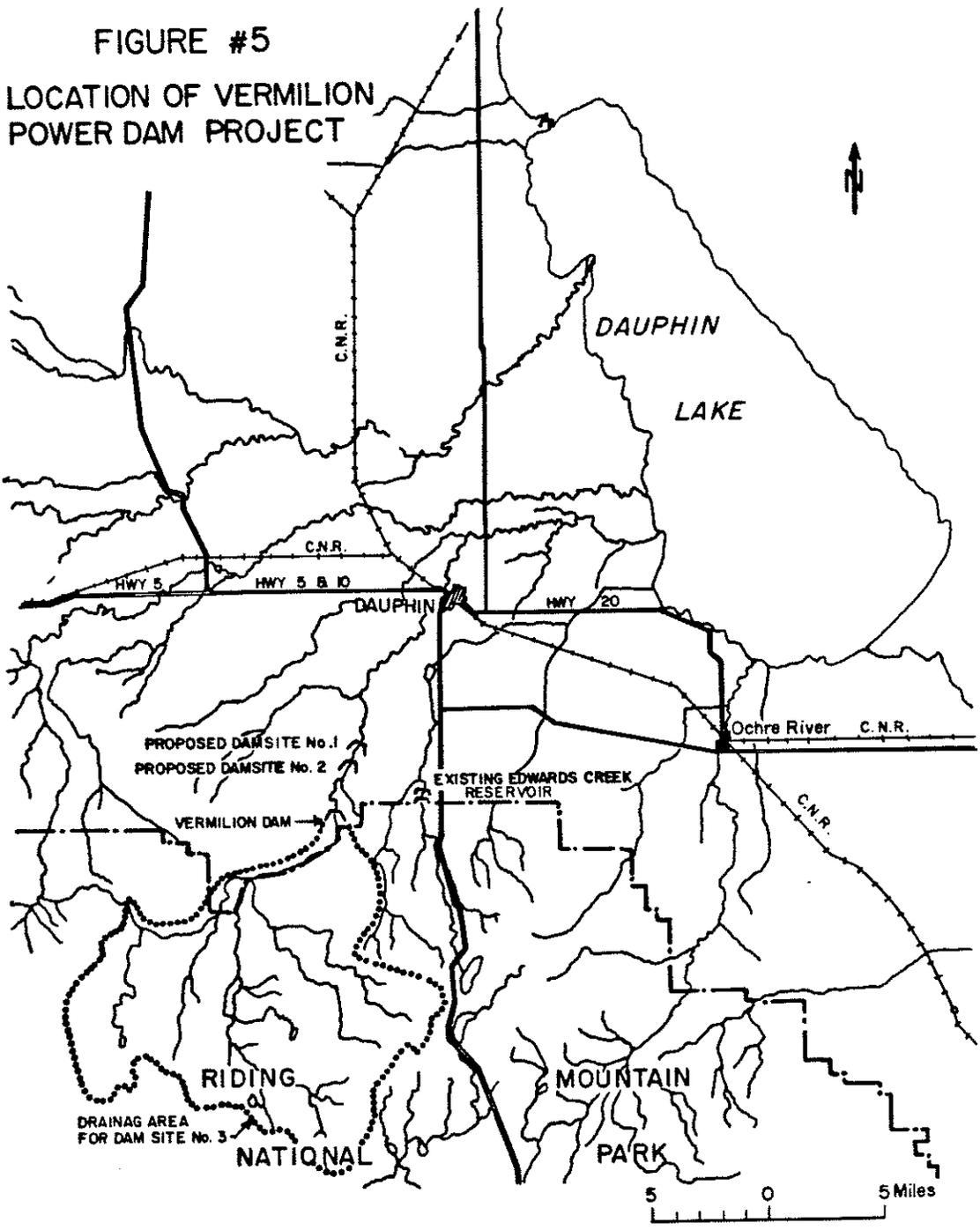
The documentation of what was considered in the original environmental review of the selected projects was the next phase of this research. After a thorough examination of the files of the selected projects, the principal actors who participated in the review were identified. An attempt was made to interview as many of these original actors as possible in order to obtain their impressions as



to the deficiencies of the EARP with respect to the particular project in question. On site inspections were made by myself and Bill Perry to determine the present condition and status of the projects and interviews were held with as many local government officials and private citizens, who had expressed an interest in the project, as was possible. The information gathered from these sources was, of course, very subjective, therefore the biases of each person interviewed were noted wherever possible.

One impression that I received from these interviews was that most people are generally interested in the ideas of Environmental Assessment. They instinctively realize its benefits, but they are generally unaware of its mode of operation, if they know of its existence at all. This would seem to indicate that a public information campaign could be very useful to the operation of EARP in the future.

FIGURE #5
LOCATION OF VERMILION
POWER DAM PROJECT



The project was jointly funded by the Federal Department of Regional and Economic Expansion (DREE), the Prairie Farm Rehabilitation Administration (PFRA), and the Manitoba Water Resources Branch. Under the agreement signed on the 27th of March, 1974, the Government of Canada agreed to design, build, operate and maintain the project for one year. At the end of this period, the province of Manitoba (Water Resources Branch) would assume responsibility for the project (Canada/Manitoba agreement to construct, pursuant to the PFRA Act, a community dam and reservoir on the Vermilion River, 1974). In 1975 the agreement was amended to account for an increase in cost. The total cost in the agreement became \$3,050,000 (Canada/Manitoba Vermilion Dam Agreement, 1975, amendment).

4.1.2 *Pre-construction Environmental Planning Associated with the Vermilion Dam Project*

There had been discussion of the need for an alternate source of water for the Town of Dauphin for many years. In 1974, Dauphin drew its water from a water reservoir on Edwards Creek, as it still does. Although Dauphin has never experienced a serious water shortage, according to the Editor of the Dauphin Herald, the water does become discoloured after heavy rains, due to silt loading in the Edwards Creek reservoir.

As early as 1946 studies were carried out on developing alternate water supplies for the Town (Gore and Storrie,

1946). During 1969 to 1972, several reports were prepared by the Manitoba Water Resources Branch, various PFRA divisions and private consulting firms, each dealing with various aspects of alternative water supplies for Dauphin. In one report (PFRA Engineering Service, 1972), several earlier reports are cited (International Water Supply Ltd., 1970; Manitoba Water Resources Branch Planning Division, 1971a; Manitoba Water Resources Branch Planning Division, 1971b; Manitoba Water Resources Branch Planning Division, 1971c; PFRA Geology and Air Surveys Division, 1971a; PFRA Geology and Air Surveys Division, 1971b; PFRA Geology and Air Surveys, 1971c; PFRA Manitoba Regional Division, 1969; PFRA Manitoba Regional Division, 1971a; PFRA Manitoba Regional Division, 1971b; PFRA Soil Mechanics Division, 1970; PFRA Soil Mechanics Division, 1972a; PFRA Soil Mechanics Division, 1972b). The majority of these reports were unavailable, but most were technical reports dealing with alternative water supplies for Dauphin. These alternate sources were listed in PFRA Engineering Service (1972), as being groundwater, Dauphin Lake, Edwards Creek Site 1, Vermilion River Site 1, Edwards Creek and Groundwater, Edwards Creek, Vermilion River Site 3 with pipeline, and Vermilion River Site 3 without pipeline. Since many of these technical reports were unavailable, it is not possible to say to what extent they examined the environmental components of

each of the various alternatives listed above. One report, (PFRA, Engineering Services, Manitoba Regional Division, 1971) examined the financial and technical aspects of Vermilion River Site 3, which was eventually the alternative chosen. The report allots one half of a page to a section entitled "Project Damages" which describes how much crown and private land will have to be acquired, depending on the specifications of the various engineering possibilities. The report (PFRA, Engineering Services, Manitoba Regional Division, 1971) also states that "no existing utilities or roads will be affected by the reservoir". The above report provided a description of the various land forms within the affected area, but gave no indication of how these land forms would be affected by the dam and reservoir.

A report, prepared by the Manitoba Water Resources Branch (1971b), describes the potential flood control benefits of the Vermilion Dam. The flood benefit study gives no indication of potential environmental impacts of the project and concludes that the flood control benefits would be minimal.

In 1973, the Federal Government initiated a policy of preparing EIA's on the basis of the Environmental Assessment and Review Process (Kruger and Mitchell, 1977). These EIA's would be required for all federally funded projects. As a result, the PFRA, in October 1973, prepared a

preliminary EIA for the Vermilion Dam Project (PFRA Engineering Services, Manitoba Regional Division, 1973). This report identified potential benefits of the project, in addition to that of a water supply for the Town of Dauphin. These additional benefits included irrigation, riparian flows for downstream rural users, sewage dilution, flood control, recreation and wildlife considerations. The stated purpose of the report was to

"(1) Evaluate the worth of each of these benefits and establish the effect each has on the cost of the necessary additional works, thus arriving at the optimum size of reservoir, and (2) evaluate the economic and environmental costs and the associated benefits of this proposal."

(PFRA Engineering Service,
Manitoba Regional Division,
1973).

The report claimed that approximately 28 farmsteads along the Vermilion River, below the dam, could use the river as a source of domestic and farm water. As well, it stated that 215 acres of farm land adjacent to the Vermilion River could be irrigated to provide fresh produce for the Town of Dauphin. By maintaining a constant flow in the Vermilion River during the winter months, the sewage lagoon at Dauphin could be diluted to acceptable levels for discharge into the lower Vermilion River. The report suggested that, due to other facilities in the area, the reservoir would not produce significant recreational benefits. No tangible benefits were ascribed to wildlife

due to the project, apart from potential for waterfowl in the reservoir area and, possibly, sport fishing within the reservoir if it was stocked.

The third section of the report dealt with environmental aspects of the Vermilion Reservoir. A brief description was given of the environment of the area, including information on physiography, geology, soils, vegetation, wildlife, recreation, climate, land-use patterns, transportation, aesthetic aspects and archaeological and historic aspects. The environmental impact of the dam and reservoir on the surrounding area, was described as being minimal in all respects. No new access roads were needed and most of the fill for the dam embankment would "most likely" be excavated on site. Air pollution would consist only of minimal dust during construction and water pollution would consist only of minor silt loading during construction. The report stated that some wildlife habitat would be destroyed within the reservoir itself, and there may be a temporary disturbance of wildlife in the immediate vicinity of the dam site due to construction noise and activity.

In its concluding section, the report states:

...Studies (no reference is made) have indicated that the damaging environmental effects of this dam and reservoir proposal, both during construction and throughout its life, would be minimal. The beneficial effects, especially the assurance of a guaranteed continuous flow in the stream bed, would be significant.

(PFRA Engineering Service,
Manitoba Regional Division,
1973).

The above report by the PFRA Engineering Service, Manitoba Regional Division (1973), appears to be the only one to that date, that dealt with the potential environmental impacts of the project. It should be noted that this report was prepared after the design for the dam had been worked out, and the site chosen, but before the Federal/Provincial agreement to build the project had been signed. There was no more environmental impact analysis done on this project until the summer of 1977. By this time, site preparation had already begun. The Manitoba Environmental Assessment and Review Agency, through its then director, Mr. F. A. Doe, submitted a proposal for research into background conditions of the Vermilion Dam site to M. Kaye, Environmental Research and Development. The purpose of the proposed study was quoted as being:

- a) To enable prediction of the effects of submerged soil horizons on both short and long term reservoir water quality.
 - b) To enable accurate distinction between the effects of submerged soils and organic matter on reservoir water quality and those effects resultant from nutrient inflow to the reservoir.
 - c) To enable accurate prediction of the effects of reservoir bank slumping on water quality.
 - d) To prepare a management model for use with proposed dam projects in similar environments.
 - e) To provide a meaningful data base to enable accurate identification of future watershed development projects (agricultural or recreational) on reservoir water quality.
- (Doe, 1977b)

This proposed study would identify the nature and extent of soil profiles in the reservoir area, monitor stream flow and water quality starting immediately above dam site and establish a reservoir outflow monitoring program. As a result of this proposal, two studies were carried out by the Environmental Research and Development Branch. The soil survey was conducted during October 1977. Thirty two test areas were sampled, 22 inside the reservoir and 10 outside the area to be flooded. The soil samples were analysed for the following:

- total nitrogen
- total phosphorus
- total organic carbon
- carbon/nitrogen ratio
- carbon/nitrogen/phosphorus ratio.

Apparently, the second half of the soil survey was to have taken place five or six years after flooding. After the reservoir water had "stabilized sufficiently" the same areas which then would be underwater, were to be resampled analysed and compared to previous data to determine how much nutrient had leached into the reservoir water. As of the date of the writing of this report, the second half of the soil study has not been undertaken, nor does there appear to be any plans for this survey in the near future.

The water quality survey of the Vermilion River, immediately below the dam site, was conducted during May to October, 1978. This survey was later expanded to include water samples from the proposed reservoir area. The survey monitored the following parameters: conductivity,

non-filterable residue, pH, dissolved oxygen, total organic carbon, total inorganic carbon, total Kjeldhal nitrogen, $\text{NO}_3\text{-NO}_2$, total phosphorus, total coliform and faecal coliform. After the analysis of the first season's samples, it was recommended that the water quality monitoring, begun during 1978, should be continued during the following years, and that additional sampling stations be established within the reservoir, once the reservoir had become. There was no indication as to who should carry out this sampling (Anonymous N.D.).

During the summer of 1979 (after the reservoir had been flooded) a second water quality survey was concluded. Eight sites were sampled in and around the reservoir. The 1979 water quality survey appears to have been the last full scale survey carried out on the Vermilion Dam Project. The Department of Health inspectors did take a water sample from the river below the reservoir on April 21, 1980, for which there is an analysis record. The only other water sampling that appears to have occurred on the Vermilion River was carried out monthly, during the summer of 1978, by the Water Pollution Control staff of the Environmental Control Branch.

4.1.3 *The Manitoba Government's Environmental Assessment and Review Carried Out on the Vermilion Dam Project*

Due to the nature of the Federal/Provincial agreement to build the Vermilion Dam, Water Resources Branch was

designated as "Proponent" of the project for the purpose of environmental assessment. The Manitoba EARP was set in place in July 1976, and by April 21, 1977, a project description had been submitted to EARP. On April 29, 1977 the project description was circulated to the various Manitoba Government departments for their comments and concerns about potential environmental problems. On May 5, 1977, Water Resources Branch appointed Mr. W.R. Newton, P. Eng., Director of Operations to the MEARA Board for the environmental review of the Vermilion Dam. By May 26, 1977 the EARP staff had prepared a report for the Manitoba Environmental Assessment and Review Agency on the environmental concerns and recommendations for the Vermilion Dam Project (Manitoba Environmental Assessment and Review Agency, 1977). It is important to note that Department of Agriculture had not responded to the EARP request for comments and concerns by May 26, 1977 and was, therefore, not included in the report by EARP to MEARA. Agriculture did respond and their concerns were received by EARP on June 16, 1977.

The MEARA Board met on June 8, 1977 and it recommended that the EARP staff arrange a meeting with those departments which expressed some concerns over the Vermilion Dam, and attempt to resolve those concerns. The meeting was held on June 14, 1977. Again, it should be noted that the Department of Agriculture's concerns were still not mentioned. On June 16, 1977, F.A. Doe informed the MEARA that, in his

opinion, all outstanding concerns had been resolved and that no remaining point need be referred back to the Agency (MEARA). It would seem that, at this point, the review of this project would have been completed, however, several people contacted the EARP support staff after final approval had been given, making suggestions on various aspects of the project. In a letter from Joachim Moenig, a Limnologist in Water Pollution Control to M. Morelli, Water Pollution Control and F.A. Doe, EARP, it was stated that:

...We still strongly recommend that some type of monitoring be applied prior to, after and during the implementation of this reservoir in order to determine and delineate actual nutrient load sources. This type of monitoring will provide invaluable data required in the decision making process where environmental concerns are the issue...

(Moenig, 1977)

This letter appears to be the first mention of a "Monitoring Program" in the Review. On June 17, 1977, P.N. Boothroyd, Habitat Assessment Biologist with the Canadian Wildlife Service sent a letter to F.A. Doe, EARP, expressing concern about the possibility that the reservoir could be used by migrating waterfowl as a staging area and that this could result in damage to nearby cropland by waterfowl depredation. In voicing this concern Mr. Boothroyd made the following suggestion (in any environmental assessment and this EIA in particular):

...in considering the amount of crop land affected by the proposal one should be considering not only that land which will be submerged but also neighbouring land...
(Boothroyd, 1977)

The last record of the EARP review of the Vermilion Dam appears to be the development of the study proposals for the water quality analysis and the soil survey study on the reservoir area that were explained in the previous section. On August 3, 1977, F.A. Doe submitted the Vermilion Dam Study Project Proposal that was described in the previous section to Mr. M. Kaye, Director of Environmental Research and Development Branch (Doe, 1977b).

4.1.4 *Present State of Vermilion Dam (1981)*

As part of the study to determine the effectiveness of the Manitoba EARP, an investigation into the present state of the Vermilion Dam was conducted by this researcher.

4.1.4.1 Personal Field Survey of Vermilion Dam

On June 10, 1981, a field inspection of the Vermilion Dam site was carried out by myself and B. Perry. The intent of the inspection was to become familiar with the dam site and surrounding area, and to document any major bio-physical impacts. The construction site had been well restored. There was no evidence of trash or construction materials on the site. The main construction area on the east side of the reservoir had been well restored. The

dam site was beginning to revegetate naturally. There was no evidence of revegetation efforts by the contractors. Grasses and perennial herbs were beginning to re-establish on the berm of the dam and on the construction site east of the dam. There was no evidence of tree species re-establishing on the higher portions of the dam. There was evidence of minor erosion on the dam just east of the spillway. This area had been used as a road for large machinery and, as a result, vegetation had not established sufficiently to prevent erosion. Inspection of the forest area and original stream bed just north of the dam showed that the area was used by many animal species, such as deer, elk, bear and beaver.

There were no waterfowl observed in the reservoir on June 10, 1981. While there were numerous animal tracks in the forested area just north of the dam, there were no animal tracks on or around the dam at either its east or west ends. It can be assumed that animals must have used the river valley as a movement route in and out of the Riding Mountain National Park before the dam was built, but there now is no cover for the animals to pass around the dam. It is possible that the dam and reservoir pose a barrier to the movement to animals such as deer, elk and bear.

The water in the reservoir appeared to be turbid. There was some silt load and some algal growth

in the reservoir water but from my observations nothing above normal for water bodies of that size in that area. The Vermilion River below the spillway carries a large silt load, but again, this appears from my observations, to be normal for this and other rivers in the area. The original stream bed which lies between the riparian outlet culvert and the spillway contained little water (see Figure #6). The stagnant ponds in this area contained heavy algal blooms but seem to have less of a silt load. The riparian outlet pipe was allowing a small volume of water out into this area compared to the large volume of water flowing over the spillway.

On the west side of the reservoir approximately 50 meters from the dam, there is a large culvert which channels water into the reservoir from drainage ditches along the south side of the western access road (See Figure #6). These ditches drain agricultural land west of the reservoir. Depending on the chemicals that are being used by the farmers west of the reservoir, this agricultural drainage could pose a threat to the quality of the water in the reservoir. From my investigation, it appears that the culvert has only been in place since the spring of 1981. It is my opinion that this culvert and its resultant agricultural drainage into the reservoir is in violation of the "Sanitary Area" around the reservoir, as

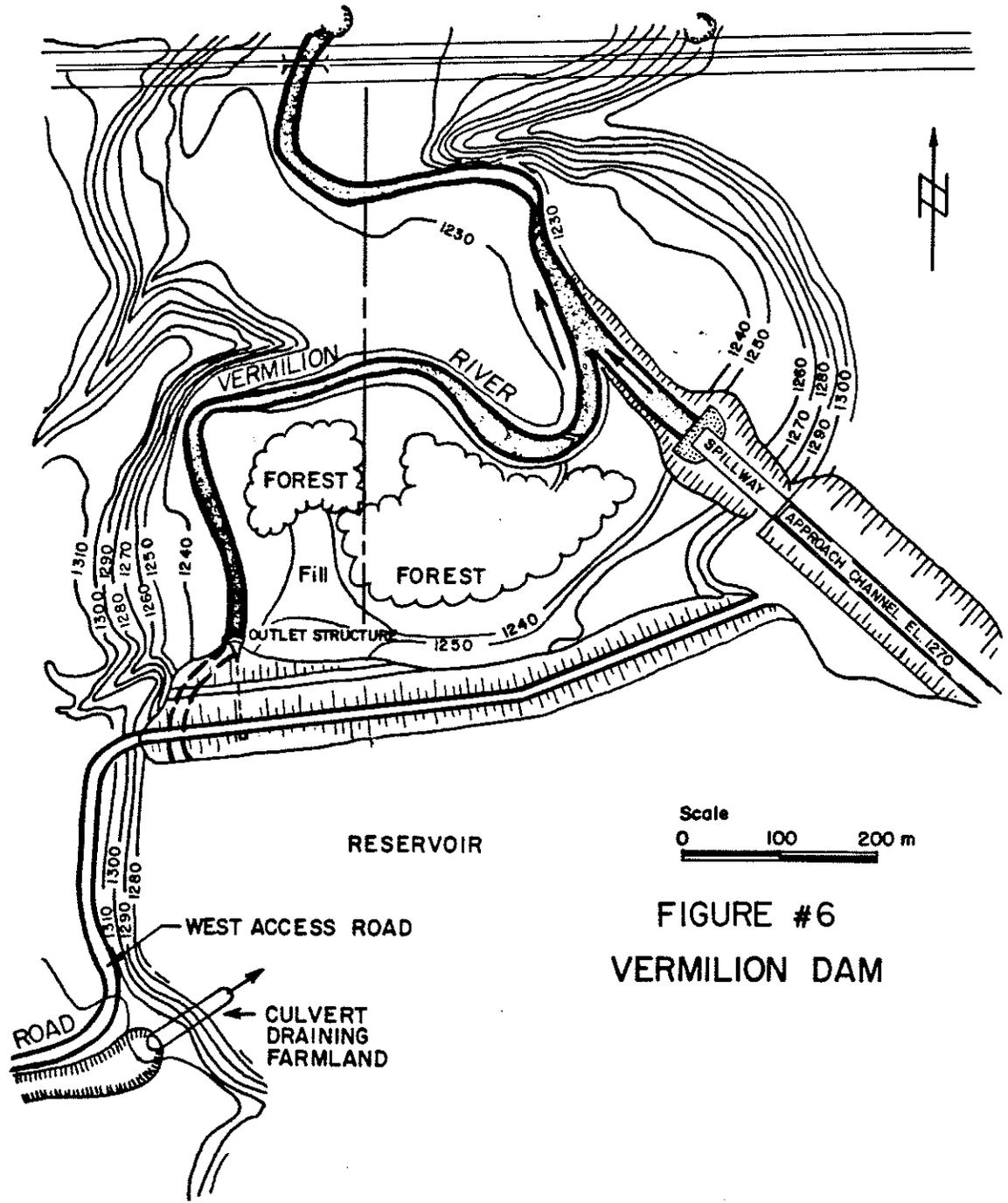


FIGURE #6
VERMILION DAM

proposed by Dr. French, Executive Director, Medical Public Health, in a letter to R.D. Johnstone, Deputy Minister, Health and Social Development, dated May 13, 1977 (French 1977) In an interview, R. Storoziński, P. Eng., Town Engineer, Dauphin, stated that he was unaware of the existence of the drainage culvert but said he would investigate it. On the morning of June 19th, Mr. Storoziński informed me that the PFRA was responsible for the installation of this culvert. I was unable to obtain further information on the culvert.

4.1.4.2 Interviews Concerning Vermilion Dam

During a second trip to Dauphin on June 18 and 19, several people were interviewed to obtain their impressions on the present state of the Vermilion Dam site. On June 18, 1981, Wes Friesen, Agri-Water Technician (Dauphin) stated that the agricultural potential of the land adjacent to the Vermilion River was very high. According to Mr. Friesen, two farming operations downstream of the dam used water directly from the Vermilion River for agricultural purposes. One operation was a beef cattle farm and the other was an ornamental bedding plant nursery. Mr. Friesen indicated that there was the possibility of future irrigation demand downstream, and that this demand would best be filled by water drawn directly from the river, as the aquifers of the region were unreliable. A farmer who was interviewed on June 18th indicated that he used the

Vermilion River south of the reservoir to water his cattle. Wes Friesen stated that, as of yet, there was no evidence to indicate that the downstream water flow has not been maintained to the satisfaction of all the downstream users.

On June 18th, R.K. Storozinski, Town Engineer of Dauphin, stated that the only times that water from the Vermilion Reservoir had not been acceptable as a raw water supply for the Town of Dauphin, had been during periods when algae blooms occurred in the reservoir. He indicated that the town would not draw water from the Vermilion System during those periods. Only when some condition developed in the Edwards Creek supply system that renders that water supply unacceptable, would the Town draw from the Vermilion reservoir, provided it is acceptable. Storozinski also indicated that every effort was being made by the Town to manage the Edwards Creek system efficiently since that system was a more economical system to operate.

H. Valiant, (Regional Fisheries Biologist, Dauphin), explained in an interview on June 18, 1981, that he had done some preliminary limnological work on the Vermilion reservoir during the summer of 1979. Two samples were taken, one on July 4, 1979 and one on July 28, 1979. Oxygen and temperature were measured on both dates and Valiant produced temperature-depth and oxygen-depth profiles for the reservoir for both dates. The profiles for July 4, 1979 show classical epilimnion-hypolimnion

formation with the thermocline forming at approximately 5-6 meters from the surface. The oxygen concentration dropped very quickly from approximately 9.0 ppm in the top 4 meters of surface water, to about 5.0 ppm just below the thermocline, and continued to fall to approximately 2.5 ppm at the bottom. The measurements made on July 28, 1979, however, show a different situation. There was no distinct thermocline in evidence on this date, only a constant drop in temperature from the surface to the bottom of the reservoir. The bottom waters appeared to be somewhat warmer than they had been on July 4, 1979. The oxygen profile was similar to the temperature profile for July 28, 1979. There was a gradual decrease in oxygen concentration from the surface to the bottom. The only explanation Valiant had for this unusual situation on July 28, 1979 was that the riparian water works, located at the west central section of the dam had been open and had drained out the colder hypolimnionic water of the reservoir, and had caused the thermocline to migrate to the bottom. This would account for apparent lack of thermocline. The reservoir would then become prone to mixing by wind, due to the loss of the stabilizing thermocline, but the organic decomposition within the benthos would still cause an oxygen depletion near the bottom. This situation, in itself, may not pose a serious problem, however, Valiant also informed me that, in the spring of 1981, 2,000 yearling Brook Trout (*Salvelinas Fontinalis*) were stocked

into the Vermilion reservoir. The fish were placed in this reservoir as part of an experimental program in farming trout in the area. The draw off of colder bottom water may pose a threat to the success of this stocking program. Brook trout prefer colder water and, therefore, would move to the bottom of the Vermilion reservoir. However, the oxygen concentration at the preferred temperature would be so low, due to the organic decomposition, that it would place a strain on the fish.

When questioned as to his impression of the adequacy of the environmental assessment of the Vermilion River Dam, Valiant stated that if he had seen the plans for the construction of the riparian water works at an earlier date, he would have suggested design changes that would have allowed for a more constant flow of cold water into the Vermilion River, between the outlet pipe and the spillway channel. This would have allowed for the stocking of brook trout into this section of the river. Valiant described the section of river as potentially a prime brook trout habitat with excellent gravel substrate. The water flowing from the outlet pipe is very cold (from 12.3°C in early July) and is only approximately 15.0°C at the junction of the spillway channel. All that is required for the creation of excellent brook trout habitat, is that the flow of cold water be maintained in this part of the river. Valiant also stated that if the brook trout stocked in the

reservoir didn't survive, then the Fisheries Branch would re-stock with another species.

In order to get an indication of the amount of local public interest in this project, I interviewed the Editor of the Dauphin Herald on June 19, 1981. He stated that, to his knowledge, there had never been a water shortage in Dauphin and, as a result, people had not been overly concerned about the water supply. There had only been a very few articles written in his paper about the project, and most of those had been editorials about a local problem with the acquisition of land for the project. He was not aware of any public concern over any aspect of the project since its completion.

After returning to Winnipeg, further information on possible bio-physical impacts of the project was obtained by telephone conversations with various people. D.A. Davies, Department of Natural Resources, Regional Wildlife Specialist for the Dauphin area, indicated that there were no studies available on the specific effects of the Vermilion Dam on wildlife. He said that, from his personal observations, he was sure that large animals such as deer, elk and moose did use the cover of the stream bed for movement, and that it would be useful to provide cover around the open areas, at each end of the dam structure, to allow easier movement around the reservoir by such large animals. Mr. Davies also indicated that there was some crop depredation due to

deer and elk in the area but that these animals probably were coming out of Riding Mountain National Park. There was no evidence, he said, to show that there was any increase in crop depredation due to ducks that might use the reservoir.

In a telephone conversation with Dr. W.G. French, the Executive Director of Medical Public Health Services, on June 16, 1981, he indicated that he had no further information on the Vermilion Dam Project and that he had not received any reply, or response, to his concerns about the project that he had submitted, in a letter, to R.D. Johnstone Deputy Minister, Health & Social Development (French, 1977).

4.2 Moose Lake Road

4.2.1 *Project Description*

This project is a resource road which was constructed by the Province of Manitoba, Department of Highways under the Federal/Provincial Northlands Agreement. The road was designed to provide year-round access for the people of Moose Lake to The Pas. The road, which is approximately 62 km (39 miles) long, passes through the Tom Lamb Wildlife Management area, (Map #7).

4.2.2 *Pre-construction Environmental Planning Associated with the Moose Lake Road*

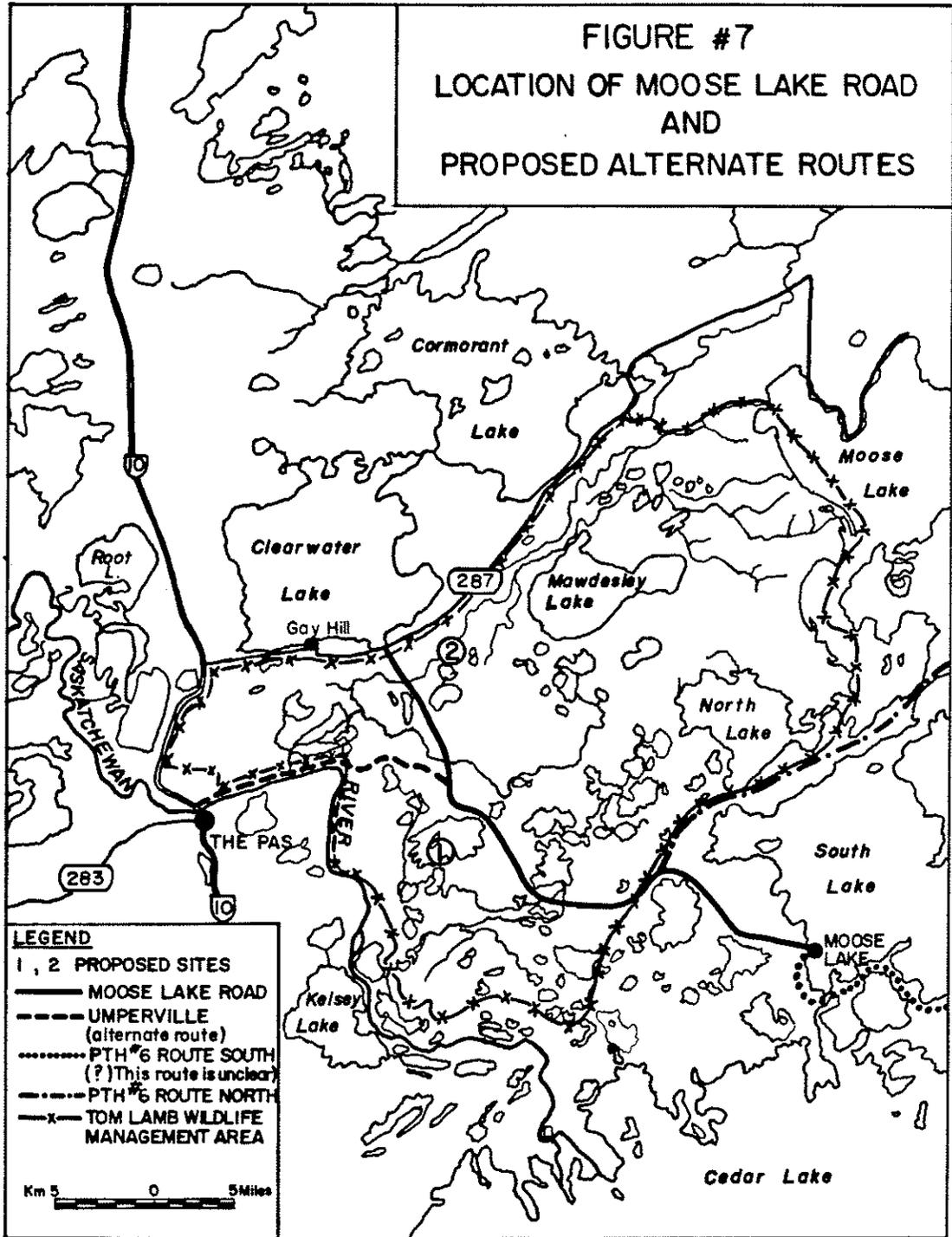
The information that was initially obtained from Highways, by EARP, did not indicate that there had been

any consideration of the environment in the initial routing studies conducted by Highways, on this road, during the early 1970's. The routing studies appear to have been technical studies assessing only the engineering and cost aspects of the alternative routes.

In a letter from C.A. Jackson, (1975) Department of Highways, Construction Engineer, to J. Peacock, Chief Engineer, Department of Highways, Jackson stated that there were basically four routes under investigation. One route would link Moose Lake to P.T.H. #6, by a route passing south of South Moose Lake, and an alternate easterly approach route would pass north of South Moose Lake. These easterly routes, Jackson stated, were considered to be unrealistic, due to the Moose Lake people's familial ties with the Town of The Pas. Another alternate route discussed, would have linked Moose Lake Village to The Pas via Umpher-ville. Choosing this route would have placed the road along the north shore of the Saskatchewan River, east of The Pas. Figure #7 shows these alternate routes and the route that was eventually chosen. Never, in the descriptions of these routes by Highways, was there any mention that certain routes passed through the Tom Lamb Wildlife Management area.

It should be noted that the Moose Lake Road was planned prior to the establishment of the Manitoba EARP policy, in September of 1975. Once it had been decided

FIGURE #7
LOCATION OF MOOSE LAKE ROAD
AND
PROPOSED ALTERNATE ROUTES



by Department of Highways, that the Atikameg (P.R. 287) to Settlement of Moose Lake would be the route of choice, S.A. Corbett, District Engineer, suggested to R.N. Sharp, Director of Planning and Design, Department of Highways, in a letter dated November 12, 1975, that several agencies would have to be made aware of the proposal, in order to "rectify any possible alterations prior to the construction stage" (Corbett, 1975). The agencies suggested and the reasons why these agencies should be contacted were given in the letter as:

- a) ...Federal Department of Indian Affairs, as the route passes through the Moose Lake Indian Reserve to terminate at the settlement.
- b) Provincial Department of Northern Affairs as the route is adjacent to the airport located on the reserve.
- c) Provincial Department of Mines, Natural Resources and Environmental Management, c/o Wildlife Branch as the route traverses the Tom Lamb Wildlife Management Area located due east of Atikameg.
- d) Ducks Unlimited as the route crosses and utilizes existing Ducks Unlimited dykes...

(Corbett, 1975)

This appears to be the first time in the designing process of this road that environmental consequences were considered. It is the first time mention was made of the existence of the Tom Lamb Wildlife Management Area. On March 24, 1976, J.D. Nicholson from the Federal Department of Indian and Northern Affairs, replied on their

concerns about this road, in a letter to R.N. Sharp, Director of Planning and Design, Manitoba Department of Highways. The letter indicated that the only major concern that the Federal Department had, was that an effort be made to select a route through the Indian Reserve land that was acceptable to the Band Leaders and the Manitoba Department of Highways. No environmental concerns were mentioned in this letter (Nicholson, 1976).

R.C. Goulden, Chief of Wildlife Programs, Manitoba Department of Natural Resources, also replied to Department of Highways, voicing his concerns on the Moose Lake Road, in a letter dated November 26, 1976. Goulden's major concerns were that he wished to have his departmental staff involved in the planning of the route, so as to protect valuable wildlife habitat. As well, Goulden wished to ensure that the road would be constructed in such a way as to have no significant effect on the water regime of the Tom Lamb Wildlife Management Area, and that the location of the construction camps be decided after consultation with his departmental staff. Finally, Goulden wished to ensure that the borrow pits be excavated in a manner which would enhance waterfowl or furbearer habitat and he also wished to ensure that all other alternative routes had been fully considered (Goulden, 1976).

T.E. Weber, Senior Assistant Deputy Minister, Water Resources Division, also made known to G.M. Docking in a

letter dated December 8, 1976, that his only concern about the Moose Lake Road was that the proposed right-of-way lay partly within the Grand Rapids Water Power Reserve and that Manitoba Hydro had said that they would have no objections to the construction of this road if the surface elevation of the road from P.R. 287 to Driftwood Lake, be no less than 262.1 m and the balance of the road, from Driftwood Lake to Moose Lake Settlement, be at least 259. m. If Manitoba Hydro's conditions were met, Mr. Weber said that he would recommend to his Minister, that the affected lands be removed from the Grand Rapids Water Power Reserve. This appears to be the last comment on the planning of the Moose Lake Road. The construction of the first 16 km of the road began in May of 1977. There was no record of any environmental studies done in connection with this road. There was, however, mention of two sites, in the area of the Moose Lake Road, that were recommended as "Ecological Reserves" by the Ecological Reserves Committee of Manitoba, under the International Biological Program (IBP) (Teillet, 1979). One of the most important objectives of the IBP program, was the conservation of Terrestrial Communities (CT). The purpose of the program was to identify and preserve samples of biological systems, for purposes of ecological education, scientific research and management, and to use the areas as base lines for assessing human impact on the world (Teillet, 1979). The two sites shown on Map #7 were

recommended for Ecological Reserve Status by the IBP in September of 1972. The sites were described by Teillet (1979) as the following:

- 1) Landry Lake Island (Manitoba IBP - CT site #16). The island lies within the Tom Lamb Wildlife Management Area and is approximately 5.18 square kilometers in area and consists of undisturbed White Spruce-Balsam fir forest with a population of nesting bald eagles.
- 2) Balsam Fir Area (Manitoba IBP - CT site #33). Located in the Tom Lamb Wildlife Management Area is approximately 10.36 square kilometers in area and consists of an undisturbed, nearly pure stand of Balsam Fir.

As of the date of the writing of this report, these sites had no legal status and lacked any statutory protection. In March of 1975, B. Harper, Regional Park Supervisor, The Pas, sent a letter to S. Corbett, District Engineer, Department of Highways, The Pas, indicating that Parks Branch had particular concern for the routing of Moose Lake Road in the vicinity of Landry Lake. No specific mention is made, however, of the existence of the IBP-CT site #16 in this letter (Harper, 1975). I could find no other indication that these IBP sites ever again were considered in the review of the Moose Lake Road.

4.2.3. *The Manitoba Government's Environmental Assessment and Review Carried out on the Moose Lake Road Project*

One of the reasons why the Moose Lake Road project was chosen for analysis in this study, was that it represents perhaps the worst possible environmental assessment

procedure. The project description was not submitted by Highways to EARP until after construction had begun. As was shown in the previous section, Department of Highways contacted several government agencies about their concerns with the construction of the Moose Lake Road. These contacts began about March 1975 and continued until May 1977, when the Capital Works Acceleration Committee gave approval to proceed with construction of the Moose Lake Road.

On April 22, 1977, W.G. Bowen, Assistant Deputy Minister, Environmental Management Division sent a letter to Allan Murray, Associate Deputy Minister, Department of Renewable Resources and Transportation Services, explaining the Government's EARP policy and its basic procedure and asking that a project description of the Moose Lake Road be submitted as soon as possible (Bowen, 1977). In reply to this request from EARP for a project description, C.A. Jackson, a construction engineer with the Department of Highways, informed F.A. Doe, Chief of EARP that during the past few years, discussions had been held with Ducks Unlimited and other interested parties in the Renewable Resources and Transportation Services Department. Specifically the letter states:

...Inasmuch as the actual construction does not contaminate the air or the water, the Cabinet Committee (Capital Works Acceleration Committee) instructed this Department to proceed with the project immediately and to submit an environmental review when all the information is compiled

from the various interested groups
such as Renewable Resources and
Transportation Services, Ducks
Unlimited and Water Control, etc. ...
(Jackson, 1977)

R.A. Doe, Chief of EARP replied to C.A. Jackson, Department of Highways, on June 9, 1977, with a letter that suggested that a project description of the Moose Lake Road be filed with the Manitoba Environmental Assessment and Review Agency as soon as possible (Doe, 1977a). On December 8, 1977, Jackson, Department of Highways, finally submitted a project description to EARP. It appears, however, that Highway's compliance with EARP's request for a project description came about as a direct result of Environment Canada insisting that the Department of Highways must submit to EARP before the Federal Government would pay for its share of the road under the Federal/Provincial Northlands Agreement.

At this point, the Moose Lake Road was almost completed, but the Manitoba EARP was initiated in any case. The project description was circulated to various Manitoba Government Departments and a report was prepared on the various Departments' concerns by the EARP support staff for Manitoba Environmental Assessment and Review Agency.

As a result of the EARP examination, the MEARA, at a meeting on January 24, 1978, agreed not to recommend an environmental assessment for the Moose Lake Road. It was also agreed that a representative from the Department of

Highways, Renewable Resources and the Manitoba EARP Support Services carry out an on-site inspection of the road during the spring of 1978, and that this group would stipulate any restoration procedures that would be required. The proponent agreed to comply with and undertake any restoration measures deemed necessary by this group following the on-site inspection.

This site inspection occurred on May 28, 1978 and, as a result, a report was prepared on the condition of the road for MEARA (Manitoba Environmental Assessment and Review Process, 1978).

The last entry in the EARP files is a letter from R.W. Glassford, Chief Mines Inspector, to F.A. Doe, EARP, dated December 12, 1978, indicating that the clean-up of the borrow pits associated with the Moose Lake Road had been completed to the satisfaction of his Branch (Glassford, 1978).

4.2.4 *Present Condition of Moose Lake Road (1981)*

On July 14, 1981, an on-site inspection of the Moose Lake Road was made by myself and B. Perry. The inspection on this date had two main objectives; first, it was intended to acquaint me with the region through which the road passed and to generally determine the status of the road and note any general problems. Secondly, the inspection was intended to determine the status of the road with respect to the

recommendations of the inspection team as reported in Manitoba Environmental Assessment and Review Process (1978).

The general condition of the road was good. It appears that the Department of Highways maintains the road surface. With respect to the specific deficiencies identified by the inspection team, Little Frog Creek was noted as having unstable banks at the inlet and outlets of the culverts. It was recommended the rip-rap would be required to prevent erosion of the banks (Manitoba EARP, 1978).

On July 14, 1981, I found no evidence of the installation of any rip-rap in this location. At Frog Creek Crossing, rip-rap was also recommended and, again, I found that none had been installed. At 18.9 km from the PR 287, Manitoba EARP (1978) inspection team reported that ponding had occurred on the south west side of the road, and recommended that a culvert was required in this area to allow for better drainage. It was noted during my inspection of July 14, 1981, that this condition still existed and that no action had yet been taken. However, it should be noted that, during an interview with D. Robertson, Regional Wildlife Specialist, The Pas, on July 15, 1981, Robertson indicated that it was not clear, to him or to biologists from Ducks Unlimited, to what extent this ditched area was draining the surrounding muskeg. The Landry Lake

crossing was noted to have several deficiencies during the Manitoba EARP (1978) inspection. Rip-rap was recommended for both ends of the culvert, as well as along the road embankment. It was also noted that the culvert had shifted for the outlet end was approximately one foot higher than the inlet end. It was recommended that this culvert be readjusted. It appears that neither of these recommendations were carried out.

The deficiencies noted during the Manitoba EARP (1978) inspection at Lobstick Creek (pumphouse inlet), were difficult to assess. The road appeared to be quite stable. I was unable to locate the mentioned culvert, and it is possible that this culvert may have been submerged. The dragline spoil from the dredged channels was totally covered with vegetation and, as a result, the banks appeared stable. The abandoned work camp in this area, that was referred to in the Manitoba EARP (1978) inspection report had undergone an effective general clean-up.

In general, the conditions that were noted in the numerous borrow pits along the road appear to be unchanged. Piles of slash and overburden that were pushed into standing timber were still evident in a number of borrow pits.

On July 15, 1981, interviews were held with several interested parties in The Pas, regarding the Moose Lake Road. D. Robertson, Wildlife Specialist, The Pas, indicated that access to the area has increased somewhat, due

to the existence of the road, particularly along the road right-of-way, but that a system of "Designated Travelling Routes" which had been in existence for a number of years, was still being used and was an effective method of limiting the hunting pressure on the local wildlife populations. Mr. Robertson also indicated that there was some concern over the effect the road may have on the moose population, however, there was, to date, no specific information on this point.

I also discussed the assessment of the Moose Lake Road with regional staff members of Ducks Unlimited, The Pas, on July 16, 1981. The Regional Manager, Rob Ingvardsen, indicated that he had not been totally satisfied with the development of the Moose Lake Road. He felt that the concerns raised by the Ducks Unlimited staff at The Pas at the time of planning and construction of the road, had not been met with the attention they deserved. Ingvardsen said that one of the main problems seemed to have been a lack of commitment at the construction site on the part of the crew to follow the guidelines or recommendations set out by Ducks Unlimited. Proper care had not been taken during the installation of water control structures and, as a result, the effectiveness of these structures had been reduced. He also indicated that there was a lack of commitment at the level of the Department of Highways engineers to ensure that these

water control structures were properly installed. Ingvarlsen indicated that he had even attempted to arrange to have one of his own personnel present when these water control structures were being installed, to advise on the proper installation, but that Department of Highways' engineers seemed unwilling to make such arrangements. As a result, the culverts were installed without the on-site advice of Ducks Unlimited. It was felt the general lack of communications between Ducks Unlimited and Department of Highways was a factor in the improper handling of the Moose Lake Road. Ingvarlsen indicated that he had become so frustrated with the apparent lack of concern on the part of the Department of Highways, that perhaps he had failed to follow through on the project, as perhaps he should have. He concluded by adding that if he had it to do over again, he would supply Highways with precise and detailed information on what Ducks Unlimited wish to see done. This would, at least, prevent Highways from claiming that they didn't know what Ducks Unlimited wanted done. Bob Clay, the Ducks Unlimited member of Manitoba EARP (1978) inspection team, was unavailable for comment.

On July 9, 1981, in a phone conversation, B. Wright, the Regional Fisheries Biologist, The Pas, indicated that the Moose Lake Road had had little direct impact on the fisheries of the area. He did say, however, that the existence of the road had improved the economics of the

Moose Lake fishing because the road now provided a cheaper form of transportation to get the fish to market. This could result, in the long term, in an increased pressure on the commercial fish populations of Moose Lake, but there was no data to indicate how severe this added pressure would be. Mr. Wright also mentioned that the Moose Lake Road indirectly provided access to the dam site between North and South Moose Lake, via a MANFOR logging road. This increased access did pose some problem with respect to poaching in the area around the dam. On July 16, I made a special trip along the MANFOR road to inspect this dam area. There was definite evidence of poaching activities in the region adjacent to the dam. Approximately one dozen Northern Pike (*Esox lucius*) were found on the beach just north west of the dam. It is possible that they had been caught along with other more valuable fish in a net, and had been discarded. Mr. Wright indicated that the road did not obstruct any major fisheries migration routes and that any impacts would be small and localized.

4.3 Squaw Rapids-The Pas 230KV Hydroelectric Transmission Line

4.3.1 *Project Description*

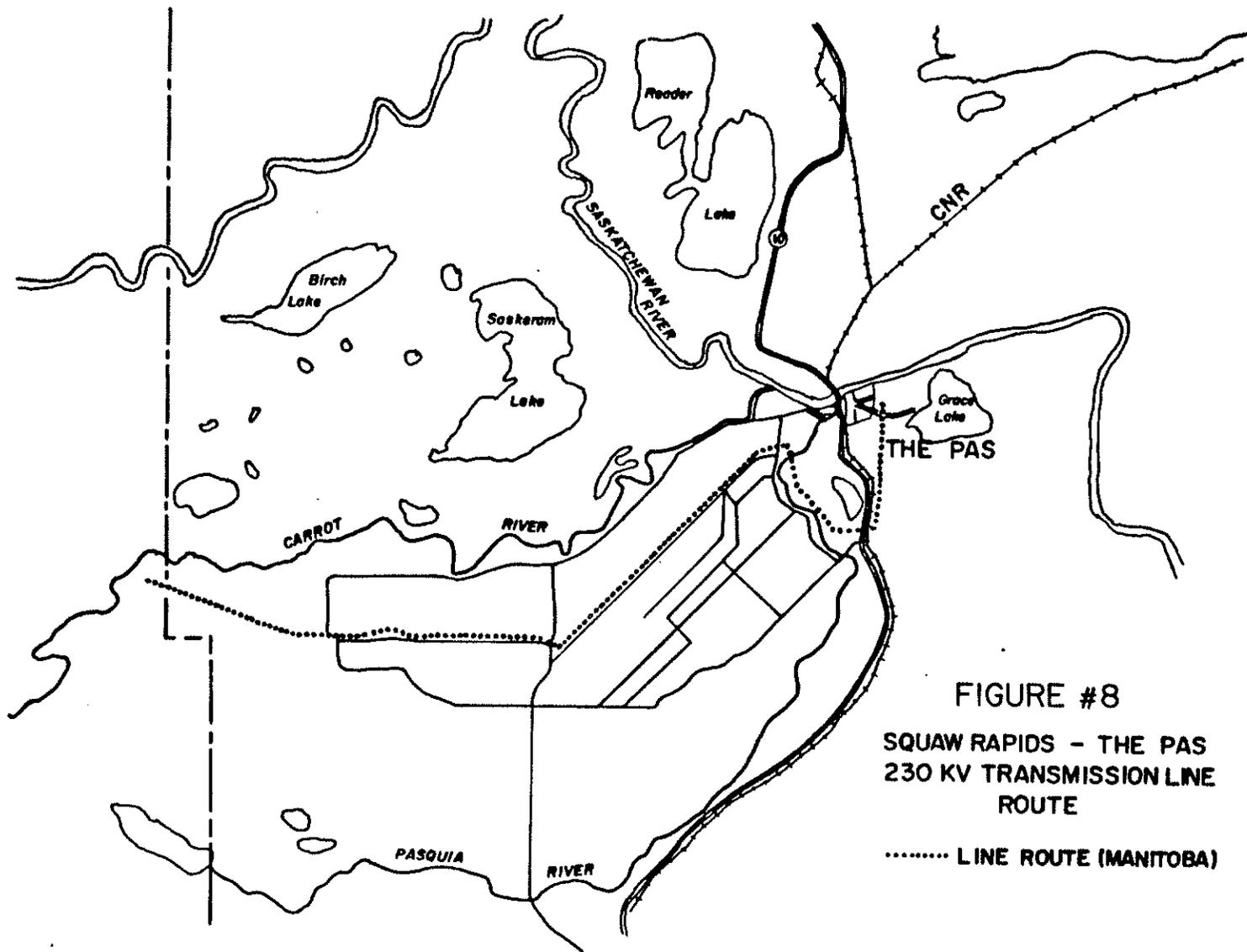
This project consisted of a 230,000 Volt (230kV) transmission line that was built to join the Manitoba Hydro's transmission network with that of the Saskatchewan Power Corporation. This interconnection was requested by the

Saskatchewan Power Corporation in order to provide a linkage between the southern and northern sections of the Saskatchewan Power Grid, through the Manitoba system. The line would be approximately 160.9 km long with approximately 48.27 km of that being within the boundaries of Manitoba. The line passes out of the Ralls Island Station, The Pas, and travels southward along the east side of Highway #10. The line then turns west and crosses Highway #10, south of Irzia Indian Reserve land. The line then travels north again until it picks up a rural agricultural road, which it follows west until it crosses marshy land at the western-most end of the Pasquia Valley before crossing into Saskatchewan just south of the Carrot River (see Figure #8).

4.3.2 *Pre-construction Environmental Planning Associated with the Squaw Rapids-The Pas 230 kV Transmission Line*

This section of the report has been divided into two parts. The first part will deal with general environmental studies which have been done on the impact high voltage transmission lines and the second part will deal with reference studies specific to the Squaw Rapids-The Pas line.

In the past several years, the appearance of Extra Highvoltage (EHV) electric transmission lines from 230kV up to 750kV, and experimentally higher voltages has caused a general concern about the potential effects of these



lines. A number of studies have been prepared by various institutions, researchers and power companies, examining these potential effects. The majority of these reports have dealt with the biological effects of the electromagnetic fields and corona discharges associated with these large energy conductors. There appears to have been little work done on logistic analysis of these types of large transmission lines on the landscape and environment in general.

Most of the research articles such as those by Young (1976), and Kronberg (1976), review the potential problems possessed by electromagnetic fields and corona discharges but provide no conclusive evidence demonstrating their effects. Droppo (1979), Hungate, et al. (1979), and Frazier et al. (1979) conducted studies with special equipment designed to reproduce in Vitro, the electromagnetic environment beneath EHV power lines. Many of these studies focussed on specific aspects of the Bio effects of EHV transmission lines but showed little, if any, conclusive results.

Lee, et al. (1979) and Scott-Walton et al. (1979) dealt more with the environmental problems of EHV transmission lines. Again, these studies present no evidence documenting specific impacts of EHV transmission but only review the present general knowledge concerning such impacts.

It appears that there were no specific studies concerning potential environmental effects of the Squaw Rapids-The Pas 230 kV transmission line, done by Manitoba Hydro. When officials from the Manitoba Hydro Environmental Services Department were questioned, there was no indication that any environmental studies had been conducted with respect to this line. Hydro did indicate in the project description submitted to EARP (Manitoba Environmental Assessment and Review Process, 1979), in a section entitled "Pollution Generation", that the line would produce the same size electrical fields and the same ranges of ozone as other 230 kV lines. This section also states that environmental studies were carried out on a similar 230 kV line that was built from Ridgway to the U.S.A. border, and it was inferred that no more studies need be done on the Squaw Rapids-The Pas line.

The environmental study referred to by Hydro was one prepared by Riewe (1975). This report catalogues the various wildlife habitats in southeastern Manitoba, and describes in detail, the natural biotic communities found in each habitat. As part of the environmental inventory analysis necessary for route selection, Riewe (1975) describes the "unique and/or environmentally sensitive areas" in southeastern Manitoba, and provides an estimation of the possible impact a transmission line would have on the area. Finally, the report recommends that ecologically sound

techniques be used by Hydro for the clearing and maintenance of rights-of-way in all transmission line projects. Several examples and references of such ecological techniques are given in Riewe (1975) and the advantages to Hydro and the environment are shown. Since this study was concerned with habitats and line routes in south eastern Manitoba, I feel that its specific application to the environmental concerns of the Pasquia Valley area is questionable. It appears that one of the reasons no environmental studies were carried out on Squaw Rapids-The Pas transmission line, was due to the lack of time allowed before the line was scheduled to be in service.

It should be noted that this transmission line, due to its interprovincial nature, was assessed in two sections, Saskatchewan assessed (and planned the route) for its half of the line, and Manitoba did the same for its half. A common border crossing was agreed upon by both provincial power companies before alternative routing plans had been made. As a result, this made developing the environmentally best overall route for the line virtually impossible. It should also be noted that Saskatchewan Power Corporation went to considerably greater lengths to prepare an environmental evaluation of the routing alternatives for its half of the line, than did Manitoba Hydro. Three separate documents were prepared as a result of the Province of Saskatchewan's environmental review of the Squaw Rapids-The Pas power line.

On June 7, 1978, the Environmental Programs Department of the Saskatchewan Power Corporation submitted an "Overview Report for the Squaw Rapids to Manitoba Border 230 KV Transmission Line" (Saskatchewan Power Corporation, 1978a) to the Environmental Assessment Secretariat, Department of the Environment, Government of Saskatchewan. This report describes the line route alternatives for Saskatchewan, the line design, the construction techniques to be used, including the right-of-way preparation, construction and maintenance. Environmental base line data are given in a section entitled "Environmental Considerations". The existing environment was described with respect to physiography, surface and subsurface geology, climate, water resources, soils, vegetation including different communities, wildlife, fisheries, outdoor recreation, access and transportation in the area and archaeology. The land uses of the proposed route alternatives are described, and include such uses as waterfowl production, hunting, trapping, fishing, outdoor recreation, agriculture settlement, natural areas, mining and forestry. The final section of the report deals with the potential environmental impacts on all of the above and the possible mitigation measures for these impacts.

On October 5, 1978, the Saskatchewan Power Corporation prepared an "Addendum to the Overview Report" (Saskatchewan Power Corporation, 1978b) which updated many

of the points mentioned in the previous report. The final Report was a one-man board of inquiry report prepared by Professor Peter Nikiforuk, Dean of Engineering, University of Saskatchewan, dated February 9, 1979. Professor Nikiforuk addressed such questions as the need for the project, that is how this project would solve certain of the province's energy problems. He also stressed that the ultimate route of the line must be decided jointly by both provinces. The main bulk of this report addresses various questions relating to the environmental aspects of the alternative routes, particularly those within the Cumberland Delta area. It is interesting to note that while both provinces entered into the agreement to build this transmission line in February of 1978, the Saskatchewan Power Corporation had submitted to the Saskatchewan Department of the Environment, a project description and detailed environmental statement by October 5, 1978. As well, a one-man board of inquiry report had been prepared by February 9, 1979, while Manitoba Hydro had not even submitted a preliminary project description until January 19 of 1979.

4.3.3 *The EARP Procedure That Was Applied to the Squaw Rapids-The Pas 230 kV Transmission Line*

The Manitoba EARP first requested on February 14, 1978, that Manitoba Hydro submit a project description which would then be used in the initial environmental evaluation of the line. Hydro did not reply to this request, and there was no further information received by EARP on this project until a copy of a Hydro memorandum to the Crownlands Section of the Department of Renewable Resources and Transportation Services dated September 12, 1978, was forwarded to EARP. This memo requested a right-of-way easement of Crown Lands be set aside for the construction of the proposed Squaw Rapids-The Pas line. At that time, September 28, 1978, EARP again contacted Hydro and requested a project description.

On November 10, 1978, the Minister of Mines, Natural Resources and Environmental Management, B. Ransom, informed the Chairman of Manitoba Hydro that he was instructing the Crown Lands Branch of his department to withhold any action on Hydro's request for land reservation until Hydro submitted a project description to EARP. In reply to this, the Chairman of Manitoba Hydro informed Ransom that the reason for the delay had been because the Saskatchewan Power Corporation had informed him that construction on this project had been deferred until further notice. (Saskatchewan had, at about this time, set up the one-man board of inquiry.) The

Chairman of Manitoba Hydro continued by saying that when a decision was made to proceed with the transmission line, the required project description would be filed with EARP.

It was not until January 19, 1979, almost one year after the Order-In-Council was signed, that Manitoba Hydro finally submitted a preliminary project description. There was one more request from EARP for more detailed maps showing the proposed route of the line on January 31, 1979. On the same day, the existing project description was distributed by EARP to the concerned Provincial Government departments and agencies for their comments.

On January 31, 1979, Manitoba Hydro requested that EARP review the project as expeditiously as possible, because approximately 16.0 km of the 48.2 km proposed route was through swampy terrain and would require winter construction. Since the line was scheduled to be in service by the end of May, 1979, winter construction, referred to by Hydro, would need to be done within the next month.

On February 6, 1979, Manitoba Hydro provided the additional maps, requested by EARP on January 31, 1979. On February 7, 1979, EARP again contacted the Crown Lands, Lands and Surveys Division of the Department of Renewable Resources and Transportation Services and requested that any irrevocable commitments of Crown Lands, requested by

Hydro for construction of the Squaw Rapids-The Pas line, be withheld until the end of February 1979, the estimated EARP review completion date.

On March 5, EARP released its Initial Environmental Assessment for the Squaw Rapids-The Pas 230 kV transmission line (Manitoba EARP, 1979). On March 5, 1979, shortly after the Manitoba EARP (1979) report was prepared, Ducks Unlimited (Canada) informed EARP of their concerns with the route of the proposed line through the land west of the Pasquia Valley area. Their concern is over the potential losses to waterfowl populations as a result of birds colliding with the power conductors. As evidence for their concern, they cited a study which documented observations of collisions between birds and 345 kV transmission lines in an area in Illinois (Anderson, 1978). On March 5, 1979, the Canadian Wildlife Service responded to EARP's request for comments with respect to the power line in question. In this letter of March 5th, P. Boothroyd, raises the same concerns as Ducks Unlimited, about the potential for bird collisions with the proposed line. Boothroyd followed up by contacting the property manager of Manitoba Hydro with a letter dated March 22, 1979, in which Boothroyd proposed a monitoring study that would be designed to evaluate what effects the transmission line actually had on the water fowl population of the area. Manitoba Hydro replied to Mr. Boothroyd on April 26, 1979, and informed him that they

were studying the problem and would advise him of their deliberations shortly. Mr. Boothroyd indicated to me, in a telephone conversation on August 14, 1981, that he had been informed by Manitoba Hydro, that they would be unable to provide funding for such a monitoring study. Boothroyd also indicated that he had sent his proposal to Mr. Partacker of the Lands Office of Hydro, and not the Environmental Branch of Hydro, because he felt that Partacker was the individual that would ultimately decide the fate of the project.

4.3.4 *Present Condition of the Squaw Rapids-The Pas 230 kV Transmission Line*

On July 14, 1979, a visual inspection was made of the Manitoba section of the Squaw Rapids-The Pas 230 KV transmission line, by myself and B. Perry. The inspection of the line started from the Ralls Island switching station east of The Pas. From the switching yard, the line travels south, across land which is generally boreal forest habitat. The line cannot be seen from Highway #10 until it crosses the highway, approximately 11.2 kilometers south of The Pas. The line then travels westward through the agricultural land west of The Pas. The hydro line was built on easement just north of an existing agricultural drainage ditch, which is itself part of the right-of-way of an agricultural road (see Figure #8).

The farmers appear to be cultivating directly under the line, but there is a strip of uncultivated land between

approximately the center line of the Hydro line to the drainage ditch. Cultivation directly under the Hydro line apparently is more difficult, then, in the open. This may be a beneficial factor in preventing the farmers from cultivating to the edge of the drainage ditch, the practice of which has been shown to cause erosion of top soil into the drainage ditch.

At the western end of the agricultural land, the line passes into a forested area. The right-of-way has been clear cut and there is evidence of dead trees in the region of the forest, adjacent to the right-of-way. There is a distinct lack of woody plants beneath the transmission line. This would indicate that some form of herbicide is being used on the right-of-way to kill the woody brush. I was unable to view the Hydro line, as it passed through the swampy terrain west of the large dike system that surrounds the Pasquia agricultural settlement. However, I was able to examine the line where it crossed "Salt Creek" just west of the Pasquia Dike system and south of the Carrot River. The brush near the stream crossing did not show the same dead vegetation as did the right-of-way within the rest of the wooded area. The day of the field inspection, the weather was overcast and a light rain was falling. The sound of the Hydro line was audible as far away as 60 meters. A local farmer who lived near the line, said that the line was very loud at times, especially during poor

weather. The farmer also indicated that there had been a farmers' organization formed in the area to oppose the routing of the power line through the agricultural land, however, the organization apparently could not agree among themselves as to their course of action, so no intervention was made.

The agricultural land west of The Pas is a very unique region. This pleasant, flat agricultural land, is an interesting break from the endless tracts of boreal forest and muskeg that typifies the region. In my opinion, this Hydro line decreases the aesthetic value of the area. In an interview on July 15, 1981, D. Robertson, Regional Wildlife Specialist - The Pas, indicated that, to his knowledge, the line had no noticeable impact on the wildlife of the area. The staff from Ducks Unlimited - The Pas, also indicated that they had no evidence to indicate that the line had any impacts on the waterfowl of the area. In an interview with an engineer from Manitoba Hydro on July 23, 1981, I learned that one of the reasons why a project description had not been submitted by Manitoba Hydro for the Squaw Rapids-The Pas environmental assessment, was because of a directive from the Chairman of Manitoba Hydro at the time of the review. The Chairman had given instructions that no 230 KV lines be submitted to EARP, as he hoped to negotiate with the Government to have the EARP waived for 230 KV lines.

4.4 Marshy Point Road

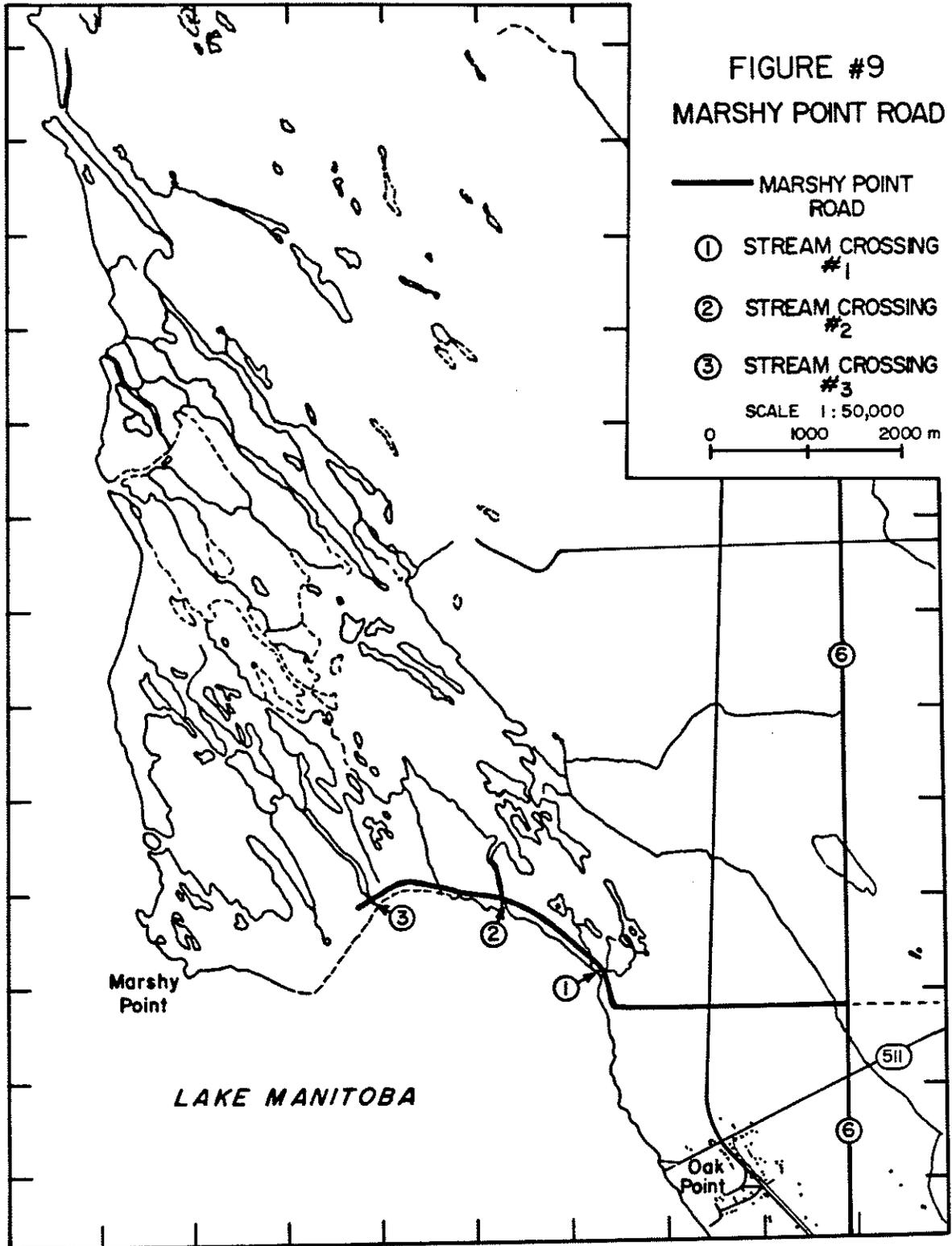
4.4.1 *Project Description*

This project was not a project that was reviewed by the Environmental Assessment and Review Process. However, this project was examined in this research because I felt that an examination of this project would be useful in the analysis of the EARP's role as an environmental protection agency. The Marshy Point Road is an access road built along the southern end of a large marshy area on the eastern side of Lake Manitoba, in the rural municipality of Coldwell. This road was constructed by the Water Resources Branch for the Department of Agriculture, and was paid for by the Agricultural Crown Lands Branch. The road was intended to provide access for area farmers to haying land within the marsh. The road project was part of the 1980 Manitoba Emergency Drought Assistance Program. The road is approximately 5,000 meters in length and crosses three main channels that drained the southern end of the marsh (see Figure #9).

4.4.2 *History of the Marshy Point Road*

Early in 1980, a sub-committee of Cabinet had been established to deal with the drought problem that was being experienced in Manitoba. This committee was referred to as the "Emergency Drought Assistance Committee", and was chaired by E. Hudek, Associate Deputy Minister of Agriculture. This committee held its first meeting on June 20, 1980.

FIGURE #9
MARSHY POINT ROAD



According to the minutes of this meeting, the main points discussed in the meeting, pertaining to the road were that:

...Wildlife Branch has now centralized most of decision-making on land use to speed up processing...
 (Manitoba Emergency Drought Assistance Committee, 1980a).

These minutes also stated that:

...Gillespie got committee's approval for he and Warrener to handle disputes formally,...
 and
 ...only extreme problems to be presented to committee...

No definition of what constituted an "extreme problem" was given, however, one can assume that problems that could not be resolved at the staff level would be included.

Also in the Special Projects File #3 of the Environmental Management Division, was an updated report entitled "Report on Activities Related to the Drought Programs of 1980", issued by Agricultural Crown Lands Branch. The third section of this report dealt with the identification of hay or grazing areas on unoccupied Crown lands in the Interlake area. Point 10 of this section described the Marshy Point area:

...Most of this area is private land lying within a Goose Sanctuary. Appears to have 3000-3500 tons of hay in area. Needs access across three water bodies at estimated cost of \$30 - \$25,000.00...

This report appears to have been a discussion paper reporting on the possible sources of extra hay and grazing land available for the drought relief program (Agricultural Crown Lands Branch, 1980).

The Drought Committee met again on July 9, 1980. There was no reference directly to Marshy Point in the minutes of this meeting. However, there was an indirect reference which states:

...Access to some hay and grazing land is a problem, but each of these cases is being studied by Crown Lands section staff (Agriculture)...(Parenthesis mine).
(Manitoba Emergency Drought Assistance Committee, 1980b).

It would appear that the planning for this road was taking place at the staff level within the departments concerned. It was difficult for me to track down all of the interdepartmental communications relating to this road in the time available. However, certain key events will outline the progress of the development of the road. On July 31, 1980, the permit for construction of the road was issued by the Permits Division of the Water Resources Branch. The permit was issued to the Engineering Division of the same Branch, Water Resources. The permit stated that the road was to be removed before November 30, 1980 which was the expiration date of the permit.

On August 1, 1980, the Drought Committee met again. Minutes of this meeting revealed that Crown Lands, Branch's agriculture main involvement now was

providing access to hay lands. These minutes are the first to make specific reference to Marshy Point Road.

...Marshy Point on Lake Manitoba: Three crossings required at cost of \$25,000 to be built by Water Resources - 3000 tons of hay available to be sold at \$8.00/ton flat rate...

(Manitoba Emergency Drought Assistance Committee, 1980c).

From the examination of the minutes of the August 1st meeting, I received the impression that Wildlife Branch was processing all applications for permits to hay on all wildlife management Crown lands. It appears that some form of review was made of each permit application by the Wildlife Branch before the permit was issued. However, the minutes of the August 1, (Manitoba Emergency Drought Assistance Committee, 1980c) meeting stated that Wildlife Branch had successfully reduced the turn-around time (from permit application to approval) to one day, and that the system of resolving any disputes at branch level was working smoothly.

The next major event appears to have occurred on September 9, 1980, when the Rural Municipality of Coldwell passed a resolution (No. 2 dated September 9, 1980) asking for a road to be built in Marshy Point to aid in the drought relief. This resolution of September 2, 1980, proved to be an interesting point in the story of this road. According to the minutes of a Special Meeting of the Rural Municipality of Coldwell, March 30, 1981 (see appendix #3), A. Rae explains how a letter from the Rural Municipality of Coldwell

to Crown Lands Branch requesting the road (ie. informing Crown Lands of the Council's resolution) was improperly handled. Rae indicated that half of the Council were not aware of such a letter, which would indicate that the resolution was underhandedly pushed through Council without half the Council's knowledge (Rural Municipality of Coldwell Special Meeting, 1981).

On September 23, 1980, P. Murphy, Executive Director of the Manitoba Wildlife Federation, sent a brief to R. Goulden, Director of Wildlife Branch, listing many of his organization's concerns about the Marshy Point Road (see appendix #3.1) (Murphy, 1980).

According to a letter from R.C. Goulden, Director of Wildlife Branch to D.C. Surrendi, Assistant Deputy Minister, Natural Resources, dated February 27, 1981 (see appendix #7.2), there was a meeting concerning the road, held between representatives from Wildlife Branch and Fisheries Branch, and the Lakeshore Wildlife Association on December 16, 1980, at Marshy Point. At this meeting, Fisheries and Wildlife concerns with regard to the road were examined, and the Government representative, after an on-site investigation, described some of the serious problems the road posed to the fisheries in the area. These concerns are summarized in appendix #3.2. It should also be recalled that the original permit issued by Water Resources to construct the road clearly stated that the road was to be removed by November 30, 1980. It obviously had not been.

As well, the letter from R. Goulden to D. Surrendi (appendix #3.2) also stated that the local opposition to the road crossings was formally presented to the Council of the Rural Municipality of Coldwell at its meeting on February 10, 1981. Those parties that presented their views at this meeting included representatives from Lake shore Wildlife Association, local fishermen, and cabin owners, and the East Meadows Ranch. It is also revealed in R. Goulden's letter that, at this February 10, 1981 meeting, the Council of the Rural Municipality of Coldwell passed a resolution withdrawing their support for the crossings to remain in place. In an interview on June 25, 1981, with an engineer with the Permits and Approvals Division of Water Resources Branch, I was informed that agricultural Crown Lands Branch, had re-applied for continued maintenance of the road at Marshy Point in the spring of 1981. The request was reviewed by Permits and Approvals and was granted. It was noted, however, that the culverts associated with the stream crossings were only adequate to an agricultural standard, and that there was the possibility that water flow in and out of the marsh could be restricted if the water flows were high.

One of the last major events associated with this road was the public meeting held on March 30, 1981, at Oak Point Community Hall. (Minutes of this meeting appear as appendix #3.) In the interview with Permits and Approvals personnel on June 25, 1981, I also learned that there had

been some preliminary discussions within the Water Resources Branch early in June, 1981, concerning the feasibility of installing bridge structures at the stream crossings on the Marshy Point Road.

On Saturday, June 20, 1981, an article by A. Blicq appeared in the Winnipeg Free Press entitled "Group charges flooding destroying nesting area". The article stated that large numbers of waterfowl nests and eggs had become flooded due to rising water in the Marshy Point area. The article stated that the road that had been built in the southern area of the marsh, had blocked proper drainage of the marsh and this had resulted in rising water. E. Sigurdson, President of the Lakeshore Wildlife Association, was quoted in the article as saying that the road also provided access to the Marshy Point Goose Sanctuary for poachers. The article also claimed that evidence of dead birds had been found to substantiate the poaching claim. In conversation with Ducks Unlimited (Canada) officials, I learned that the numbers of affected nests and eggs estimated in the Free Press article were probably an overexaggeration. However, it was speculated that some damage, due to the rising water, could have been experienced by waterfowl, that used the marsh as a nesting site.

4.4.3 *Site Investigation of the Marshy Point Road*

On June 26, 1981, I made an on-site inspection of the Marshy Point Road. The inspection was intended to

acquaint me with the general area of Marshy Point and to note the situation of the three stream crossings cited in the Free Press article. The locations of these stream crossings are shown in Figure #9.

The first stream crossing (noted on Figure #9 as 1) was the largest of the three crossings, at approximately 100 meters long. This crossing had two culverts draining the Marsh into Lake Manitoba. There was a fairly large bay area on the Marsh side of the road which was being fed by approximately three stream channels flowing from within the Marsh. There were two smaller channels located at the very eastern end of the first crossing that have been totally blocked by the road. Most of the long causeway of this crossing #1, is exposed directly to the wave action of the open lake. There is no protective rip-rap on either side of the stream crossing and, as a result, the lake side of the road showed extreme erosion.

The second stream crossing, is a smaller crossing than the first, only about 50 meters long. This crossing has only one culvert channeling the water channel from the Marsh. This culvert is larger than the ones that were installed at the first crossing. The stream crossing itself is protected from direct wave action from the lake, by a small bay area. On the western bank of the channel, north of the road, is an abandoned trailer-like structure. On the eastern side of the channel on the south (lake side)

of the road is a small dugout. This dugout appears to have been built at the same time as the road.

The third stream crossing is smaller than the second one, approximately 40 meters long. This crossing also has one culvert.

4.4.3.1. General Description of the Marshy Point Road

The road is partially built on a sand dune system that borders the southern edge of the Marsh. The three drainage channels in question, pass through breaks in this dune system. The road does not totally follow the crest of this dune, but is built on either side at various points. Where the road is built off of the dune, it is prone to flooding and, at certain points, was impassable at the time of this inspection. The sections of the road that are built on the dune, from time to time, pass through thickets of shrubs and trees. In these areas, the road has been cleared very hap-hazardly, shrubs are cut about 7 to 12 cm. above the ground or simply bulldozed over. The road is no more than a cart path at most points and there has been no effort to prepare a road bed, except in the areas of the stream crossings. On this field inspection, I found approximately one dozen spent 22-long rifle shells, several spent No. 4 12-gauge shotgun shells, and three unfired 308 high-powered rifle shells.

CHAPTER V
DISCUSSION AND RECOMMENDATIONS

5.0 Introduction

This final analysis of the effectiveness of the Manitoba Environmental Assessment and Review Process will be divided into two separate sections. The first section will deal with the specific problems of deficiencies in EARP that were illustrated by the post-construction analysis of the four projects chosen. The second section will deal with the general EARP deficiencies which have become apparent during the course of the research.

It is not the intention of this analysis to single out specific faults in the review of each individual project, but rather to illustrate, through the examination of these specific projects, the more general procedural difficulties experienced by EARP.

5.1 Specific Problems with EARP

The approach that will be taken in this section of the analysis, will be to move step by step through the Manitoba Environmental Assessment and Review Process as shown in Figure #1, and discuss each step with respect to the problems encountered in the four projects reviewed.

The first step in EARP is for the proponent to apply the EARP screening guidelines to a project, and to determine if the project qualifies for EARP (these guidelines are

listed in Appendix #1, under the section "The Proponents Screening Process and Simple Projects"). When the proponent applies these guidelines, the questions are usually answered from one perspective. For example, from an engineer's point of view "in his best professional judgement" a road, such as Moose Lake, may not pose any significant problems. Whereas from a biologist's point of view, such a road may, indeed, pose serious problems. There appears to be no procedure in the present environmental assessment and review process to ensure that the proponent takes a multidisciplinary approach when first applying the screening guidelines to their projects.

In the case of the Squaw Rapids-The Pas 230 kV power line, management at Manitoba Hydro apparently felt that 230 kV lines should not be required to submit to EARP. In the case of the Moose Lake Road, it appears that the Department of Highways were either confused as to the requirements of EARP, since they had started their own correspondence with the environmentally concerned departments, and perhaps felt that that was what was expected of them, or perhaps in their "best professional judgement" they felt the road needed no more assessment.

Once the proponent has screened the project, the MEARA flow chart clearly indicates that the proponent must "record the project with EARP". This "requirement" to list the project with EARP appears nowhere else in the

EARP Guidelines except on this flow chart. It is of the utmost importance that EARP staff know what is being planned in the various departments of the Government. A second very important aspect of this point, is that a project being planned by a department be listed with EARP as early as possible in the planning stages of that project. Nowhere in the EARP Guidelines is there indication at which stage of planning the prescreening guidelines should be applied, or at what stage of the project planning, EARP should learn of the existence of the project.

There appears to be no indication in the files of the four projects reviewed in this analysis, of "how" the EARP staff learned of the project. However, from discussions with the EARP staff, it is apparent that a large number of projects reviewed by EARP were "discovered" by informal means, and then the proponents were approached and further information was requested. The degree of lack of cooperation in listing projects, according to the EARP staff, tends to vary from department to department. It appears that those departments that generally deal with large projects are more cooperative with EARP, and those departments that deal with smaller scale projects are generally less cooperative.

One can see from the EARP flow chart that if a proponent does not feel a project applies to EARP, and does not list the project with EARP, the process stops at that

point. There is no way to double check the proponents' estimation of his own project's environmental impact.

From the theoretical ideal assessment developed in Chapter II, it can be seen that it is essential to include some form of environmental consideration into the earliest planning stages of the proposed action. Since most government departments appear to be unwilling, or incapable of providing this type of planning, it is up to the EARP to ensure that it is included. Therefore, it is recommended that:

1. a program be initiated to educate all Manitoba Government department personnel to the purpose and procedures of EARP,
2. that departments engaged in the development of any construction projects be required to submit, each month, a list of the projects under construction, or being planned in that department, to the EARP support staff. This list is to be compiled and submitted by the Director of the planning staff of the department and that the Director of the planning staff be the point of contact for EARP staff, should any further information be requested by EARP.

The next step in the EARP flow chart, is for the EARP staff to decide which process EARP or Interdepartmental Planning Board (IPB) applies to the project. A full analysis of this step and the rationale for the decisions made at this step, is beyond the scope of this report. However, whichever decision is made, the proponent is required, at this point, to submit a project description to

EARP. This submission of the project description has proved, in this analysis, to be a major problem area in EARP.

The EARP guidelines provide a list of what information is required by EARP in the project description (see appendix #1). However, in the introduction to the EARP project description guidelines, it states that:

...all provincial departments, agencies and crown corporations shall submit all information, which in their best professional judgement, will enable the Review Agency to understand the nature and scope of the project, as well as to recognize the potential environmental impacts...
(underlining mine)

Again, the proponent will almost always submit only information he feels is justified, ie. "his best professional judgement". The EARP process is inevitably slowed up by the need for EARP to request further information from the proponent, in order for EARP to make a proper environmental assessment. This can be seen in the case of the Squaw Rapids-The Pas 230 kV transmission line. In the original project description, Hydro had not submitted a map showing the exact route proposed or any alternative routes that were considered, and EARP had to request additional information be submitted.

Another point that is stressed in the introduction to the EARP Project Description Guidelines is that the project description must be submitted prior to any "irrevocable decisions or commitments" with respect to the proposed

project. In all the projects reviewed for this analysis, this was not the case. It should be emphasized again, that the Moose Lake Road and the Vermilion Dam were both planned, and the decisions to build were made prior to the establishment of the EARP in Manitoba. However, there was a long delay in the case of Moose Lake Road before a project description was obtained. In fact, only after the Federal Government threatened to withdraw financial support for the Moose Lake Road, unless an assessment was done, did Highways finally submit a project description. In the case of the Squaw Rapids-The Pas 230 kV power line, the decision not to submit a project description seems to have come from the Director level of the Corporation. Since a commitment to build the projects had been made in all the cases studied, the resultant environmental review could only determine what, if any, environmental impacts were possible and then recommend ways to mitigate those perceived impacts. As a result, the role of EARP as a planning tool had been totally removed in these cases. One of the guidelines for the project description states that:

...A description of and a statement of the rationale for the undertaking, the alternative methods of carrying out the undertaking and the alternatives to the undertaking... (underlining mine).

In the project descriptions of all of the projects reviewed, very little information was presented on the

..."the alternative methods of carrying out the undertaking"... In the case of the Vermilion Dam, the project description briefly described the alternatives and stated that they had been studied. There was no indication of the extent of these studies. This investigation showed that these Dauphin water supply studies were quite thorough, but this was not conveyed in the project description. In the case of the Squaw Rapids-The Pas 230 kV line, the project description does provide some discussion of the alternate routes, however, the Moose Lake Road project description provides absolutely none. None of the project descriptions provide any discussion of ..."the alternatives to the undertaking". That is, alternative methods of achieving the ultimate goal of the project. For example, the ultimate goal in the Moose Lake case was to provide access to a remote community. A road is only one way of achieving this. No discussion was made of the possibility of upgrading air or water transportation facilities.

The lack of cooperation on the part of the proponent departments and agencies with respect to the submission of project descriptions is evident in the cases reviewed. I was informed by the EARP staff that these are not isolated cases. This problem seems to occur consistently, more with some departments than with others. There may be several reasons for this lack of cooperation. Firstly, it seems unlikely that the proponent, at this stage of the

process, would be unaware that he is required to submit a project description. In the cases of both Moose Lake Road and Squaw Rapids-The Pas hydro line, very specific requests were made for project descriptions. I was informed by EARP staff that these proponent departments were also made aware of the information that was to be included in the project description. It would seem unlikely that the proponent departments lacked the time or the professional expertise to prepare these project descriptions. This would, therefore, lead me to conclude that the proponent departments simply place a very low priority on environmental considerations in the planning and construction of their projects. This could be due, in part, to a simple lack of understanding on the part of the engineers and planners within these departments, of the ultimate long term benefits of sound environmental planning. It is also possible that the proponent departments view the EARP as an adversary, whose only purpose is to block the successful completion of their project and finally, it is quite possible that the proponent departments simply do not understand what EARP is all about. This final point is understandable since the explanation of the EARP Policy and the definitions of its scope are not clearly stated in the EARP information document (appendix #1).

As a result it is recommended that:

3. the departments be required to submit a project description to EARP, immediately upon request, and that this

preliminary project description contain information pertinent to the early planning stages of a project;

4. that provisions be made by EARP support staff to make the list of projects submitted by the departments public, and a method be developed to gauge the response of the public, so that informed decisions can then be made as to which projects should require assessment;
5. the project description for each project is to be updated each month in the monthly report from the department, and ample analysis and response time for EARP should be expected by the developer before the project can be allowed to proceed to the next stages of development;
6. all studies done by the proponent departments on the alternatives to the proposed action, be made available to EARP upon request, and that provisions be made to make these studies available to the public upon request.

The EARP guidelines (Manitoba Department of Mines, Resources and Environmental Management, 1975) define "environment" as being air, water and soil, and the concerns of EARP being only the review of projects that contaminate air, water or soil. These definitions could very easily lead a proponent to believe that his project was not required to submit to EARP or, at the very least, it provides the proponent with grounds on which he can refuse to submit to EARP.

This principal of proper definition of environment was also identified in Chapter II, as being critical to the effective operation of EARP. Therefore, it is recommended that:

7. the definition of "environment" under which the EARP functions, be redefined to include:
 - i) air, land, or water
 - ii) plant and animal life including man,
 - iii) the social, economic and cultural conditions that influence the life of man or a community,
 - iv) any building, structure, machine or other device or thing made by man,
 - v) any solid, liquid, gas, odour, heat, sound or vibration or radiation resulting directly or indirectly from the activities of man, or
 - vi) any part, or combination of the foregoing and interrelationships between any two or more of them, in or of Manitoba.

Once the project description has been received by EARP, then the next set of steps in the Initial Environmental Evaluation (IEE) can begin. This is shown in Figure #1, the EARP flow chart, as "Staff Review". This analysis determined a number of potential problems in this staff review section of the EARP process. As was noted before, the whole EARP can be slowed at this point, if the proponent has not supplied all the pertinent information to EARP. As well, an inadequate project description makes the issuing of comments by the various government departments much more difficult. More time must be spent if the responding departments request further information on certain aspects of the project.

The circulation of the project description to a number of government departments is an attempt to provide a multidisciplinary review to the project. The advantage of this, is that many people with different views and backgrounds, have the chance to provide input into the project. The concerns that are raised by the departments generally only relate to the negative environmental impacts that each department foresees the project having. Again, it would seem that the "Contaminants to air, water and soil" clause in the EARP policy document, may be misleading these departments. It is my opinion, that these responding departments should also address any other concerns they may have, such as, the impact of the project on the future land use patterns in the area, or the possibility of multiple resource use with respect to the project. It is quite possible that, with only minor design changes, the project could provide additional benefits, unforeseen by the original designers. An example of this is shown in the Vermilion Dam project. Parks Branch expressed a desire to see the possibilities for recreation on the reservoir examined in more detail. Also, on the Vermilion Dam project, regional fisheries biologists suggested that minor design changes could have provided excellent fish habitat in the river north of the dam.

If the framework upon which the environmental evaluation was based on, set ecological reference standards

as described in Chapter II, it would provide the commenting departments with a more standardized approach. This use of ecological reference standards would also provide a means by which the scientific credibility of the assessment could be made and provide the grounds for comparison between assessments of similar projects.

The flexibility that is exhibited in the Manitoba EARP is very useful in preventing inefficient use of personnel and funds. The EARP support staff can direct the environmental evaluation so as to exclude areas where assessment is either unnecessary or would yield very little useful information. Every attempt should be made to maintain this type of flexibility in the process. In light of the above, it is recommended that:

8. the Manitoba EARP adopt a framework of ecological reference standards upon which the environmental assessments be based;
9. that an administrative decision-making framework be maintained that will ensure the flexibility of EARP.

One of the major problems with the concerns given by the responding departments is that this input is usually received well after the project planning stage and a commitment to build has been made. As a result, the comments from the various departments can do very little to alter the major design features of the project, for the mitigation of impacts they have identified. The projects generally proceed as originally planned (or with only

minor alterations) and this could very possibly result in the responding department and the concerned individuals within those departments, becoming discouraged and disillusioned with EARP. This could possibly have an effect on their responses to other projects at a later date. Another factor that could influence the quality and thoroughness of the comments from the responding departments, is the amount of time that they are given to respond to EARP. This time limit is usually set by EARP in response to the "urgency" of the project as described by the proponent. A very good example of this type of pressure on EARP by the proponent, was shown in the Squaw Rapids-The Pas 230 kV power line. Hydro waited until the last minute to submit the project description, then said that the project must meet a deadline in order to hook up with the Saskatchewan portion of the power line. The resultant rush that was put on the environmental assessment could not possibly have fulfilled the spirit of the EARP policy. Another factor that could determine the quality of the response from the departments is the method by which those concerned people in the various departments are 1) made aware of the existence of these projects and 2) made aware of requests by EARP for comments and concerns on these projects. It was difficult, in this analysis, to determine just how effective this system of information transfer within the concerned departments was. As part of a future study, perhaps it

might be possible to survey government personnel in order to locate those individuals within each department that exhibit knowledgeable concern for the environment, and identify their areas of expertise. This information would be very helpful to the EARP staff, for it would make it much easier for EARP to access these concerned experts and therefore obtain the most information in the least possible time.

Thus, it is recommended that:

10. the department be made to include sufficient time in their project development schedule to include the EARP;
11. that knowledgeable and concerned individuals within each department be identified and educated into the EARP process, and that they then become the contacts within that department for the EARP staff. These persons will respond on behalf of that department to all of EARP's requests for concerns on projects from other departments;
12. that these EARP contact people within each department be invited to present any concerns that they may have, on any project being reviewed by EARP, to the MEARA meeting on that project.

The final point in this discussion of EARP accessing environmental information, was the point that seldom, if at all, were private individuals, particularly those who live in the area, consulted by EARP for any information or concerns they may have had on these projects. As part of this study's data gathering phase, many private citizens

who lived in the area of these projects, were interviewed in order to get their impressions of conditions of the projects as they exist today. In these interviews, several people suggested that perhaps, if they had been consulted in the planning stages of the project, they could have provided insight and information on the area in general, or certain aspects of the project. It is generally accepted that, when one lives in an area for a number of years, certain things become apparent that are not apparent to outsiders. As can be seen from the EARP flow chart (Figure #1), there is no provision in this part of the process for consulting private individuals.

From the discussion in Chapter II, the major goal of the "staff review" phase of the Manitoba EARP, should be to gather all information that is available so that it can be presented to those people who will make the appropriate decisions as to if and how the project should proceed. These people are the Manitoba Environmental Assessment and Review Agency (MEARA). The more complete the information package is that is presented to the Manitoba Environmental Assessment and Review Agency, the more able its members will be to make an informed judgement on the project. The EARP staff prepares these reports to MEARA as summaries of the environmental concerns of the responding departments with regard to the project. The EARP staff may also provide recommendations relating to

various outstanding issues or concerns raised about the project. MEARA considers and interprets all of this information, then makes its own recommendations to the Minister of Consumer and Corporate Affairs and the Environment. The Minister has the final word on what form the project will take and his decision is final. Under our present political system, this decision-making system of MEARA screening and Ministerial discretion is as it should be. However, in order to ensure that decisions are made in the most responsible way, the information that is transferred from EARP to MEARA to the Minister, must be the best available.

Unfortunately, none of the projects selected for review proceeded past the initial environmental evaluation level. It is, therefore, not possible to report on how effective the remaining portion of the EARP is. There has been only one project built in Manitoba that has actually proceeded through the full environmental assessment. This was a 500 kV transmission line from the Dorsey Station to the U.S. border, near Sprague, Manitoba. A consideration for future research might be the evaluation of this line, in the same light as this research, in order to gain insight into the full EARP process.

5.2 Marshy Point Road

The Marshy Point Road project, as can be seen by the description in Chapter IV, is unlike the other projects

reviewed in this research. The Marshy Point Road was never subjected to the Environmental Assessment and Review Process. The reason it was never assessed was because it was considered an emergency project. Due to the environmental problems that resulted from this project, it became obvious to me, that an examination of this project might shed some light on the need for EARP to become involved in these types of emergency projects.

The most striking feature of an emergency project is the urgent need to complete the work in order for the project to begin to relieve the emergency. It appears that the usual procedure for developing these emergency projects is through a committee appointed to handle the emergency. The committee is usually given all the powers it requires, in order to deal with the emergency effectively. The representatives on these committees are chosen so as to provide representation from all relative government departments. This is meant to ensure that all concerns are met with respect to the projects. The basic characteristics of these emergency projects and the committees that develop them, appear to be at odds with the characteristics of EARP. EARP requires time, in an emergency there is very little time. However, this does not mean that obvious environmental concerns cannot be reviewed in the short time available. It should be the responsibility of the representatives on these committees, from the Environmental

Management Division, to ensure that the committee is made aware of the obvious environmental problems related to the project. As well, provisions should be made by the Environmental Management Division, to monitor the post-construction state of these emergency projects, so that, should environmental problems begin to occur, appropriate action can be taken to remedy the situation as quickly as possible.

Fortunately, these emergency projects are usually of only short duration, being removed or discontinued when the emergency is over. If there is no estimation of what environmental problems could result from an emergency project, then the sooner the project is terminated, the less are the chances of the project causing permanent environmental damage.

At the present time, in Manitoba, there is no method which allows EARP to become formally involved in the initial development of these projects. Due to the nature of these projects, it would seem unlikely that EARP would be effective in the initial stages of their development. However, EARP could play a very important part in the follow-up to these projects. EARP could be a very useful coordinator in monitoring of such projects, to ensure that the projects fulfill their intended purpose with only minimal environmental disruption.

It is recommended that:

13. some formal arrangements be made, to include a representation from the EARP on future committees established to deal with any emergency projects that could possibly result in environmental impacts.

5.3 General Issues with Respect to Manitoba EARP

While conducting research into the Manitoba EARP, or any EARP for that matter, certain fundamental issues arise and should be addressed. This section of Chapter V will briefly discuss some of these issues.

5.3.1 *Law vs. Policy*

According to the EARP staff, the Division is in the process of drafting legislation that will govern EARP.

Several authors have provided detailed analysis of the various approaches to environmental impact assessment taken by different governments, in Canada and elsewhere (Krueger and Mitchell, 1977) (Duffy, 1977). These types of analysis are useful in showing the advantages and disadvantages of the various approaches. In the case of Manitoba, a report was prepared by Manitoba EARP support staff in 1978 which discussed the possible future direction of EARP in Manitoba. Within this report, the question of Legislation vs. Policy was discussed. Figure #10 shows the advantages vs. disadvantages of each. It is beyond the scope of this report to fully document the Legislation vs Policy debate. There are certain problems that were

FIGURE #10: Environmental Assessment and Review as Government Policy or as an Act of the Legislature.

POLICY		LAW	
Advantages	Disadvantages	Advantages	Disadvantages
very flexible - can be changed.	cannot be enforced on private projects (or perhaps Muns.)	cannot be ignored for frivolous reasons.	can lead to litigation.
less danger of being trapped in legal phraseology.	individual departments can frustrate more readily.	high profile - public education value.	less flexible due to legal language.
can meet special problem situations.	has less psychological force on public.	forces departmental bureaucracy to be responsive.	may raise public expectation too high.
can be replaced with legislation later if necessary.	Crown Corporations at "arms length" from government may find it easy to evade.	can be staged and phased so that other sectors outside provincial government come under process at later date.	difficult to return to policy if legislation not very effective.
	Public involvement tends to pivot upon bureaucratic discretion	strongly announces government intent to protect the environment.	
		The public's role is very clearly defined.	

Taken from: Manitoba Department of Mines, Resources and Environmental Management, 1978.

discovered in the course of this research that may have their origins and solutions in this debate. It would, therefore, be very useful to have this law vs. policy question discussed in an interdepartmental workshop on the Manitoba EARP, so that all points of view could be heard.

5.3.2 *Public Participation in EARP*

Historically, Environmental Assessment and Review was created in order to fulfill the public demand that Government do something about the "environmental crisis". Citizen participation was one of the original, theoretical components of environmental impact assessment. The Manitoba EARP does provide for public participation, however, the terms under which this public participation is provided, are very unclear. The section on "Public Participation" in the EARP guidelines (Manitoba Department of Mines, Resources and Environmental Management, 1975) (appendix #1), initially would seem to indicate that the public is only consulted when an "environmental assessment" is done on a project. Recall that an environmental assessment results in the preparation of an "Environmental Impact Statement" by the proponent (see definitions Chapter I this report). However, the next clause (clause (a)), would tend to indicate that it is the "Initial Environmental Evaluation" (which is prepared by EARP staff in consultation with other government departments) that is

subject to public participation. In the course of this research into EARP, no evidence was found that would indicate that the public had any involvement in the "Initial Environmental Evaluations" of any of the projects reviewed. These public participation guidelines are in desperate need of clarification.

Generally, it can be seen from these guidelines, that the Minister has full control over the amount of public participation and what form that participation takes. The proponent is given the power to introduce public involvement into the initial stages of the environmental assessment. (Again, it is unclear where, in the EARP process, this proponent initiated involvement is.) This research has shown that the proponents of the projects reviewed, never initiated such public involvement. The contradiction between the stated importance of public participation to the EARP (Manitoba Department of Mines, Resources and Environmental Management, 1975), and the apparent lack of action on this point, is puzzling. A firm definition of the role of public participation in EARP, and an enforcement of those requirements could be an area where legislation of EARP could be useful. If Government is designing, proposing and building projects for the good of the people, those people have a right to be involved.

It is therefore recommended that:

14. the guidelines describing the participation of the public in EARP be

redefined to provide a strong public input into the process at the private and local government level and;

15. that a public information campaign be established to inform the public of the role of EARP, its operation and their part in that operation.

5.3.3 *Follow-Up Monitoring in the EARP*

In the EARP guidelines (Manitoba Department of Mines, Resources and Environmental Management, 1975), there is reference to the requirement of follow-up monitoring. The guidelines state:

...The proponent must conduct or procure post-operational environmental studies to assess the predictions of the original impact statement and must take necessary steps to minimize or mitigate unforeseen environmental impairment...

None of the projects reviewed in this research had any form of organized follow-up monitoring. In the Vermilion Dam case, a program of water sampling was established through the Water Pollution Control Section of the Environmental Management Division. However, the program was almost totally supported by the efforts of one individual in the Division, and was discontinued when that person left the Division.

The Manitoba Environmental Assessment and Review Process has never claimed to be able to foresee all the possible impacts of a project. For that reason, some

type of follow-up monitoring program is essential in order to assess the effectiveness of the recommendations given by EARP and, more importantly, to quickly pick up on any unforeseen impacts. Again, the unclear wording of the EARP guidelines may be one of the reasons for the apparent lack of follow-up monitoring. As can be seen from the EARP guideline clause above, the post-construction environmental studies that are required of the proponent, are to assess the predictions of the original "impact statement". This wording would seem to indicate that if the EARP process does not proceed to the full preparation of an impact statement, then the proponent is not required to monitor any of the recommendations of either EARP or MEARA.

In the case of the Squaw Rapids-The Pas 230 kV transmission line, a research project was proposed by P. Boothroyd of the Canadian Wildlife Service, that would have determined the impact of the hydro line on neighboring waterfowl populations. However, according to Dr. Boothroyd, Manitoba Hydro stated that they could not provide funding for such a study.

If EARP is to completely fulfill its mandate to provide protection for the environment, then a strict program of monitoring of the projects during and after construction is required.

Therefore, it is recommended that:

16. the government ensure that EARP has all the authority necessary to enforce the requirement that the

proponent conduct or produce any post-operational environmental studies that EARP may deem necessary.

5.4 Conclusions

The Manitoba Environmental Assessment and Review Process, which has been in existence for approximately seven years, is only just beginning to reach a stage in its evolution, in which it will be able to be used as an effective tool for the preservation and enhancement of Manitoba's natural environment. The process has been hampered by a poorly defined mandate and an inadequate set of operational criteria. It is time for an overhaul and upgrading of the process, in order that it may realize its full potential. Whether EARP proceeds from this point as a strong and effective tool, or falls by the wayside, will be totally dependent on what the government sees as important to Manitobans. It is the conclusion of this report, that it is time for the Government of Manitoba to reaffirm and strengthen its commitment to preserve Manitoba's natural environment, for the long run benefit of all the people of Manitoba.

In conclusion, therefore, it is recommended that:

17. an on-going programs for the evaluation of EARP be established so that the effectiveness of the process can be constantly assessed and upgraded, and finally,
18. that. the government of Manitoba, by adoption of the above recommendations, and by expanding the personnel and budget of

the Manitoba EARP support staff, demonstrate its full commitment to the preservation and enhancement of the natural environment of Manitoba for future generations.

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APPENDIX #1

CABINET PAPER

Manitoba Department of Mines,
Resources and Environmental
Management, September 1975
(Sidney Green, Minister)

P 2-0-570
Nov. 12/78

CABINET PAPER

MANITOBA DEPARTMENT OF MINES, RESOURCES & ENVIRONMENTAL MANAGEMENT

ENVIRONMENTAL MANAGEMENT DIVISION

SUBJECT:

"An Environmental Assessment and Review Process for Proposed Provincial Projects"

BACKGROUND:

An Environmental Assessment is the end product of a multi-disciplinary review of the effects on the environment, which may result from a proposed development. The Environmental Assessment may therefore be considered a preventive strategy or mechanism to identify and resolve potential environmental problems of a proposed undertaking, and, in turn, augment present environmental management practices in the Province of Manitoba. The anticipated effects of a proposed development will ultimately require a high level of decision which will be reached by the proposed Environmental Assessment Review Agency.

Attached is a proposal entitled "An Environmental Assessment and Review Process for Provincial Projects" which covers this basic concept.

RECOMMENDATIONS:

1. An environmental assessment and review process be established within the Manitoba Department of Mines, Resources and Environmental Management.
2. An Environmental Assessment Review Agency be established to review project proposals and to recommend procedures to minimize or mitigate adverse environmental effects on the air, water or soil.
3. The decision to permit, modify or disallow a proposed project will reside with Cabinet.

4. All provincial departments, agencies and crown corporations be directed by Cabinet to,
 - a. submit a Project Description to the Review Agency;
 - b. undertake or procure an environmental assessment of potential environmental effects for all projects as may be required by the Environmental Assessment and Review Agency prior to irrevocable decisions or commitments;
 - c. submit an environmental impact statement upon completion of the environmental assessment to the Environmental Assessment Review Agency prior to irrevocable decisions or commitments;
 - d. incorporate all recommendations and conditions applicable thereto respecting planning, design, construction and operation as conditionally or unconditionally approved.

JUSTIFICATION:

To strengthen the environmental management practice currently supported by legislation, and to establish a policy to cover major provincial undertakings with respect to their environmental impact. Implementation of the proposal will fill a gap whereby:

1. Identification and evaluation of potentially significant environmental effects of proposed undertakings at a stage when alternative solutions, including remedial measures, or the option of not proceeding, are available to the decision makers.
2. The proponent of an undertaking, government, and agencies required to approve the undertaking, give due consideration to the means of avoiding or mitigating any adverse environmental effects prior to granting any approval to proceed with an undertaking.

September 10, 1975

Honourable S. Green, Q.C.

"Approved" by Cabinet - November 12, 1980⁷⁹
(Cabinet Item #14)

AN ENVIRONMENTAL ASSESSMENT
AND REVIEW PROCESS FOR
PROPOSED PROVINCIAL PROJECTS

INTRODUCTION

The concept, implementation and usefulness of an "Environmental Assessment" as a decision-making management mechanism has been the subject of considerable study throughout North America in recent years. An Environmental Assessment is essentially a process to inform a decision-making authority of the potential effects of a proposed action on the environment. The concept embodies an evaluation of the environmental conditions which may be affected by a proposed undertaking.

The Environmental Management Division of the Department of Consumer and Corporate Affairs and Environment has, since September, 1973, extended considerable effort in this area. The basic concept, philosophies, methodologies and implementation options etc., have been subject to inter-departmental analysis. In addition, liaison was maintained with responsible federal and provincial agencies and a comprehensive review of the present state of the art of the Environmental Assessment in North America was undertaken.

It is anticipated that the Environmental Assessment and Review Process will strengthen the environmental management practice currently supported by legislation, and establish a policy to cover major provincial undertakings with respect to their environmental impact.

POLICY

The Department of Consumer and Corporate Affairs and Environment is vested with the responsibility governing activities relative to the protection of Manitoba's environment and its controlled improvement. In accordance with this mandate, an environmental assessment and review process has been established within the provincial government to ensure the following:

1. environmental assessments are carried out for all proposed provincial projects that may significantly alter or affect the environment, as a result of contamination of air, water and soil;
2. the results of the environmental assessment are subject to review by the Cabinet who may permit, modify or disallow the proposed action;
3. the results of the environmental assessment and all subsequent recommendations and conditions applicable thereto, will be used in the planning, implementation and operational phases of the project if approved.

The above process may be considered a preventative strategy or a mechanism to identify and resolve potential environmental problems related to air, water or soil pollution of a proposed action, and in turn, strengthen existing environmental management practices in Manitoba.

IMPLEMENTATION

a) Environmental Assessment Review Agency

An Environmental Assessment and Review Agency, hereinafter referred to as the Review Agency, has been established within the Department of Consumer and Corporate Affairs and Environment. The responsibilities of the Review Agency are to:

1. review proposals for new projects or proposals respecting major alterations to existing facilities;
2. exempt those projects which would not require a thorough environmental assessment;
3. recommend to the Minister of Consumer and Corporate Affairs and Environment, those projects which in the judgement of the Review Agency require an environmental assessment;
4. provide environmental impact assessment guidelines in accordance with those presented in Appendices 1 and 2;
5. review environmental impact statements;
6. recommend additional procedural guidelines to further identify and mitigate adverse environmental impacts;
7. submit reviews and recommendations to Cabinet to permit, modify or disallow a proposed undertaking.

The Environmental Assessment and Review Agency consists of the Deputy Minister of the Department of Consumer and Corporate Affairs and Environment as Chairman, the Assistant Deputy Minister of Environmental Management, and an Assistant Deputy Minister from the Departments of Health and Social Development, and Finance. In addition, every proponent will appoint a representative to the Agency during the review period for any given project. The Review Agency will utilize specialists and professional staff from the Department of Consumer and Corporate Affairs and Environment according to the nature of the project, and will forward its recommendations to the Minister of Consumer and Corporate Affairs and Environment.

b) Decision-Making

1. The decision respecting the need for an environmental assessment of a proposed project resides with the Environmental Assessment and Review Agency subject to the approval of the Minister of Consumer

and Corporate Affairs and Environment.

2. The decision to permit, modify or disallow a proposed action resides with Cabinet.

c) Assessment Process

The environmental assessment process has been established as follows:

1. The proponent is required to submit a "Project Description" to the Review Agency in accordance with the guidelines presented in Appendix 1.1
2. The proponent is invited to appoint a representative to the Review Agency for the duration of the project review period.
3. If required by the Review Agency the proponent will conduct or procure an environmental assessment of the proposed action in accordance with the guidelines outlined in Appendix 1.2.
4. The proponent may be required to submit an "environmental impact statement" to the Review Agency upon completion of an Environmental Assessment.
5. The proponent must incorporate all recommendations and conditions applicable thereto respecting project planning, design, construction, and operation as conditionally or unconditionally approved by the Cabinet.
6. The proponent must conduct or procure post-operational environmental studies to assess the predictions of the original impact statement and must take the necessary steps to minimize or mitigate unforeseen environmental impairment.
7. The proponent must comply with federal and provincial regulations respecting environmental quality standards for air, water and soil.

d) Public Participation

Where an environmental assessment of an undertaking is submitted to the Minister of Consumer and Corporate Affairs and Environment, the Minister,

- a) will cause a review of the assessment to be prepared by the Review Agency and
- b) will give notice of
 - i) the receipt of the assessment
 - ii) the preparation of the review
 - iii) the place or places where the assessment and review may be inspected, and
 - iv) such other matters as the Minister considers necessary or advisable,

to the proponent, the clerk of each municipality in which the undertaking is being or will be carried out and to such other persons and in such manner as the Minister may consider necessary or advisable. Any person may inspect an environmental assessment of an undertaking and the review thereof in accordance with the terms of the notice, and may make submissions to the Minister with respect thereto within fifteen days of the giving of notice or within such longer period as may be stated in the notice.

Since public participation may be considered essential to the environmental assessment, the proponent may elect to introduce citizen involvement in the initial stages of the environmental assessment. Specific public concerns, constructive criticism, recommendations and reviews would then be available for inclusion in the "Environmental Impact Statement".

Public hearings may be initiated by the Minister of Consumer and Corporate Affairs and Environment through the Environmental Assessment Review Agency or the Clean Environment Commission prior to any decision to permit modify

or disallow a proposed project.

e) Federal/Provincial Interface

Since many major developments in Canada involve both federal and provincial governments it is important that the environmental assessment process in both jurisdictions are complementary. Therefore, the Provincial Environmental Assessment Review Agency maintains liaison with the Federal Environmental Assessment and Review office to coordinate federal/provincial assessment responsibilities, procedures and reviews in order to eliminate duplication of effort.

The Federal Environmental Assessment Review Process has been designed to incorporate provincial concerns in the assessment, review and decision-making stages, if projects are Federal in nature and transcend Provincial jurisdiction.

APPENDIX 1.1

PROJECT DESCRIPTION GUIDELINES

ENVIRONMENTAL ASSESSMENT

AND REVIEW PROCESS

JULY, 1976

APPENDIX 1.1

ENVIRONMENTAL

PROJECT DESCRIPTION

MANAGEMENT DIVISION

GUIDELINES

JULY, 1976

INTRODUCTION

Within the conditions of the provincial environmental assessment and review process, all provincial departments, agencies and crown corporations shall submit all information, which in their best professional judgement, will enable the Review Agency to understand the nature and scope of the project as well as to recognize the potential environmental impacts. This information must be submitted prior to irrevocable decisions or commitments respecting proposed Provincial undertakings. With all due consideration to the above, the proponent shall submit:

1. Information and technical data on the proposed project.
2. Relevant drawings, plans, photos, maps, charts, etc.
3. A description of and a statement of the rationale for the undertaking, the alternative methods of carrying out the undertaking and the alternatives to the undertaking.
4. A description of all in situ facilities, and auxiliary or support structures.
5. Information on anticipated gaseous, liquid and solid waste generation.
6. The manner in which compliance with existing federal and provincial environmental quality standards and regulations will be achieved.
7. Transportation requirements respecting incoming and outgoing material, employee and customer traffic, etc., insofar as they affect contamination of the air, water, or soil.
8. The organizational structure which would be established to

administer and manage all aspects of the proposed projects.

APPENDIX 12

ENVIRONMENTAL IMPACT
ASSESSMENT GUIDELINES

ENVIRONMENTAL ASSESSMENT
AND REVIEW PROCESS

JULY, 1976

APPENDIX 1.2
ENVIRONMENTAL IMPACT
ASSESSMENT GUIDELINES

ENVIRONMENTAL
MANAGEMENT DIVISION
JULY, 1976

All provincial departments, agencies and crown corporations required to undertake or procure an environmental assessment of a proposed project shall comply with the following impact assessment guidelines, and such other guidelines as may be developed by the Environmental Assessment Review Agency.

A. Guidelines Respecting All Environmental Impacts of a Proposed Project

1. All primary and secondary effects, beneficial or otherwise, should be described. Short and long-term impacts should be projected.
2. The environmental assessment should address:
 - a. All ecological changes expected through alteration of the physical and biological habitat.
 - b. The implication of these ecological changes as related to air, water, or soil.
3. The time frame in which impacts are anticipated should be detailed.
4. Remedial, protective and corrective measures to be implemented if required should be thoroughly described.

B. Guidelines Respecting Probable Adverse Effects Which Cannot Be Avoided

1. The type and magnitude of any adverse impact on air, water, or soil which cannot be reduced in severity, or which cannot be reduced to an acceptable level should be described.
2. For those impacts which cannot be eliminated or reduced, their implications and the reasons why the proposed action should be accepted, notwithstanding the limitations of these effects or impacts should be described in detail.
3. Where abatement or mitigative measures can be implemented to reduce adverse effects to acceptable levels, the basis for considering these levels adequate, and the effectiveness and costs of the abatement measures should be specified.

C. Guidelines Respective Alternatives

1. Alternative facility configurations of the proposal should be considered.
2. Alternative locations for the proposed project should be discussed.
3. Alternatives to the proposed project which may involve trade-offs among uses of available environmental resources should be developed, described and objectively weighed.
4. The analysis of alternatives should be structured in a manner which will permit comparison of environmental benefit or damage.

5. Where practical, impacts of alternative action(s) should be qualified or described qualitatively to facilitate an objective judgement of their significance.

D. Guidelines Respecting the Relationship Between Local Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity

1. Cumulative and long-term effects of the proposed action which either significantly reduce or enhance the state of the environment should be described.
2. The desirability of the proposed action should be weighed to guard against shortsighted foreclosure of future options or needs.
3. Special attention should be devoted to those effects which narrow the range of beneficial uses of the environment or pose long-term risks to health or property.
4. A description and evaluation of the immediate long-term environmental effects.
5. Irreversible environmental damage which may result from accidents associated with the proposed action should be considered.

APPENDIX 1.3.

THE PROPONENT'S SCREENING PROCESS AND

SAMPLE PROJECTS

ENVIRONMENTAL ASSESSMENT

AND REVIEW PROCESS

JULY, 1976

APPENDIX 2.3.

PART A

THE PROPONENT'S

SCREENING PROCESS

ENVIRONMENTAL

MANAGEMENT DIVISION

JULY, 1976

The following are some questions the proponents should utilize in selecting those projects to be submitted to the Manitoba Environmental Assessment and Review Agency. In answering these questions the proponents are expected to use their best professional judgement (e.g. architect, biologist, engineer, geologist) as if administering the Environmental Assessment and Review Process to fulfil the intent and purpose of this policy.

Might the proposed undertaking:

- 1) result in a significant detrimental effect on air, water or soil quality, or on ambient noise levels for adjoining areas?
- 2) have significant effects on adjacent persons or property or persons or property not associated with the undertaking?
- 3) generate secondary effects (e.g. land development, population growth) likely to significantly affect the environment?
- 4) necessitate the irreversible commitment of any significant amount of non-renewable resources?
- 5) preempt the use or potential use of a significant natural resource for any other purpose?
- 6) cause significant interference with the movement of any resident or migratory fish or wildlife species?

- 7) have effects on an area of ten acres or greater?
- 8) block views or adversely affect the aesthetic image of the surrounding area?
- 9) have an effect on any unique, rare or endangered species, historical or archeological resources, habitat or physical feature of the environment?
- 10) establish a precedent or involve a new technology either of which is likely to have significant environmental effects now or in the future?
- 11) be highly controversial?

APPENDIX 1.3

PART B

SAMPLE PROJECTS

ENVIRONMENTAL

MANAGEMENT DIVISION

JULY, 1976

The following are examples of the types of projects that require submission to the Manitoba Environmental Assessment and Review Agency.

- 1) Nuclear power development.
- 2) Hydro or thermal electric power development.
- 3) Hydro transmission facilities of 230 KV or larger in excess of five miles.
- 4) Highways of four lanes or more.
- 5) Highways and roads constructed on a territory or in a region where no highway or road existed previously.
- 6) Highways including bridges necessitating physical encroachment upon a lake or water course or physical alterations to the water course.
- 7) Pipeline construction in excess of twelve inch diameter and five miles.
- 8) Dam or barrier construction that completely traverses a major water course.
- 9) Rail lines constructed on a territory or in a region where no rail line existed previously.
- 10) Channelization improvements to major water courses for flood control or drainage.
- 11) Provincial Forest preserves and parks.

APPENDIX 1.4.

DEFINITIONS

ENVIRONMENTAL ASSESSMENT

AND REVIEW PROCESS

JULY, 1976

APPENDIX 1.4.
DEFINITIONS

ENVIRONMENTAL
MANAGEMENT DIVISION
JULY, 1976

1. "air" means the atmosphere;
2. "contaminant" means any solid, liquid, gas, waste, odour, heat, sound, vibration, radiation, or a combination of any of them that
 - a) is foreign to or in excess of the natural constituents of the environment; or
 - b) affects the natural, physical, chemical, or biological quality of the environment; or
 - c) is or is likely to be injurious to the health or safety of a person; or
 - d) is or is likely to be injurious or damaging to property; or
 - e) is or is likely to be injurious or damaging to plant or animal life; or
 - f) interferes or is likely to interfere with visibility; or
 - g) interferes or is likely to interfere with the normal conduct of business; or
 - h) interferes or is likely to interfere with the comfort, well-being or enjoyment of a person;
3. "environment" means the air, water or soil;
4. "soil" includes land, earth and terrain;
5. "water" includes flowing or standing water on or below the surface of the earth and ice formed therein.

APPENDIX #2

BIBLIOGRAPHY OF ENVIRONMENTAL IMPACT ASSESSMENT
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APPENDIX #3

TWO SEPARATE MINUTES OF
A SPECIAL MEETING OF THE
COUNCIL OF THE RURAL
MUNICIPALITY OF COLDWELL,
HELD ON MARCH 30, 1981,
AT OAK POINT COMMUNITY
CENTER.

REEVE M. DESJARLAIS, CHAIRMAN.
(FIRST SET OF MINUTES TAKEN
BY R.M. COUNCIL. SECOND
SET TAKEN BY MANITOBA
WILDLIFE FEDERATION
REPRESENTATIVE).

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The Minutes of a Special Meeting of the Council of the Rural Municipality of Coldwell was held at 8:30 P.M. on Monday, March 30, 1981, at Oak Point Community Hall. All the members of the Council were present, with Reeve M. Desjarlais acting as Chairman.

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Dennis Surrindi, Assistant Deputy Minister and Albert Trudger, M.L.A. for Emerson and Legislative Assistant to Hon. Harry Enns were in attendance. They represented the Hon. Harry Enns who could not be present because of other commitments.

A number of ratepayers of the R.M. of Coldwell and other interested members of the General Public were also present.

The purpose of the meeting was to give the rate payers of the R.M. of Coldwell and other interested members of the general public, the opportunity to examine and discuss with Municipal and Provincial Officials the question as to whether or not the Marshy Point road should be retained and if so, under what conditions.

Points raised favouring removal of the road.

1. According to some individuals the Provincial Government did not authorize construction of the Marshy Point Road in a proper manner. The application requesting construction of the road listed certain farmers as would be beneficiaries of the road, who would in no way benefit from the construction of such a road while certain farmers who had a genuine interest in the Marshy Point area were not listed and were not notified that the construction of the road would take place.
2. Public funds should not be spent (\$17,000.00 to \$20,000.00 in this case) building a road which will only benefit two or three private individuals.
3. The Marshy Point road interferes with the natural flow of water in the bay. This has been an impediment to fishing in the area as the road and culvert system has created a whirl wind effect in the current, causing floats and sinkers to freeze to the bottom of the ice. The road would have also created flood conditions in the surrounding hayland if water levels would have been normal this spring.
4. A rate payer stated that after the road had been constructed he had heard that the road was to be removed by the end of October, when the drought conditions, which had initially prompted construction of the road, was no longer a factor, and, consequently, the road would be no longer needed. Mr. Surrindi countered by stating that he had no knowledge of such a deadline and that the road had been constructed to meet an urgent temporary need.
5. The Marshy Point area provides molting grounds for geese. If the road is allowed to remain, irresponsible members of the general public could effectively destroy the molting grounds. The road interferes with the natural currents in the bay, which may result in the flooding of wild life fowl nests.
6. Conservation Officers could not provide adequate surveillance to the area if the road was maintained.
7. A bridge constructed to standard with a gate system may effectively prevent the general public from gaining access to the Marshy Point area, while allowing the currents in the bay to flow naturally, but the cost of constructing such a bridge would be prohibitive.
8. Farmers, who occasionally make hay in the Marshy Point area can haul their hay out of the area by barge or by hauling the hay over the ice in the late fall or early winter.

Points raised favoring retention of the road.

1. Whether or not the Marshy Point road was built at the request of one or two individuals is not an over riding issue at this time. Many individuals stand to benefit by retaining the road, such as farmers who make hay on the point and conservation officers who may use the road to monitor the water fowl population. All molting grounds have not been as inaccessible as Marshy Point area. This has not resulted in the destruction of these molting grounds.
2. Since public funds have already been expended in building this road, removing the road entirely would only compound the problem of government waste. The beneficial effects, if any on fishing in the bay and the waterfowl population on Marshy Point do not justify removal of a road which cost \$17,000.00 to construct and will cost more by the time it has been removed as has been suggested.
3. Mr. Surrindi stated that preliminary engineering advice was sought before the road was constructed and that the effect on water levels, fishing, and the water fowl population were likely considered before the project was launched. A Councillor monitored water levels in the area and found that the road did not have a significant effect on those levels.
4. As mentioned before, a ratepayer stated that he had heard that the road was a temporary measure that would be removed after drought conditions had abated. Mr. Surrindi denied having knowledge of such a deadline, but agreed that the road had been constructed to meet an urgent and temporary need, and as such was justifiable.
5. Much has been made of the potential destruction of the fishing in the area and the molting grounds of waterfowl, but on closer examination it can be seen that such destruction, if any, would be only marginal. Again, the economics of the situation would not favour removal of the road. It is conceded that the road in its present form is probably inadequate and should be built to standard, or else, a bridge should be constructed.
6. A bridge built to standard, funded jointly by government and private interests would be the best solution. The Marshy Point area could become a show case for wildlife management, and, at the same time, effectively keeping intruders away from the molting grounds during critical periods. Another ratepayer stated that lowering the hunting limit on geese from five to three per day would have a more far reaching effect from a conservation point of view, than the beneficial effects if any, to the bird population on Marshy Point, derived by the removal of the road. Another individual indicated that the Marshy Point area has always been a pouchers haven so that the retention or removal of the road will not have an appreciable effect. A spokesman, favouring removal of the road, countered this argument by stating that if pouching had been a problem in the past, it would be accelerated by retaining the road and making easier access to the Marshy Point area.
7. All farmers, who have some interest in the Marshy Point area may use the road. It will be to their advantage to haul their hay out of the Marshy Point area on a all weather road, rater than having to resort to a more cumbersome system such as a barge or the recariousness of early winter ice.

The representatives from the Provincial Government summarized the Government's position on the road. The road had been constructed as a temporary measure to alleviate the hay shortage brought on by drought conditions during the summer. The construction of the road had been recommended by the Department of Agriculture and the funds for the construction of the road had been channeled through that department.

A Subcommittee of cabinet had been established to deal with the drought, Mr. Surrindi said. The degree of aid to Agriculture in a Wildlife Management Area is baded in part on hay permits issued for the area and other factors, such resolutions filed by Municipal Councils, indicating a desire for certain steps to be taken to alleviate drought conditions. Resolution No. 2 of the R.M. of Coldwell dated September 9, 1980, in part, influenced the decision taken on Marshy Point. A Councillor of the Municipality expressed his doubts about the correctness of some of the procedures or events leading up to or culminating in the passage of the aforementioned resolution. Mr. Bill Uruski, M.L.A. for St. George, asked the representative from the Provincial Government, where the final decision to leave or remove the road would be made.

The Representatives replied that the building of the road was a Department of Agriculture decision and the issuance of hay permits was a Department of Natural Resources decision. The final decision would be the result of joint investigations by both branches of Government. That decision would be based in large measure on public reaction such as the feed back they had received from this public meeting.

It seems that the alternatives are either to build a bridge or road to standard or to remove the road completely.

The meeting was adjourned at approximately 11:00 P. M.

The minutes of a Special Meeting of the Council of the Rural Municipality of Coldwell was held at 8:30 P.M. on Monday, March 30, 1981, at Oak Point Community Hall. All the members of the Council were present, with Råave M. Desjarlais acting as Chairman.

Albert Driedger explains and appologizes why Harry Enns, Minister over Department involved, could not attend meeting.

When asked how much money was spent on said road to this point, Albert Driedger explains \$17,000.00 was spent to present stage, and \$25,000.00 was budgeted or estimated for the road.

Ed. Sigurdson explains fishermens views feeling that many nets were froze in, due to more current by narrowing down creeks to culvert sizes, which was felt was not adequate for the flows involved.

The current was strong enough to push the sinker lines up against the ice causing them to freeze.

There fishermen have fished all their life in this area and had never had nets freeze in this manner before.

E. Nast has a bill made out for nets they lost (froze in) duo to this extra current, and asks which Department to direct the bill to, (whichever Dept. is responsible for the roads at this time). E. Nast goes on to explain how the current has pushed up both lines (float & sinker) to ice and froze. He also explains how a North West wind brings water up in marsh causing flooding, and culverts in creeks are to small causing a variation in levels (higher on marsh side) and it takes longer for water to equalize when wind dies down.

4-1
Driedger asks if bigger culverts were put in, if this would solve the problem. The concerned people answered that bridges would be the only solution, to levee the current, and possible flooding. The resolution was read, that was sent in by Council asking to leave these roads in on a trial period to do more study on the affect of said roads. Also the resolution from R. M. rescinding the above resolution, feeling that the drought conditions were no more prevailing, that the road either be taken out or bridges put in, due to the peoples concerns to flooding.

Leifur Palsson explains there is adequate drain for the water to run out in this marsh area.

Allan Backman explains that in a strong N W wind, the creeks or outlets referred to by Leifur Palsson, take water in, not let water out, bringing the water up in the marsh, causing flooding draining back over some ridges, where it sits and cannot get out. Also any hay made could be flooded in the marsh area.

Paul Vincent reads brief on how road would affect East Meadows operations on nesting and brooding of the geese, that they felt with this road open to public the geese could be disturbed so much they could leave and not come back. This road leads into main brooding area.

They felt with even a controlled gate on the said road, with these all terrain vehicles, they could float around gate, and continue on road.

They felt this road could jeopardize their whole operations as the biggest majority of geese end up in area where road goes when molting.

Farmers explained how all hay was hauled out previous to this year from this marsh area, and felt the money spent was not benefiting that many farmers.

Albert Rae explains how a letter went through the municipal office to Minister over crown lands Brian Ransom requesting this road, signed by the R.M. and half of the council were not even aware of such letter, indicating that it was underhandedly pushed through council without half the councils knowledge.

Discussions were on how much hay came out of above area, and most hay made was by several farmers who had built a barge to get their equipment in and out of marsh area, and were just about finished haying when roads were finally put across creeks. It was felt that there was not enough hay came out of area to justify this amount of money spent on roads across creeks.

Driedger explains that substantial work will have to be done to roads, if they are to be left in, and financial responsibilities to be the Governments.

Surrindi explains where similar roads were built in other marsh areas to get machinery in and hay out.

Leifur Palsson explains how much poaching went on in this area, and felt the road could be an asset to control poaching.

The publics answer was they felt there would be more poaching, with the road making the access open to more people.

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Vandalism to cabins was brought up since roads were put in and Vivian Jeffery asked to comment, since she has a cabin in this area. She said there was some cabins smashed and vandalized since road was in.

Erlondson explains roads should be brought up to standards if left in.

Laurance King explains how the N W wind brings water up in this marsh area, and without proper drainage in these creeks, could cause land and hay to be flooded.

Driedger explains why roads were put in, to cut costs on freight, and they realized at this time culverts are not of adequate size. Bob Harris asks which farmers were to have put names in to govt. requesting use of the roads in question, as he had some names given to him by a govt. official, and when contacting those farmers to get their views, they were not aware their name was even being used, and most of them had no use for the road.

Bob Harris asks what study went into size of culverts needed, how it would affect surrounding land. Govt. answers that these culvert sizes were recommended by Water Resources Branch for a temporary access to be taken out at a later date.

Erlendsen asks for people who are using these roads to comment.

One comment, if we didn't want the roads we wouldn't be here, and no other comments were made.

Bill Uruski asks what the govt. stand is on this road, and when they will make a decision as to the future of said road. Neither Driedger or Surrindi could comment to briefly on this, saying they were to get peoples concerns and report back to their office for further discussion.

They agreed there was two alternatives for the road:
1 - Put in bridges, rock road.
2 - Have road taken out.

Chairman adjourns meeting.

APPENDIX #3.1

MANITOBA WILDLIFE FEDERATION
BRIEF TO WILDLIFE BRANCH.
FEBRUARY 27, 1981.

MANITOBA

Wildlife

FEDERATION



TELEPHONE 833-5867 • ST. JAMES AND NOTRE DAME AVE. WINNIPEG, MANITOBA R3E 3K2

September 23, 1980

Mr. R. Goulden
Director of Wildlife
1495 St. James Street
Winnipeg, Manitoba

LC Sept. 26/80

Dear Rich:

We have had numerous complaints on the following matter. Over a dozen phonecalls from area residents have been received along with official opposition from our Lakeshore Assoc. which represents over 100 district landowners.

As you will recall, we brought our protests to your attention a few weeks ago. You assured us that it would be investigated and that our Lakeshore President, Ed Sigurdson, would be contacted at his Oak Point farm.

The problem was brought up at Saturday's Prov. Exec. Meeting. Ross Thompson attempted an answer but obviously was unaware of our previous protests.

Realize that you have been on holiday for the past couple of weeks but thought I would put some info on paper so you could undertake some action on your return.

Our complaint deals with the building of road crossings in Marshy Pt. situated on the east shore of Lake Manitoba, just north of Oak Point.

The creeks involved are known as First Creek, Channel Creek and Deep Creek.

As we understand it, and because of hay shortage this season, the Minister of Agriculture approved erection of these crossings.

WORKING FOR WILDLIFE

1. Our people in the area estimate there was 600 tons of hay -- tops. And they believe that the Minister was somewhat led astray at the hay potential estimate on the Crown Land involved.
2. Money approved by the Minister was \$20,000 for earth moving and \$5,000 for culverts. This was expended for what area residents describe as "some rough hay that isn't even good bedding for cows".
3. Also, we understand that the government was led to believe that the expenditure and his action was to have benefited seven or eight area farmers. Not so - only one farmer benefited and he holds a position in the Dept. that supervises Crown Land hay leasing.
4. We also understand that a barge was provided to transport his machinery.
5. Our Assoc. feels that these crossings could cause serious flooding on adjacent private land resulting from strong north, (or south), winds. Also, when the culverts freeze up this winter a water backup could result from the water being restricted in its return to the lake.
6. Perhaps this matter could best be settled between your Minister and the Minister of Agriculture but we are reluctant to move in this direction until you have had an opportunity to investigate.
7. We have just had another phonecall this morning. Because of these crossings providing access we now have complaints of vandalism, a cabin break-in and drinking parties created by these new access crossings.

We would appreciate any info you can supply and would appreciate our Lakeshore Pres., Ed Sigurdson, also being notified.

Cordially,

Paul Murphy
Executive Director

cc: E. Sigurdson

APPENDIX #3.2

Marshy Point Crossings
Update Brief From
Director Wildlife Branch
to Assistant Deputy
Minister, Natural Resources.

MAR 0 1981

225.1-10

February 27, 1981.

Mr. Dennis C. Surrendi,
Assistant Deputy Minister,
Natural Resources.

Richard C. Goulden,
Director,
Wildlife Branch.

MARSHY POINT CROSSINGS (update)

On November 21, 1980 I forwarded a memo (attached) to your office outlining the background relative to the controversial crossings in the Marshy Point area. Since that time, Department staff have completed further follow-up investigations regarding this issue. The following is a summary of what has transpired to date.

A meeting was held at Marshy Point on December 16, 1980 between representatives from the Wildlife and Fisheries Branches and the Lakeshore Wildlife Association. The crossings were examined in terms of their possible negative effects on the wildlife and fisheries resources in the area and opposition to them from local interest groups. The following points summarize the local opposition enumerated by Mr. Bob Harris and Mr. Ed Sigurdson of the Lakeshore Wildlife Association.

1. Local landowners felt that the culverts would restrict water flows from the south end of the marsh and that flooding on these adjacent properties would result.

Note: Harry Martel, Interlake Regional Manager, Water Resources Branch, has indicated that wind tides could result in flooding in the area adjacent to the marsh.

2. Commercial fishermen would have problems with open water and nets freezing to the ice caused by the increased water flows. (Incidentally, this is exactly what is presently occurring in the bay adjacent to the outlets).
3. The Wildlife Association was concerned that increased access would result in illegal harvest of geese in the refuge, waterfowl nesting would be adversely affected by grazing and haying, muskrat houses and waterfowl nesting sites would be flooded, increased public activities through the use of various All Terrain Vehicles such as marsh buggies and power toboggans would cause serious detrimental effects on furbearer and waterfowl populations in the marsh; fish spawning would be reduced or eliminated because pickerel fry would not be able to get out of the marsh to Lake Manitoba; irreparable damage would be done to the vegetation on the sand beach ridges by cattle grazing and careless use of A.T.V.'s and four wheel drive trucks.

4. Cabin owners who are presently leasing small pieces of land previously accessible by water only, now feel that vandalism will be a real problem. This has apparently already occurred to the extent that some windows have been broken, buildings broken into, equipment removed and a great deal of garbage spread about at "party sites".

In addition to the above concerns, on-site investigations by Department staff revealed that the design of these structures would undoubtedly have serious implications on the fisheries resource. The crossings are a mixture of locally excavated mud, clay, and gravel and lack rip-rapping. As a result, the structures are highly vulnerable to erosion which will result in sedimentation and siltation. The corrugated pipes are not countersunk and will very likely be undermined through current action. This will result in rapid flows and waterfalls which is expected to impede spawning runs of pike, walleye, and mullet. It is also expected that these limitations to free movement of fish will cause many fry to be trapped in the marsh area.

I understand that local opposition to the crossings was formally presented to the Council of the Rural Municipality of Coldwell on February 10, 1981. Apparently the Lakeshore Wildlife Association, local fishermen, cabin owners and landowners including the East Meadows Ranch attended the meeting and presented their views. I should point out that recent municipal elections have resulted in some changes to the makeup of the local council and the new Reeve, Mr. Marvin Desjarlais is reportedly receptive to airing the concerns of the various interest groups in regard to the crossings. During this meeting a resolution (attached) was passed withdrawing support for the crossings to remain in place. Council agreed that the structures were intended as a means of temporary emergency access and should be removed before spring breakup.

It is my understanding that the R.M. of Coldwell is expecting the Province to arrange for the removal of the crossings and to assume the associated costs. This responsibility lies with the Department of Agriculture since they funded the installation last summer. Mr. Rod Bailey should be asked if Agriculture can initiate and pay for this action as part of the 1980 drought amelioration program.

✓Richard C. Gouloen.

BG/RCG/bk

Enclosures

P.S. I have attached a photo mosaic of the area showing the location of the structures and local land tenure.

c.c. W. Hayden
L. Colpitts

b.c. B. Gillespie

with Vincent's photo of the area to F. H. of C. D. C.

EAST MEADOWS OBJECTIONS TO THE ROAD ALONG
THE SOUTHERN SHORE OF MARSHY POINT

1. The area to which the road provides access provides 2/3 of the brood rearing and moulting habitat utilized by the Marshy Point goose flock. The presence of man or man and machinery during the critical brooding and moulting period will deprive the geese of this area as they require complete privacy. Geese nesting throughout the marsh take their young to this area and to the lakeshore ridge south of Sec. 29, Twp. 18, Rge. 5W to feed on the narrow meadow of grasses of the type the young require. The lakeshore on Sec. 29 and to the north has high coarse vegetation that is useless to young geese. An annual count is taken by East Meadows of young geese on the lakeshore from south of Sec. 29 to the southwesterly point of Marshy Point, then east to Channel Creek. The count averages out at 1500 young with 1000 of these in the area west of Channel Creek. This count was verified by Dr. Dennis Raveling for the Canadian Wildlife Service prior to 1973.
2. There are a great number of ducks of almost every species that nest and raise young in the area. Human activity will result in a net loss of this habitat to them.
3. Foxes den and spend the summer in the area. The beneficial effect they have on controlling mice and prairie dog populations far outweighs their slight effect on waterfowl. Again human access and activity would most certainly force them to abandon the area. This would also result in an economic loss to trappers in the community over a much larger area.

4. To adequately protect this area and its wildlife resource, and at the same time leave the road in, would require a person stationed at Deep Creek seven days a week to ensure that only a haymaking crew used the road. A steel gate or removable bridge would not be a deterrent to anyone with a Honda ATC for example. Such a person merely crosses on foot and floats his vehicle to the other side.
5. Does the community want the area to turn into a picnic ground for drinking parties and illegal shooting of wildlife? We cannot expect C.O.'s and the R.C.M.P. to spend the time in the area that will now be required to protect it.
6. There is also the very strong possibility that the now restricted outflow at the affected creeks will cause flooding due to wind tide. Aside from the damage done by flooding waterfowl nests, there could be a loss of existing haycropping on marsh islands and East Meadows land adjacent to the east side of the marsh.

CONCLUSION: East Meadows Ranch was established by W.A. Murphy in 1945. Until his death in 1968 he was dedicated to preserving his holdings at Marshy Point as a wildlife sanctuary first and foremost. We, the Curry and Vincent family, Mr. Murphy's successors, will continue to give wildlife top priority at East Meadows.

The success of my grandfather's efforts was largely a result of community support and shared aspirations for waterfowl at Marshy Point. We hope that now, and in the future, we will continue to enjoy your support. It would

be sadly ironic that a municipality which has built a reputation on the continent for its conservation efforts, and chosen the Giant Canada Goose as its community symbol, were now to withdraw its support for what took so long to build. Marshy Point is unique, but it is also an extremely fragile ecosystem. We believe, gentlemen, that one small road can cause serious damage to our wildlife heritage at Marshy Point.

Paul Vincent, on behalf of the owners of East Meadows Ranch.