INITIAL ASSESSMENT GUIDE
FEDERAL ENVIRONMENTAL ASSESSMENT AND REVIEW PROCESS

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PREFACE

The Federal Environmental Assessment Review Office (FEARO) has produced this guide as part of its responsibility to provide initiating departments of the federal government with procedural guidelines for the initial environmental assessment of proposals. It is the product of a process of consultation, discussions and workshops involving federal departments that build physical projects and/or carry out programs affecting the environment. Work sessions and discussions were held in all regions and written contributions were received from specialists across the country.

Out of the process of consultation was distilled a guide designed primarily for federal workers responsible for initial assessment of proposals with environmental implications. The guide will also find associated use by provincial government officers, industrial proponents and consultants as well as academics and the public. Therefore, the text has been prepared for use by a wide range of users.

The guide consists of advice on how initial assessment can be carried out in keeping with the Environmental Assessment and Review Process Guidelines Order of 1984 and in keeping with experience of many departments and specialists. It incorporates the results of collaborative research and is intended to encourage better techniques and efficiency in initial assessment.

The co-operative efforts of participating departments and workers have contributed to the drafting of this guide in a very fundamental way, resulting in what is essentially a co-authored document. The high level of constructive debate, deliberation and collaboration is gratefully acknowledged.

After a period of use, this guide will be revised. Comments and suggestions from users are therefore requested.

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CHAPTER 1: PURPOSE, POLICY, AND MANDATE

1.1 PURPOSE

This publication provides guidelines to federal departments and agencies in the execution of responsibilities set out in the Environmental Assessment and Review Process Guidelines Order of June, 1984. A description and explanation of the environmental assessment and review policy are given as well as procedural guidelines for the initial assessment of federal proposals, including federally funded ones.

This guide sets out:

(1) a general description of the Environmental Assessment and Review Process, hereafter referred to as the EARP or the Process;

(2) a detailed description of the initial assessment phase and how it fits into the full Process;

(3) roles and responsibilities of all participants in initial assessment and;

(4) how to undertake an initial assessment.

This guide should be used in conjunction with the following manuals available from the Federal Environmental Assessment Review Office:

(1) Revised Guide to the Environmental Assessment and Review Process (1979), containing general guidance and information related to the EARP (under revision).

(2) Guide to Environmental Screening (1978), prepared in co-operation with Environment Canada, and

(3) Environmental Assessment Panels: Procedures and Rules for Public Meetings (1985).

The guide is intended to be used by all initiating departments* in the preparation of written procedures for screening and initial assessment.

1.2 POLICY

The federal government policy on environmental assessment requires that the environmental implications of government actions be considered prior to taking irrevocable decisions and as early in the planning process as possible. The EARP is a self-assessment process; the initiating department is the decision-making authority and shall ensure that the environmental implications of all proposals are fully considered. Where adverse implications are potentially significant, or where there is significant public concern, the initiating department shall refer the proposal to the Minister of the Environment for public review by a Panel.

The implications shall include the potential environmental effects on and from the project and directly-related social effects as well as effects that are external to Canadian territory. The consideration of the proposal will include the concerns of the public regarding its potential environmental and related social effects. In the case of proposals referred for a public review by a Panel, with the approval of the Minister of the Environment and the Minister of the initiating department, consideration of a proposal may also include such matters as the general socio-economic effects, technology assessment, and the need for the proposal.

Where a proposal is subject to environmental regulation independent of the Process, duplication of public reviews is to be avoided. The initiating department shall use a public review by a Panel under the Process as a planning tool at the earliest stage of development of the proposal. The results of the public review should be made available for use in any subsequent regulatory deliberations respecting the proposal.

1.3 MANDATE

This guide is issued pursuant to Section 18(a) of the Environmental Assessment and Review Process Guidelines Order (1984), as recommended by the Minister of the Environment pursuant to the Government Organization Act, 1979, which directed FEAR0 to provide procedural guidelines.

* See Glossary, Appendix 2 for definitions of terms.

CHAPTER 2: AN OVERVIEW OF THE ENVIRONMENTAL ASSESSMENT AND REVIEW PROCESS

2.1 OPERATING PRINCIPLES

The purpose of the Process is to implement the federal government's policy on environmental assessment. Implicit in this is the requirement that the Process should be used as a planning tool, and therefore it is most effective if applied at the early stages of project planning. Early application improves the effectiveness of both initial assessments and public reviews. It is also important that decisions taken during initial assessment be accessible to the public.

The Process operates on the principle that the initiating department shall ensure that each proposal, for which it is the decision-making authority, is subjected to an initial assessment. The initial assessment is to determine whether, and the extent to which, there may be any potentially adverse environmental effects from the proposal. Responsibility for decision making under the Process belongs with the initiating department and cannot be delegated to another agency or jurisdiction, although relevant advice and information may be obtained from other sources.

Another operating principle is that information on the proposal should be made available to the public to allow the public to comment on its potential environmental effects. While there may be instances where this is not practical, public involvement is often important to project planning and should therefore commence early in the planning work.

2.2 APPLICATION

The Process applies to any proposal:

(1) to be undertaken directly by an initiating department, for example, an extension of an existing airport runway by Transport Canada;

(2) that may have an environmental effect on an area of federal responsibility, for example, a hydroelectric power generation project with potential to flood national park lands;

(3) for which the Government of Canada makes a financial commitment, for example in railway relocation projects in some urban centres partially funded by Transport Canada;

(4) that is located on lands, including the offshore, that are administered by the Government of Canada, such as the National Parks.

Where the decision-making authority for a proposal is a corporation listed in Schedule C of the *Financial Administration Act,* the corporation is expected to develop a corporate policy which would require the routine application of the Process unless the application of the Process is beyond the legislative mandate of the corporation.

The EARP Guidelines Order (1984), stipulates that federal boards or agencies exercising a regulatory function are obliged to apply the Process if:

(1) there is no legal impediment to doing so; and

(2) procedural duplication does not result.

A legal impediment could occur, for example, if a board or agency had no legal authority to include environmental factors in its decisions. For instance, an agency set up to regulate aircraft safety could not use that federal decision-making role to apply EARP to aircraft owners and force environmental assessments not related to aircraft safety.

For projects requiring public review under EARP as well as under a regulatory process, there is an obvious need to avoid potentially costly duplication. An example is the National Energy Board (NEB) which incorporates environmental matters into its decision-making process. In such cases, if the EARP was used at an early stage, it could serve as an early planning tool for the project proponent by making the major environmental recommendations which could be considered subsequently in the NEB's detailed regulatory review.

Some other federal regulatory agencies, for example the Atomic Energy Control Board (AECB), may choose to apply the EARP to their decisions to assist them in incorporating environmental factors. In most cases, it is not practical for regulatory agencies to use the Process as an early planning tool since they are not involved with the proposal until the proponent makes an application. Nevertheless, if it becomes known that such a board will be applying EARP principles routinely to its decision making, it is expected that proponents will plan for such examination and in effect use EARP principles in their early planning.

The Process requires that a proposal be reviewed for its environmental effects and those social effects which are directly related to the environmental effects. For example, a series of water control or hydro dams might result in flooding (environmental effects) leading to disruption of hunting and trapping activities and seasonal harvests (social effects). As noted above the subject matter under review may be broadened to include such items as general socio-economic effects of the proposal, technology assessment, and the need for the

project, but only with the mutual agreement of the Ministers of the Environment and the initiating department.

The Process applies to Canadian project proposals which affect the environment external to Canadian territory. For instance, offshore oil and gas exploration may have the potential to adversely affect nearby coastlines and waters in the U.S.A., Denmark (Greenland) and France (St. Pierre and Miquelon). Where there is the possibility of international transboundary effects, initiating departments that consider such projects must consult with the Department of External Affairs at the earliest possible stage of a project so that complicated and costly delays at a later stage can be avoided.

2.3 ADMINISTRATION OF THE PROCESS

FEAR0 is responsible directly to the Minister of the Environment for the administration of the process, FEAR0 receives policy direction from the Minister of the Environment and depends upon the Department of the Environment for administrative support.

2.4 DESCRIPTION OF THE WHOLE PROCESS

The purpose of this section is to give a general overview of how the entire Process works, so that the following detailed description of the initial assessment phase can be put into a useful context.

Throughout the Process, it is important to keep environmental, social, economic and technical feasibility studies related to each other and conducted to about the same level of detail. If this does not happen, decisions will be made without the benefit of adequate information in one or more of the areas. Environmental studies cannot and should not be separated from other studies being carried out.

The initial assessment undertaken by an initiating department has two possible stages:

(1) screening and, if necessary,

(2) further investigation to study unknowns resulting in a report called an Initial Environmental Evaluation.

Experience shows that a great majority of the projects generally meet environmental criteria and are approved as a result of screening. Only a small fraction of the projects require further investigation and even fewer are referred for public review by a Panel.

Generally speaking, for every 1,000 projects which are screened, 100 move ahead to further study, and 1 project may go to public review. A variety of projects and activities which have been recently assessed and which cover a range of impacts are illustrated in the photographs which follow.

The main steps of the Process are described in the following text and in a schematic diagram in Figure 16 (last page).

1. Trail Construction.

2. Fish Sampling.

STEP 1

The Process commences when a proposal for a project, program or activity is identified in an initiating department's work program. The proposal should be sufficiently developed to identify an initial list of environmental issues, the alternatives and to identify most of the affected parties. If environmental considerations are properly integrated into the planning process, very few projects will be delayed for environmental reasons. This is to illustrate that environmental assessment is not separate from other project planning activities,

STEP 2

Screening is a systematic, documented assessment of environmental implications of a proposal, including the significance of adverse environmental consequences. Proper note should be made of environmental factors which may

impact on the project. This is particularly important where these factors cause conditions requiring special operating or construction procedures, as related, for example, to human safety and working conditions. Screening determines the need to mitigate environmental impacts or to carry out modifications to the project plan to reduce impacts or whether further investigation is required. At this step, if there are possible international transboundary effects, then, as noted in Section 2.2, the Department of External Affairs must be consulted. FEAR0 should be advised as well.

Experience shows that many initiating departments carry out screening with the project manager using the Guide to Environmental Screening (FEARO, 1978) and obtaining technical advice from departments such as Environment Canada, and Fisheries and Oceans Canada.

Screening results in one of nine outcomes:

(1) Automatic exclusion, based on lists defined on a program-by-program basis. The project proceeds.

(2) No significant adverse effects, The project proceeds.

(3) Effects can be mitigated with known technology, environmental design, and conformance to legislation and regulations. The project proceeds with mitigation and monitoring measures identified and recorded.

(4) Potentially adverse effects are unknown. The proposal is given further study until a decision can be made.

(5) Ability to mitigate effects is unknown. The proposal is given further study until a decision can be made.

(6) Where potentially adverse effects are significant, according to criteria developed by FEAR0 and the initiating department, then the proposal shall be referred to the Minister of the Environment for a public review by a Panel.

(7) Where there is public concern about potential environmental effects, such that a public review is desirable, then the proposal shall be referred to the Minister of the Environment for a public review by a Panel (see Section 13, Order in Council).

(8) Automatic referral based on lists defined on a program-by-program basis. The project is referred for public review by a Panel.

(9) Potential adverse environmental effects are unacceptable, in which the proposal must be modified and then re-screened, or be abandoned.

STEP 3

Further investigation is the next step for proposals which have passed the screening stage and have not been referred for public review by a Panel or approved for implementation but require additional study. This step entails a documented assessment of the potential environmental impacts of a proposal, and it requires that further study be done to provide information on the nature, extent, and significance of impacts, and the efficacy of known mitigation measures. The work is usually documented in an Initial Environmental Evaluation (IEE) (see Section 3.7.4). Experience has shown that, at this stage, procedures by initiating departments vary considerably, some involving additional field research and surveys, and others involving reviews of alternative designs. Procedures are sometimes very dependent on the nature of the project. It is also customary at this stage to seek the advice of departments with special expertise. Depending on the complexity of the issues involved, the study approach can vary from a scoping meeting (see Section 3.8.1) to find out the need for more definite information, to the undertaking of a prescribed study and the production of a report. Documentation of results in the IEE also varies widely, from short reports to volumes of 100 pages or more. The size and format will continue to be left to the judgement of initiating departments. The main objective remains unchanged however; that is, to establish the significance of potentially adverse environmental effects, to identify useful mitigative measures from existing technology, and to report these results and the related decision on the project in a clear concise manner suitable for public scrutiny.

Since 1976, the term Initial Environmental Evaluation (IEE) has been used to describe this documentation of results of further investigation. *

Further investigation will result in one of three documented decisions being taken:

(a) Effects are understood and can be mitigated; the project therefore may proceed with prescribed mitigation and monitoring measures.

3. Indian School Reconstruction Project.

* initiating departments are encouraged to continue to use this term for consistency; the main point is to identify the report as one which presents the results of further investigation following screening, thereby distinguishing the report from an environmental impact statement, a document required in a public review.

(b) Effects or public concern or both are significant and a public review by a Panel is therefore warranted, in which case the proposal is referred to the Minister of the Environment for such a review (Section 13, Order in Council).

(c) Effects are significant and unacceptable, in which case the proposal must either be modified and subsequently re-screened or be abandoned.

These initial assessment decisions will be published regularly in a bulletin issued by FEAR0 and this will cover decisions made at the screening stage or after additional investigations have been completed. The record will consist of information on proposals forwarded by initiating departments. In this way, both government and non-government agencies and other interested parties can be assured that the Process is being implemented.

STEP 4

The next step in the Process for proposals warranting such action is referral of the proposal by the Minister of the initiating department to the Minister of the Environment for review by a Panel. The Panel is normally chaired by the Executive Chairman of FEAR0 or his delegate and is appointed by the Minister of the Environment who issues the Panel with terms of reference after consultation with the Minister of the initiating department.

STEP 5

The environmental assessment documents are prepared. Depending upon the nature of the review these may include guidelines prepared by the Panel for the preparation of an environmental impact statement (EIS) to be prepared by the project proponent or, in some cases, the initiating department. Panels usually seek public comment on EIS guidelines before they are finalized.

STEP 6

Once the environmental assessment documents are completed, the public review of the EIS is carried out. If deficiencies are identified, then the proponent is asked to address them in writing before public hearings are held. Then the Panel holds public hearings on the EIS.

STEP 7

The Panel prepares a report on the review for the Ministers of the Environment and the initiating department. The report is usually a description of the impacts of the proposal with recommendations on how to address these impacts.

STEP 8

The two Ministers then make the Panel report public.

STEP 9

The Minister for the initiating department will determine the manner in which the decisions taken will be made public (Section 33(e), Order in Council).

2.5 DEPARTMENTAL RESPONSIBILITIES AND ROLES IN INITIAL ASSESSMENT

The purpose of this section is to outline in general how the administrative and technical resources of government are marshalled to help the Process work as smoothly as possible. Initiating departments, departments with special expertise, and FEAR0 are discussed in the following sections.

2.5.1 Initiating Department

(1) The initiating department has the primary decision-making responsibility for the Process. Its role is to lead the proposal through the initial assessment phase consulting with other departments and the public as appropriate, deciding whether a Panel review is necessary and following such a review, to respond to the Panel report. Where two or more initiating departments are involved, the responsibilities, duties and functions of each will be decided by consultation. FEAR0 is available to assist in such matters if requested to do so.

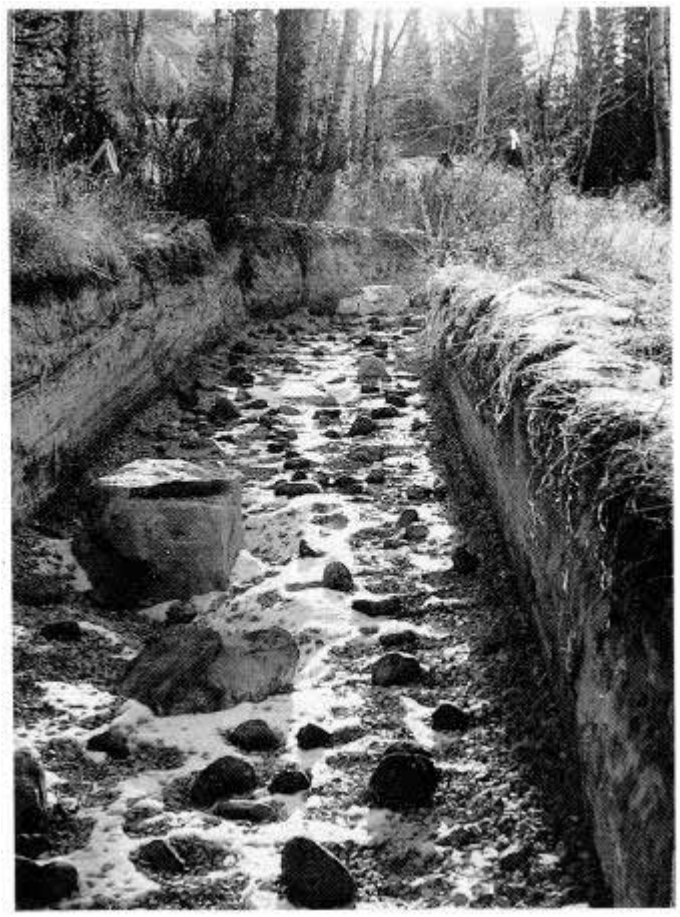
(2) Any decisions resulting from the initial assessment phase must be made by the initiating department and may not be delegated to any other body including a provincial one. Initiating departments are responsible for providing for the resources (person-years and dollars) required to carry out project assessments under the EARP. Experience shows that the advice and assistance of departments with staff having specialist knowledge are routinely sought on matters of potentially significant environmental impact. Such advice is essential for a relevant and successful review,

(3) Each department will establish written departmental procedures for making decisions throughout the initial assessment phase (See Section 2.9). Such procedures should be based on the EARP Guidelines Order and this manual. FEAR0 is available to provide assistance.

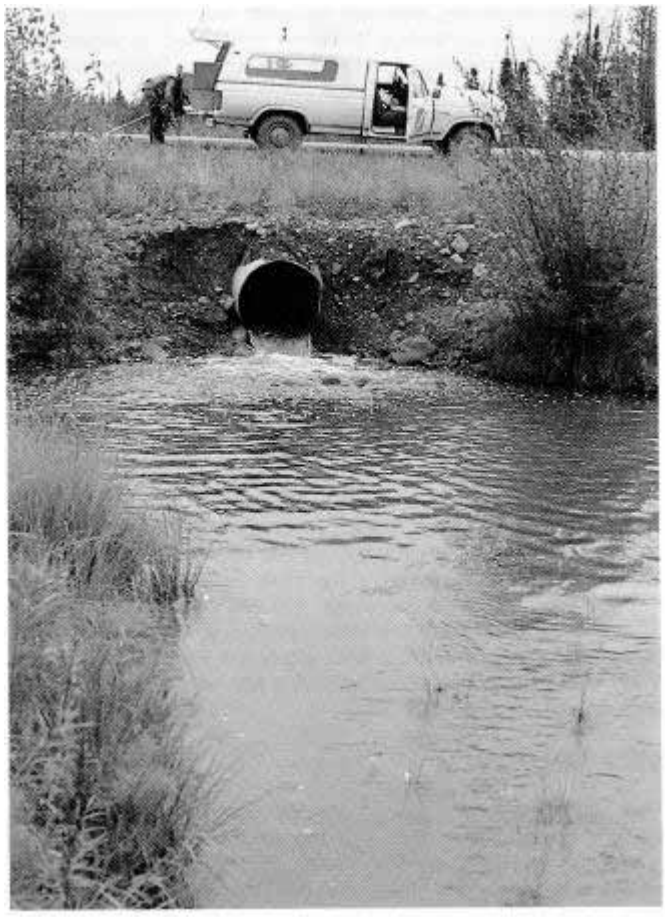
(4) The initiating department is required to refer a proposal to the Minister of the Environment for public review by a Panel when required by the initial assessment decision.

(5) The initiating department has the obligation to ensure that the public has access to initial assessment decisions and the opportunity to respond to the information. This information can be made available on public files without requiring a formal application under the Access to Information Act, although the confidentiality provisions of the Act apply. FEAR0 will be publishing a periodic bulletin of initial assessment decisions containing a summary record of decisions, and initiating departments will maintain public records containing more detailed information.

(6) Initiating departments are responsible for ensuring that all initial assessment recommendations regarding environmental protection and mitigation of environmental and directly-related social impacts are implemented for project proposals. All departments with legislative, regulatory or administrative responsibilities related to the development of the project shall continue to exercise their mandates with respect to projects.



4. Creekbed Relocation.



5. Existing Culvert Requiring Modification to Allow Fish Passage.

(7) Initiating departments are responsible for the regular provision to FEAR0 of information on initial assessment decisions for publication.

(8) Initiating departments involved in the development of federal-provincial, territorial, international and other agreements which bind the federal government, are responsible for incorporating potential EARP applications as a part of the agreements, where it is relevant to do so.

(9) Initiating departments are responsible for responding publicly in a substantive way to Panel reports, outlining the manner (design, supervision, monitoring) in which the project will be implemented.

2.5.2 Departments with Specialist Knowledge and Expertise

(1) Departments such as Environment, Fisheries and Oceans, Indian and Northern Affairs, Energy, Mines and Resources, Health and Welfare, Agriculture, Regional Industrial Expansion (Tourism), External Affairs, Public Works, and the National Research Council possess personnel with specialist knowledge and competence relevant to environmental assessment. Their role is to provide, initiating departments with requested available data, information or advice on regulatory requirements and environmental effects including the directly-related social impact of such environmental effects.

(2) Certain departments also have the role of advocating protection of interests for which they are responsible. For example, Environment Canada has specific responsibilities for protecting certain wildlife whereas Fisheries and Oceans protects certain fish habitats.

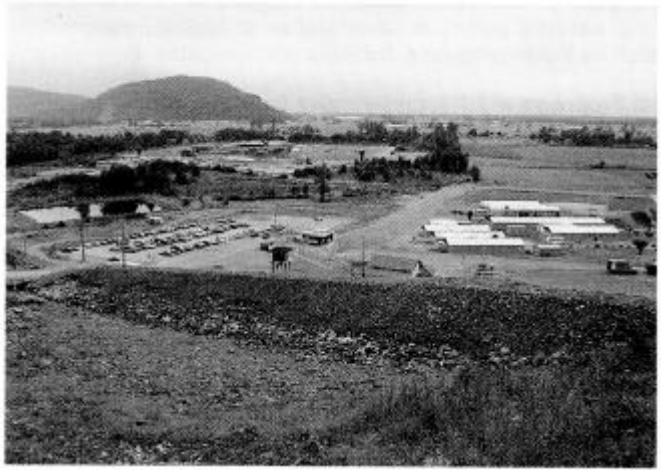
(3) Environment Canada is also responsible, by drawing on its own resources and those of other departments, for advancing the state of the art in initial assessments through work done in project assessment under its jurisdiction, and through developing and advocating the use of technical principles and generic project guidelines for federal agencies (See Appendix 3).

(4) While the use of the specialist departments is encouraged, this in no way reduces the responsibility of the initiating department to do the initial assessment and make the resulting decisions.

2.5.3 Service Departments and their Clients

Some initiating departments rely upon other departments to undertake major components of work associated with given projects. This may include studies and review required under the Process. However, the initial assessment decisions remain the responsibility of the initiating department.

For example, Public Works Canada (PWC) provides architectural, engineering and project supervision services to other departments which plan, commission and finance projects. In such cases, environmental assessment activities conducted by PWC, where requested as part of a Specific Service Agreement with client departments, should be designed to meet the initiating department's responsibilities under the Process. An initiating department may choose to undertake these activities directly and incorporate the results in the instructions given to PWC. Service departments are responsible for applying the Process to matters for which they have decision-making authority, as the initiator.



6. Reconstruction and Upgrading of the Mountain Institution Medium Security Detention Centre, Agassiz, B.C.

2.54 Federal Environmental Assessment Review Off ice

(1) FEAR0 is responsible directly to the Minister for the administration of the Process. To carry out this responsibility FEAR0 maintains a headquarters and regional structure consisting of policy and process specialists in Hull, Quebec and regional directors for all regions, based in Vancouver and Hull.

(2) FEAR0 has specific responsibilities to:

(a) Provide procedural guidelines (e.g. this publication) to initiating departments and agencies for the screening of proposed projects, as well as providing assistance in the development and use of implementation procedures.

(b) Assist initiating departments in the provision of information on and the solicitation of public response to proposals early enough in the planning stage that irrevocable decisions will not be taken before providing opportunities for public input. This is normally done by assisting initiating departments, rather than FEAR0 undertaking the public consultation. FEAR0 can assist in advising on public consultation techniques such as scoping, workshops on issue clarification, and mediation meetings to resolve apparent conflicts. Only in unusual circumstances and at the request of the initiating department would FEAR0 undertake mediation or manage a public consultation process during the initial assessment phase.

(c) Publish an initial assessment bulletin periodically which will record initial assessment decisions made by initiating departments (See Section 2.10). The point in project phasing at which an initial assessment decision is to be reported to FEARO, is to be left to the discretion of the initiating department.

(d) Prepare an annual report to the Minister of the Environment, to be made public, on the implementation of the EARP by initiating departments.

(e) Carry out any necessary discussions concerning the avoidance of duplication in reviewing projects which affect the responsibilities of more than one jurisdiction, (i.e. federal, provincial, and territorial governments). Where federal-provincial matters come up for review, a general guideline is to use the process of the jurisdiction with the main constitutional authority for the proposal under study, always ensuring that the minister of the initiating department retains the decision-making authority required under the Process.

(f) Serve as an advocate for the Process, but not for project-specific issues.

(g) Manage public reviews by Panels once proposals are referred to the Minister of the Environment.

2.6 FEDERALLY-FUNDED PROPOSALS

Certain projects and programs are funded by federal departments and agencies that hold decision-making authority over this aspect of planning. Examples include hydrocarbon industry development proposals funded by Energy, Mines and Resources and resource and industrial development proposals funded by Regional Industrial Expansion. In many cases the program delivery, project planning and implementation are the responsibilities of a provincial government agency.

The funding department carries the decision-making authority and reporting responsibility as the initiating department under the Process. However, the initial assessment of a proposal may be carried out on the basis of information generated under a provincial environmental 'assessment process provided that the information is sufficient to allow the federal department concerned to make the initial assessment decisions required by the Process. Such decisions should be reported to FEAR0 by the funding department in the normal manner. If the department decides that a public review is required under the

Process, then the decision should be taken in consultation with the province concerned and FEAR0 should be consulted concerning the form of that review. It is FEARO's responsibility to negotiate cooperative review arrangements with provinces with the objective of reducing duplication wherever possible. (See Section 2.8-3)

Where funding arrangements with a province are such that the federal government (providing funds) is not called upon to make decisions about particular proposals, these arrangements should contain provisions calling for provincial assessment of environmental effects. The funding agency should request that environmental effects be assessed and that funds be committed by the provincial government to undertake such assessments and that study results are forwarded to the federal funding agency for review and comment.

7. Placing Rip Rap along South Shore of Steveston Island, B.C.

2.7 PUBLIC CONSULTATION

The Process requires the initiating department to consider the concerns of the public regarding a proposal and its potential environmental effects. The department must ensure that the public has access to the initial assessment decision and related information in accordance with the spirit and principles of the Access to Information Act and the opportunity to respond to a proposal before implementation. Different techniques for undertaking this consultation may be appropriate for different programs. Managers of affected programs will select appropriate techniques for incorporation in departmental procedures under the Process so that the above-mentioned basic requirements are met. (See Section 2.9-4 of this Chapter and Section 3.8.3)

As noted all initial assessment decisions are to be recorded and listed by initiating departments and published periodically in an initial assessment bulletin issued by FEARO.

2.8 FEDERAL-PROVINCIAL-TERRITORIAL CONSIDERATIONS

There are several potential areas for EARP to be used interactively with provincial planning, resource management, and environmental assessment processes. These include:

(1) Project proposals where the federal government holds the major part of the planning and decision making. Examples include national harbour developments and additions to airport facilities.

(2) Project proposals where the provincial government holds the major part of the planning and decision making and where the federal government performs a contributory role, such as funding for a provincial energy or highway project. These proposals may involve more than one provincial jurisdiction, as in the case of an oil sands mining and processing plant or a heavy oil processing project on or near a provincial boundary.

(3) Proposals which are of provincial origin and have a potential environmental effect on federally administered lands (e.g. national parks) or on a matter of federal responsibility such as Indian programs, fisheries and navigable waterways.

(4) Proposals which represent joint federal-provincial initiatives and call for co-operation in project planning and review. An example is the Venture Development Project which was studied by an Environmental Assessment Panel appointed by the federal government and the Government of Nova Scotia.

Three principles should govern departmental actions under the Process in situations where provincial involvement is a significant factor. The intent of these is to maintain federal departmental accountability for environmental assessment, while respecting provincial responsibilities and minimizing duplication.

(1) If a federal department has to make a specific decision to allow an activity to occur, the requirements of the Process apply to that decision.

(2) As explained in Section 2.6, reliance on provincial systems to generate the information needed to meet departmental responsibilities under the Process is acceptable especially where the primary decision-making responsibility lies with the province. However, departments remain accountable under the Process for the decisions that they take and for ensuring that the assessment process adequately addresses specific federal environmental or renewable resource responsibilities.

(3) Where it appears that a public review is warranted under the Process and where provincial interests are affected or a provincial decision on the project is required, the decision to seek a public review should be the subject of consultation with the affected province(s). FEAR0 has the responsibility for negotiating formal co-operative review arrangements with provinces as required and should therefore be consulted at this point. In the past such arrangements have ranged from federal participation and representation in provincial review mechanisms through joint or co-operative reviews to provincial participation and representation in federal reviews. These

differences in approach have reflected the varying levels of federal or provincial responsibility in each instance.

As territorial government requirements are developed and land claims are settled, FEAR0 will seek compatible processes for adequate reviews and the avoidance of duplication.

2.9 DEPARTMENTAL PROCEDURES

Each initiating department will establish written procedures, in consultation with FEARO, which should be followed to make initial assessment decisions on proposals for which it is the decision-making authority. These procedures will take into account different departments' unique operational needs. However, certain common items should be considered for inclusion:

(1) The departmental units responsible for overseeing the Process should be described, as well as the delegation for decision making on projects, for quality control and review. For example, a field or regional office may be designated to assess a type of project, and a headquarters office may deal with types which are known to require public review by a Panel. The initial assessment decision should be signed off by the responsible officer and then referred for quality control and review by officers with authority and expertise to perform these activities.

(2) The timing for initial assessment decisions within the context of the departmental planning cycle should be specified, where it is possible to do so. All departments maintain a five-year planning horizon, with annual operational plans and estimates established in broad accordance. For EARP to be effective in aiding project and program planning, initial assessment needs to be brought into the picture in a timely way.

(3) Relevant methods in the initial assessment phase, exclusion and referral lists, and federal government sources of expert advice should be described. This information can be used by project officers and others with designated responsibilities for initial assessment decisions and quality control.

(4) A procedure is needed for the public to have access to initial assessment information on, and the opportunity to respond to proposals in accordance with the principles of the Access to Information Act. Policies for release of information and the systems employed will differ between departments, and program-specific procedures will therefore be necessary.

(5) A procedure to provide FEAR0 on a regular basis with information on the implementation of the Process with respect to the proposals for which it is the decision-making authority (Section 16, Order in Council).

(6) Systems which will help to ensure that recommendations will be carried out on mitigation measures, project monitoring, surveillance, and required follow-up on corrective measures, should be described.

(7) A description is required of the system for disseminating and explaining the procedures to departmental staff, including the production of manuals, training courses, and workshops which depend on the particular needs of the department.

2.10 DOCUMENTATION

This section describes the recommended information and format of initial assessment decisions for the FEAR0 initial assessment bulletin.

As noted in Section 2.4, screening will lead to one of nine decisions.

Where a department is relying upon information to be generated by a provincial process, this should be reported. The initial assessment decision would be taken when the provincial process was completed and would be reported to FEARO.

Documented initial assessment decisions (including those reported in initial environmental evaluations) are recorded by the initiating department. An example of the departmental documentation is given below. (See also Appendix 5).

For each decision a brief summary of l-2 lines suitable for computer printout format is then forwarded to FEAR0 for publication in an initial assessment bulletin. FEAR0 will publish the bulletin on a regular basis using only the summary information provided by initiating departments. The timing of the provision of this information is at the discretion of the initiating department. This information should be limited to the department name, proposal name and description, location, initial assessment decision and contact person, name and address, so that public requests for further information can be addressed to the applicable initiating department. The precise format for the submission of information to FEAR0 is being developed in consultation with departments.

Projects types on departmental automatic exclusion lists should not be reported to FEAR0 for inclusion in the initial assessment bulletin.

INITIAL ASSESSMENT DECISION

Name of Proposal

Brief Description of Proposal (Location, Cost, etc.)

Nature of Effects Identified

Mitigation/Compensation Measures Proposed

Federal and/or Provincial Agencies Consulted

Yes/ No List as applicable

Public Advised

Yes/No List dates/Methods as applicable

Approximate Date of Implementation

Initial Assessment Decision & Rationale

Departmental Contact (Name & Tel. No.)

Initiating departments will prepare procedures for providing public access and response to initial assessment decisions, thus accommodating their own unique situations. Besides recording initial assessment decisions and forwarding a brief summary to FEAR0 for listing in the FEAR0 Bulletin, initiating departments may choose to give public notice of proposal plans and initial assessment decisions to solicit comments and measure public concern. Should public requests for initial assessment information be received at FEARO, they will be referred to the appropriate departmental contact.

Certain types of proposals may not warrant public consultation during planning. Examples include emergency repairs to existing facilities or proposals which can be grouped into a category for which environmental effects are known and are not considered important. Such proposals could be covered by issuing class environmental assessment guidelines, examples of which are found for municipal highways in Ontario, and for dredging operations in Quebec (See also Section 3.6-5). Confidentiality requirements on industrial funding proposals and on negotiations for the acquisition of lands are other examples. Initiating departments will develop initial assessment procedures to deal with such situations to preserve the required confidentiality.

CHAPTER 3: HOW TO DO AN INITIAL ASSESSMENT

3.1 INTRODUCTION

Initial assessment helps to ensure that environmental implications of all proposals for which an initiating department is the decision-making authority are fully considered early in the planning process and, where the potentially adverse environmental effects that may be caused by the proposal are significant, that proposals are referred to the Minister of the Environment for public review by a Panel.

The following sections offer general guidance in a wide variety of project types and ecological and social environments. The advice is general, since specific procedures will be developed in each initiating department, and it is to be used in conjunction with those procedures.

3.2 TERMINOLOGY

A glossary in Appendix 2 defines the key terms used in this guide. Figure 8 illustrates the relationship among the terms used to identify the main stages of initial assessment.

3.3 AN INITIAL ASSESSMENT STRATEGY

One of the objectives related to initial assessment is to reach sound decisions without excessive expenditure of time, effort and financial resources. This can be done by keeping the procedures as simple as possible, by making many of the decisions predictable and automatic, and by providing appropriate documentation on results.

Most initial assessment does not require the application of sophisticated scientific techniques; it requires good information, logic, skilled management, and good communications.

The approach recommended in this guide, as illustrated in Figure 9, proceeds in steps, dealing first with the most easily taken decision requiring no analysis for individual projects, second, with those which require moderate analytical effort and third, with the most complex and difficult decision routes involving scientific study and the preparation of a report.

The first of these steps includes the automatic exclusion and automatic referral lists, described in Sections 3.4 and 3.5, where the preparation and use of the lists effectively fulfills the requirements for initial assessment. Some proposals can be categorized according to historical precedent where well accepted design and implementation guidelines could be employed automatically to preclude environmental problems. Categorical assessments cover such situations. Additional categories of automatic initial assessment decisions may also be created (See Section 3.6).

If a proposal does not fit into a list or category that permits it to be handled automatically, it must be examined individually. In many cases, screening will indicate negligible or easily mitigated environmental consequences. In some cases it will be necessary to apply significance criteria to determine whether a public review is warranted (See Section 3.9). In some cases, further investigation will be required before an initial assessment decision can be reached. An Initial Environmental Evaluation will be necessary because of unknowns associated with the environmental effects or mitigation measures. Normally, it is not necessary to carry such study any further than the point at which an initial assessment decision can be taken. The following sections deal with the steps of initial assessment in more detail.

3.4 EXCLUSION LISTS

Exclusion lists may be developed by the initiating departments in co-operation with FEARO, and should identify the types of proposals that would not be expected to produce any adverse environmental effects and that would, as a result, be automatically excluded from more detailed examination under the EARP. These lists are meant to remove the harmless projects from further consideration, thus permitting initiating departments to concentrate on those proposals which warrant closer attention. The following examples from other jurisdictions may be useful in compiling lists:

(1) Interior renovations to buildings.

(2) Scientific research and surveys in certain categories. For instance, some field surveys are harmless, but detrimental impacts might result from certain experimental field studies in fish and wildlife habitats.

(3) Routine maintenance of installations and grounds keeping activities.

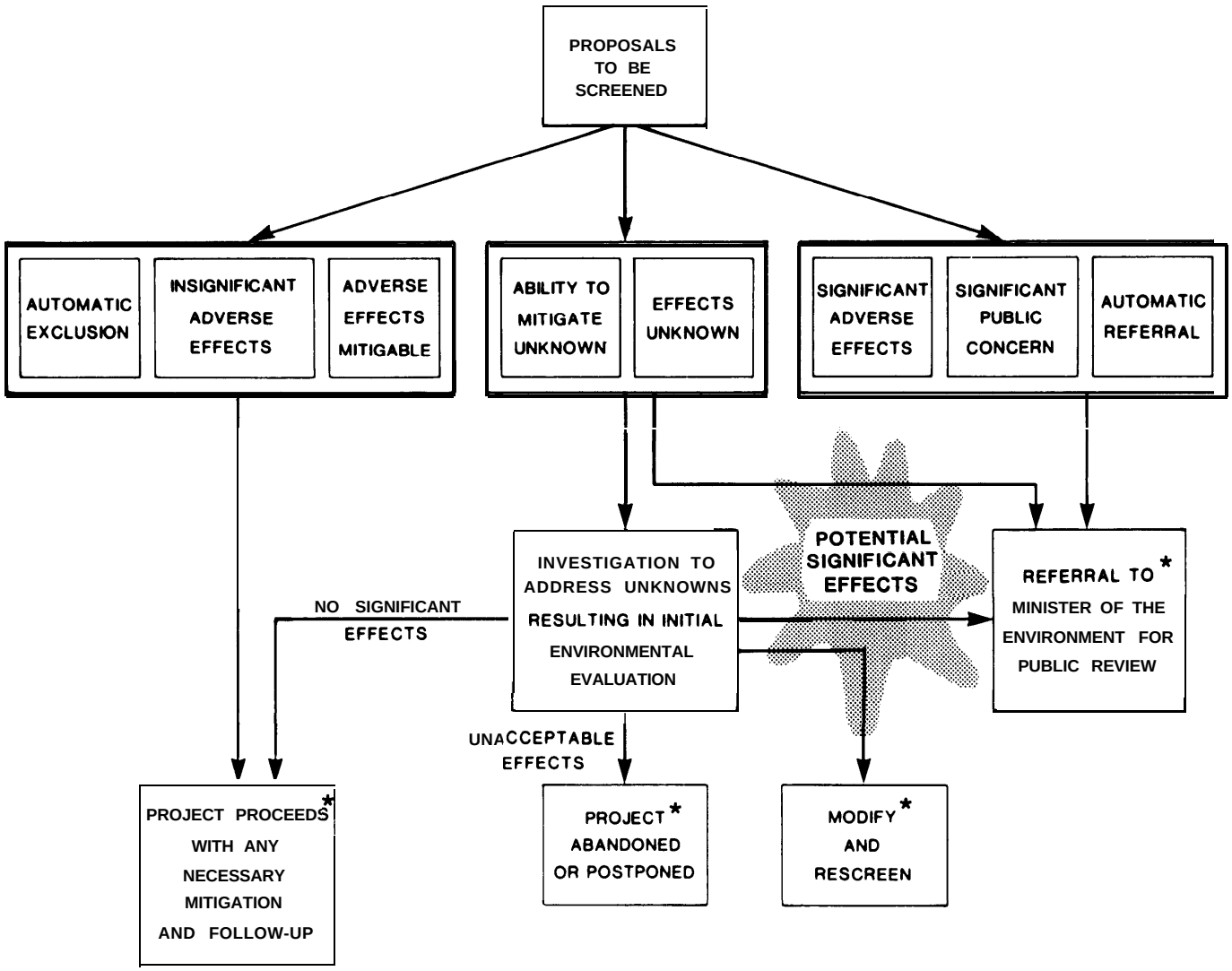
(4) Minor construction conducted in accordance with an approved master plan which does not significantly alter land use, provided that the operation of the completed project would not have an environmental impact.

(5) Studies which require only commitments of manpower and funding and which do not have potential for adverse impacts.

3.5 AUTOMATIC REFERRALS

The concept of automatic referral lists is in the EARP Guidelines Order. Initiating departments may want to give consideration to developing such lists according to the criteria and methodology set out in Section 3.9.

Figure 8. INITIAL ASSESSMENT

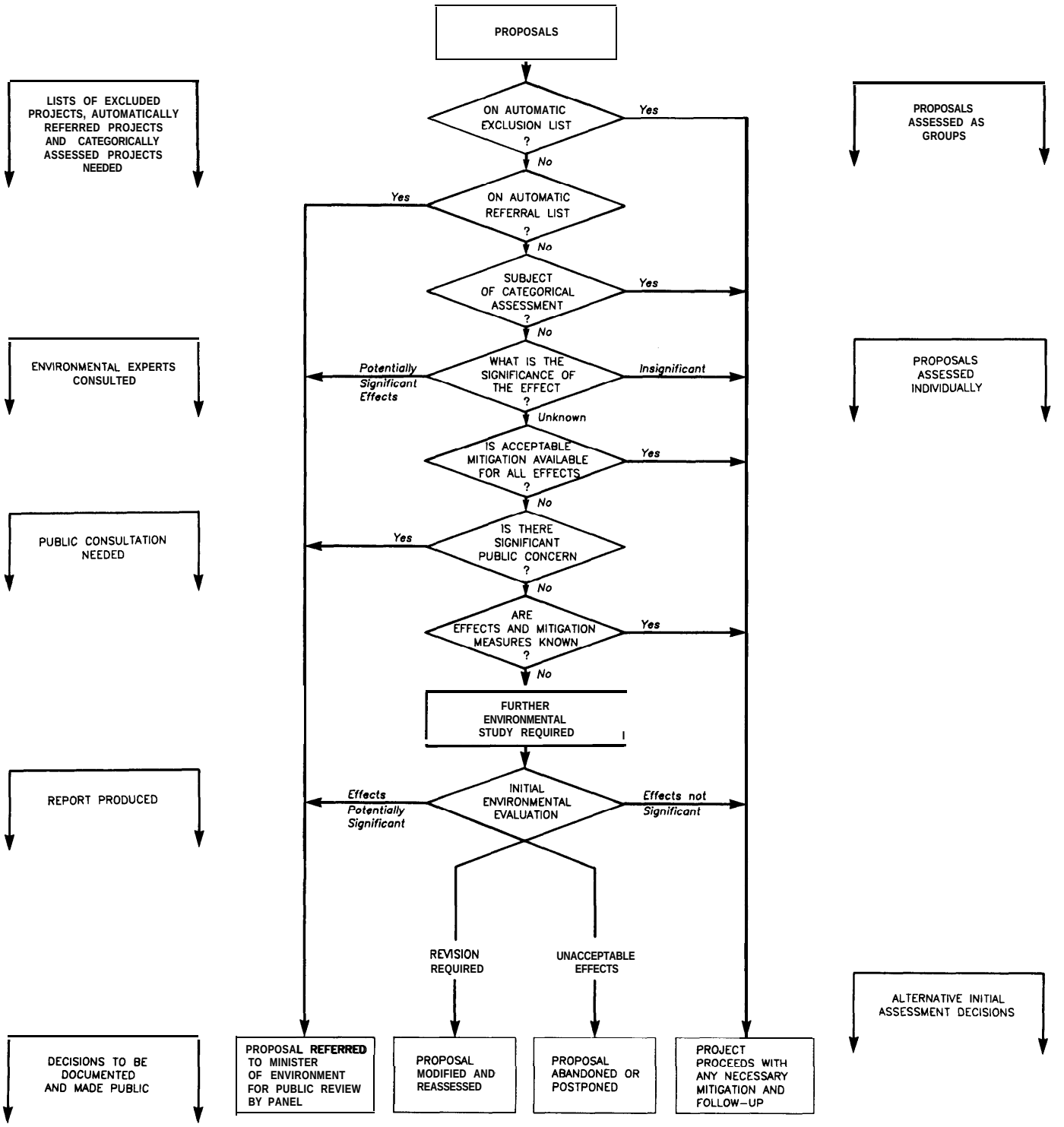


Initial Assessment constitutes all the screening and any subsequent environmental investigations needed to reach one of the initial assessment decisions. *

Screening is a component of initial assessment phase which places a proposal into one of the 8 screening decision routes.

Initial Environmental Evaluation is the documented result of investigation needed to address unknowns identified at the screening stage which are impeding an initial assessment decision.

Figure 9. INITIAL ASSESSMENT PROCEDURES



Some departments will be unable to develop such a list, since each proposal would have to be considered on its individual merits. Bearing in mind that there have been only about 30 referred projects during the past 10 years of EARP implementation, any lists that are developed are not expected to be extensive.

The concept of a referral list is to assist initiating departments in makingreferrals for public review by Panel more predictable and making the effort on the decision less burdensome. If it is known beforehand that certain project types would always require public review, this could enhance and simplify the early planning.

3.6 CATEGORICAL ASSESSMENTS

It is expected that many departmental activities may be classified in an environmental context to avoid unnecessary detailed individual examination. The term categorical assessment is intended to apply to groupings of activity which can be .identified by environmental criteria and which do not normally warrant individual project assessment. There are examples where federal departments group activities and implement them according to generic principles for environmental protection:

(1) Activities routinely regulated by:

- Fisheries Act
- Atomic Energy Control Act
- Ocean Dumping Act
- Environmental Contaminants Act
- Water Boards
- Arctic land use permits

(2) Activities which have been implemented without difficulty according to accepted norms of environmental practice.

(3) Activities for which specific federal environmental guidelines or codes have been prepared. Examples include publications by Parks Canada, Fisheries and Oceans, and Environment Canada.

(4) Activities for which one or two precedents have generated sufficient confidence that individual assessments are no longer needed.

(5) Activities subject to routine public consultation programs, such as certain aspects of park or airport planning.

The concept of class assessments used by the Province of Ontario has a similar objective. Environmental assessments are conducted for certain types of projects that are repetitive and for which the environmental issues are similar in each situation. Examples are routine dock construction, small transmission lines, highway widening, and bridge construction. Where a class environmental assessment document is available, a relevant project is approved to proceed on the condition that the procedural directives of the document are followed. Thus the review is speeded up for certain types of projects.

Initiating departments are encouraged, drawing on appropriate expertise from Environment Canada and elsewhere, to develop categorical environmental assessment documents that can serve as a satisfactory means of discharging EARP initial assessment responsibilities for certain types of routine activities. Some categorical assessments may, in fact, stipulate assessment procedures to be followed according to project circumstances.

The overall purpose of categorical assessments is to encourage initiating departments to develop techniques to minimize the effort on the Process without sacrificing environmental value or public concerns.

10. Breakwater at Port Burwell, Ontario.

3.7 INVESTIGATION LEADING TO AN INITIAL ASSESSMENT DECISION

There is no fixed prescription for investigations leading to an initial assessment decision since the extent of study required to fill the knowledge gaps is usually project-dependent. The following sections describe techniques and scientific requirements that can be applied in such investigations.

3.7.1 Information Requirements for Initial Assessment

Because initial assessment seeks to evaluate the potential for adverse impact on the environment, certain minimum preliminary information is required:

(1) Description of project proposal: physical layout and design, construction plans and timetables, operating procedures, and abandonment plans.

(2) Description of the project environment: physical, biological and social characterization, often at the reconnaissance survey level of detail, including functional linkages in the ecological systems (rather than lists and descriptions of species and population numbers).

(3) Description of project-environment interactions: potential adverse impacts on the environment (e.g. ecosystem changes, altered land use) and environmental effects on the project (e.g. windchill for outdoor work, wave height and loadings, probable maximum precipitation). A description of these interactions helps to insure that correct design values and mitigation measures are being used. As well, good operating procedures can be linked to reduced negative environmental effects and hence, less risk to the environment. The degree of public concern on these interactions represents an important information requirement on some proposals.

(4) Results of studies of similar developments in similar environments (e.g. northern pipelines in permafrost terrain, airport development in locations with extreme weather and climate).

(5) Evaluation of the above information together with a list of all major impacts and probable cause-effect relationships.

(6) Description of major impacts and unknowns providing a focus for problem resolution by filling data gaps and finding adequate alternative designs and mitigation measures.

Information required for impact prediction purposes and information for follow-up monitoring purposes are different in nature and detail. This is because more focused detailed measures are required for an experimental design leading to adequate monitoring and follow-up. Furthermore, adequate data are seldom readily available for prediction and monitoring and may have to be collected. Monitoring reports from other similar projects may be useful for confirming impacts and designing effective follow-up studies.

3.7.2 Methods

A variety of tools and techniques are used in initial assessment. A 1984 canvass of practitioners in initiating departments showed that most projects are screened by the project planner or group, often with a site visit and without any direct use of methods (an ad hoc committee approach). However a two-level matrix is sometimes employed, combining a broad screening evaluation of a project (Level 1 Matrix) and a focus on more specific environmental impact areas (Level 2 Matrix) (FEARO, 1978). This is an application of the well-known analytical matrix approach developed by Leopold et *al.* (1971).

At the stage of Initial Environmental Evaluation (IEE) preparation a variety of techniques and methods are employed including matrices, map overlays, project team work on impact/mitigation combinations, scoping (See Section 3.8.1), and project-specific guidelines (FEARO, 1976). These methods focus effectively on potential impacts and on ways and means of reducing or removing the adverse ones, For example a marine shoreline development involving a wharf and access road in an estuary may be planned such that ecologically sensitive fish and waterfowl habitats can be avoided or compensated for through re-creation. Map overlays and checklists may be useful as well as the intuitive advice of an experienced fisheries biologist recommending design and construction methods which would avoid the habitat or mitigate or compensate for adverse effects.

Impact assessment takes three steps, each using different methods and techniques:

(1) Identification of Potential Impacts.

The most common tools used are the checklist and the matrix which are meant to ensure that all possible interactions between the project and the environment are identified. Scoping is also used in some cases. Following this identification, there should be no outstanding unidentified effects or impacts to assess.

(2) Description and Prediction of Impacts.

Written descriptions of identified impacts are prepared and used with the matrix. Experience shows that the method most often used at this stage is the ad hoc committee approach where specialists give descriptive, and in some cases, numerical scores on the importance, magnitude, benefits and significance of individual impacts. Map overlay techniques are sometimes useful at this stage, with environmental values or ecologically sensitive areas being graphically plotted on overlay maps or digital computer maps. By scoring or colour coding values, a predictive environmental analysis can be developed (McHarg, 1969). In making impact predictions, it is useful to include estimates of the probability of occurrence and the associated risks, timing and direction of impacts, as well as the probable efficiency of proposed mitigation or remedial measures.

(3) Evaluation of Impacts.

The evaluation is basically a question of “How important is the predicted impact?” At the initial assessment stage this is usually accomplished by an *ad hoc* committee approach, and an estimate of environmental significance of impacts as well as public interest in the potential impacts.

In some cases the evaluation will examine the need for monitoring and the techniques to be used. Monitoring is required for impacts which are difficult to predict with the available information. Since monitoring programs which evaluate impacts sometimes consist of long-term, before and after comparisons, results are of use to similar projects in the future. However, in the context of monitoring it may be difficult to make changes in the project design and operation under study.

There are several overview articles on tools and techniques for impact assessment, including comprehensive reviews by Warner and Preston (1974), Shopley and Fuggle (1984), and Westman (1985).

3.7.3 Technical and Scientific Requirements

Environmental impact assessment (including initial assessment) requires accurate impact prediction based on knowledgeable application of physical, biological and social sciences, environmental data, and project information.

11. Marmot Basin Ski Area, Jasper National Park.

Therefore, some consistency in study requirements is useful. A few simple requirements are proposed here which will make the planning, execution and follow-up of technical and scientific studies and results more efficient, cost-effective and reliable than in the past. These requirements are summarized from a report based on a substantial Canadian research project entitled, "An Ecological Framework for Environmental impact Assessment in Canada" (Beanlands and Duinker, 1983). The reader is referred to the publication for further details on technical and scientific requirements (pp. 91-95). The requirements hold much potential to make initial assessment more efficient, cost-effective and result-oriented, and they are well within the grasp and capabilities of practitioners. The requirements have only recently been applied to project planning studies in Canada and feedback shows that they have more potential usefulness in further investigation after screening and in the public review by Panel stage than in the screening activity at the beginning of the EARP.

Requirement 1 is to identify at the beginning of the assessment the valued ecosystem components considered to be important in project decisions.

This is because it is impossible for an impact assessment to address all potential environmental effects of a project. Early identification of the important issues or questions gives direction to the assessment and allows focussed and more cost-effective efforts. For instance, a proposal for a mining development at the headwaters of a river occupied by salmon may cause fisheries biologists to predict that 16-33% of the available spawning and rearing habitat will be lost due to siltation over a period of at least 30 years. The threatened habitat is therefore identified as a valued ecosystem component.

Requirement 2 is to define a context within which the significant changes in the valued ecosystem components can be determined. Impact significance can be interpreted from the following perspectives:

(1) Statistical significance. Can project-induced changes be isolated from natural variation or from other man-made activities?

(2) Ecological significance. What are the implications of project-induced changes from a purely ecological perspective, independent of social values?

(3) Social importance. What is the social acceptability of the project-induced changes in the environmental attribute?

(4) Safety and health significance. What is the effect of the environment on project operations, construction procedures and overall project risks?

In the mining proposal example, an assessment of significance would involve a consideration of the magnitude and nature of other impacts on the salmon habitat, the quality of the habitat, and the relative importance of the river system for producing salmon as held by the users of the fish resource. Determining the nature, duration, extent and severity of the impact is a scientific exercise, while determining the significance in terms of project acceptability is a management decision based on several factors which may include government policy and departmental mandates and objectives as well as public values.

Terms used to describe the significance of project-induced changes can and should be simple and clearly defined (e.g. major, short-term, local, regional). This will help to avoid a wide range of interpretations by interested parties.

Requirement 3 is to set the time and space boundaries for the project early in the assessment in order to limit the study and analyses which may be required. These boundaries are critical to study design, interpretation of results, the prediction of impacts and the determination of impact significance. Four categories of boundaries should be considered:

(1) Administrative boundaries, imposing time and space limits for political, social or economic reasons;

(2) Project boundaries of time and space, usually the limits imposed by physical structures or operational practices;

(3) Ecological boundaries in which natural systems function; and

(4) Technical boundaries brought on by the difficulties of predicting the behavior of natural systems and man's limited capabilities to measure ecological change. Two examples are the difficulties in undertaking adequate sampling programs for some species of fish and wildlife, and in predicting changes in poorly understood ecosystem components.

Requirement 4 is to develop an overall study strategy to ensure effective deployment of time and resources in assessment studies. Apart from reconnaissance investigations which may be needed to provide some early preliminary understanding of the environment, study strategies must be in place before field or laboratory studies begin and should demonstrate the framework within which individual studies will be co-

ordinated. In turn, this work strategy needs to be an integral part of overall project planning and management.

Requirement 5 is to generate specific impact predictions to avoid vague, generalized speculation. Predictions may be based on a combination of speculation, professional judgement, experience, experimental evidence, quantitative modelling, and others. It is important to be explicit about the basis upon which the predictions are made. A useful description would cover the nature of predicted changes and their magnitude, duration and timing, extent and geographic distribution, level of confidence, and range of uncertainty.

Requirement 6 is to detail a commitment to a well-defined program for monitoring) project effects. Monitoring is required to test the effectiveness of mitigation measures and to test impact predictions from which understanding can be applied to future similar projects. Certain predicted changes may not require monitoring following project start-up. Resources available for monitoring need to be concentrated on those environmental attributes most in need of protection and on those which are poorly understood.

3.7.4 Initial Assessment Report Format

The results of an initial assessment should include a determination of the significance of potential impacts and the effectiveness of proposed mitigation measures. The results may be reported in a variety of ways depending upon the circumstances of the project under review and the practices followed by the initiating department. However, the reporting document should clearly indicate decisions taken on the basis of the assessment and should be retained for the purposes of project management and answering queries.

Guidelines have been prepared for larger and more potentially sensitive projects with a report format called an Initial Environmental Evaluation (IEE). The IEE is the documented result of the studies needed to address unknowns associated with the impacts or mitigation possibilities of the proposal under review which are impeding an initial assessment decision. The recommended formats (FEARO, 1976) have been changed over time to include more emphasis on project-ecosystem interactions, environmental processes, and the results of retrospective studies of similar developments. Treatment of the subject, the level of detail, and the report format may be decided by the initiating department. FEAR0 has sample IEE reports for reference use by departments.

3.8 CONSIDERATIONS IN INITIAL ASSESSMENT

The following sections deal with a variety of techniques for initial assessment which should be used as appropriate. They may also be applicable at the public review stage.

3.8.1 Scoping

Scoping is a process to determine the important issues and alternatives that should be examined in environmental impact assessment. Although the expression “scoping” and recommended procedures were developed in the USA as part of a requirement under the National Environmental Policy Act (NEPA), the basic approach has been usefully practised in Canada for some time. Scoping has potential for application in initial assessment and the public review stages of the EARP. In order to offer some consistency of approach and language, the following outline on scoping is adapted from USA experience as reported by Sachs and Clark (1980). It is intended to outline the subject and permit the reader to seek further details in references.

In the course of project assessment, new issues are raised, modifications are requested, and additional alternatives are recommended. Scoping is intended to reduce delays and lead to more adequate environmental assessment by:

(1) starting a process of communication early in project planning;

(2) involving all directly and indirectly affected parties;

(3) pinpointing the issues warranting study.

Scoping proceeds in the following manner, once the initiating department decides that the information on the project proposal is complete enough for the process to begin:

(1) The initiating department goes through an informal internal scoping process in which background information on the proposal is acquired and, from this information, a proposed scope of work of environmental study is developed.

(2) Normally contact occurs with another agency or agencies, with expertise in a particular area or eventual review responsibility over the proposal, to help determine the scope of work.

(3) The initiating department contacts interested parties and informs them of the scoping process, usually through the mail and local newspapers. Sometimes background information or a preliminary scope of work or both is sent with the letters, especially to co-operating agencies. Otherwise, this information is simply provided at a scoping meeting.

(4) After about 30 days or another suitable interval, a scoping meeting is held, having been arranged by the initiating department. Background information on the proposal is introduced after which the meeting is typically open to comments and discussion. The meeting may last from one hour to a full day depending upon the level of controversy or interest in the proposal. If the proposal is regional or national in scale, as opposed to site-specific, several meetings are usually held, each in a different location.

(5) The initiating department seldom tries to reach a consensus among participants on what issues are significant and which alternatives should be evaluated in the studies. Instead, they simply take note of the comments and revise the scope of work later as it is deemed appropriate. Usually the criterion used by an agency in making this determination is given as the “public interest” combined with the agency’s mandated responsibilities.

If the purpose and potential strengths of scoping are well understood, and care is taken in executing the Process, then several results can be achieved:

(1) Extended conflicts should diminish since all parties would be in a constructive participatory process. Key issues would be raised early instead of throughout the planning stages. Delays at later stages of the project review would be reduced since the appropriate scope of the study would be agreed upon early. Agencies often reach agreement on study assignments.

(2) There would be less likelihood of overlooking important issues since this early warning system is intended to provide a multi-agency rather than single-agency perspective.

(3) Paperwork would be reduced since trivial issues would be eliminated.

(4) Scoping is designed to raise potential mitigation measures or alterations to a proposal early in project planning, and thereby eliminate surprises that might be raised later on (Sachs and Clark, 1980).

Additional relevant material on scoping is to be found in a U.S. Council on Environmental Quality memorandum on scoping guidance (April 30, 1981) to General Counsels of U.S. departments, liaison officers on National Environmental Policy Act work, and to participants in scoping (Council on Environmental Quality, 1981). This memorandum gives detailed advice to all parties on scoping. Copies may be obtained from FEARO.

3.8.2 The Planning Context

During initial assessments, departments are encouraged to consult regional, municipal and other plans prepared by other governments and federal agencies. Certain national and provincial surveys (e.g. Canada Land Inventory) have produced useful reconnaissance data on land, soils, water, natural resources, present land use and demographic and economic trends. Regional and local plans may provide goals and objectives in a project-specific environmental assessment, as well as information on other proposals which may combine with the project under review to generate potential cumulative impacts. Joint planning measures may have potential to mitigate such impacts successfully. By consulting plans at all government levels, the initial assessment benefits through:

(1) Capitalizing on the regional and local plans to reduce required research, potential land use conflicts, and to take advantage of mitigation measures conferred by the plan (for example, green belts, buffer zones, corridors).

(2) Identifying issues and concerns which are best addressed at the regional planning level (for example, a pipeline right-of-way location in a designated transportation/utility corridor).

(3) Focusing on relevant environmental issues which can be controlled in the context of EARP.

In the absence of municipal, regional, or resource management plans, the initiating department will need to consider land use and resource use conflicts as potential issues to be dealt with under initial assessment.

3.8.3 Public Consultation

As noted in Section 2.7, public groups and other interested parties have a role in the initial assessment stage of EARP. This role includes both providing and receiving information on initial assessment. The provision of information may be through solicited comment or reaction to project plans of the proponent or the initiating department early in the planning process. The scoping process could be used to solicit this information especially for controversial projects which involve a diversity of interest groups. The public may receive information on initial assessment decisions, either through information releases from regional offices of initiating departments-or from the Initial Assessment Bulletin issued periodically by FEARO, which records decisions made by initiating departments.

Public consultation in the initial assessment stage, including scoping, can have several useful objectives, such as:

(1) Informing interested parties in the project area.

(2) Initiating a dialogue or exchange of information which may, if necessary, continue throughout the planning stage, project construction and operation.

(3) Soliciting views and comments on the proposal, some of which may assist in avoiding unforeseen developments or surprises.

A variety of techniques are available to carry out such consultation, each one having application to particular situations (see Table 1 for examples). FEAR0 is developing guidelines on techniques for public consultation for use during the initial assessment stage of the EARP.

3.8.4 Additional Considerations

The following additional considerations which are required from time to time in initial assessment are set out in Appendix 1:

Cumulative Effects

Mitigation/Compensation

Socio-Economic Effects

3.9 CRITERIA FOR REFERRAL FOR PUBLIC REVIEW

3.9.1 Introduction

Under the EARP, proposals which have potentially adverse environmental effects and proposals which generate public concern must be referred by the Minister of the initiating

Table 1. Techniques for communicating with the public. (Adapted from Bishop, 1973)

Communication Characteristics				Public Information and Participation Objectives					
Level of Public Contact Achieved	Ability to Handle Specific Interest	Degree of 2-way Communication	Public Participation/Communication Techniques	Inform/Educate	Identify Problems/ Values	Get Ideas/Solve Problems	Feedback	Evaluate	Resolve Conflict/ Consensus
2	1	1	Public Hearings		X		X		
2	1	2	Public Meetings	X	X		X		
1	2	3	Informal Small Group Meetings	X	X	X	X	X	X
2	1	2	General Public Information Meetings	X					
1	2	2	Presentations to Community Organization	X	X		X		
1	3	3	Information Coordination Seminars	X			X		
1	2	1	Operating Field Offices		X	X	X	X	
1	3	3	Local Planning Visits		X		X	X	
2	2	1	Information Brochures and Pamphlets	X					
1	3	3	Field Trips and Site Visits	X	X				
3	1	2	Public Displays	X		X	X		
2	1	2	Model Demonstration Projects	X			X	X	X
3	1	1	Material for Mass Media	X					
1	3	2	Response to Public Inquiries	X					
3	1	1	Press Releases Inviting Comments	X			X		
1	3	1	Letter Requests for Comments			X	X		
1	3	3	Workshops		X	X	X	X	X
1	3	3	Advisory Committees		X	X	X	X	
1	3	3	Task Forces		X	X		X	
1	3	3	Employment of Community Residents		X	X			X
1	3	3	Community Interest Advocates			X		X	X
1	3	3	Ombudsman or Representative		X	X	X	X	X
2	3	1	Public Review of Initial Assessment Decision Document	X	X	X	X	X	X

1 = low, 2 = medium, 3 = high

x = Capability

department to the Minister of the Environment for a public review. In the context of the Process, a significant impact is one which leads to referral for public review. Certain impacts may be potentially significant in the initial assessment stage of the Process, requiring additional investigation and a decision on how to deal with them. The following sections set out criteria and procedures to assist in the determination of which projects should be referred for public review and to ensure decisions on which proposals should undergo public review by a Panel are consistent and rational.

The basic procedures are:

(1) Establish general criteria for placing social values on environmental features in a qualitative way.

(2) Determine specific criteria for quantifying impacts on the social values.

(3) Determine the facts on the potential impacts of the proposal.

(4) Determine the thresholds of concern relative to the potential impacts.

(5) Determine whether thresholds of public concern may be exceeded and use this knowledge in determining the need for a public review by a Panel. Examples are given below for guidance.

3.9.2 General Value Criteria of High Priority to Society

The public perception of environmental values and their influence on the EARP can be characterized in the following fashion:

(1) Health and Safety. The first concern of the public about the environment are those features of proposals which have or are perceived to have a threat to human life, health or safety. This includes the effects of the environment on the project, for example, the potential effects of ocean conditions on an off-shore oil drilling rig.

(2) Threats to Livelihood. The public will have great concern about proposals that could undermine or eliminate the way they earn their living. The concern could relate to direct impacts (e.g. the loss of a commercial species), or to less direct consequences (e.g. the effects on businesses dependent on the harvestors of a particular species). People could be disconcerted about immediate impacts a change to the environment could have; considering longer term effects, such as the loss of habitat because it forecloses future production of valued species, whether or not the habitat is currently being used to capacity.

(3) Life-style Modifications. The removal of individual homes or neighbourhoods would cause distress among a group of people because they would lose more than their dwellings. Their homes would be permanently taken from them, with all the implicit emotional attachment people give to “home”. A proposal’s environmental effects could also cause a change in the number of visitors or new permanent residents with life-styles that are different and are perceived as a threat to a cherished existing life-style.

(4) Recreational, Aesthetic, Educational, Scientific and Historic Features and the Preservation and Conservation of Natural Areas. Residents in a project area or beyond may find a proposal unacceptable because it threatens recreation areas where they fish or hunt, or simply find a retreat in nature. Special interest groups may gain broad public support for defense of species that are rare or endangered, or ecological features perceived to have special aesthetic, educational or scientific importance. Environmental change could also pose a threat to historic or archaeological sites.

(5) Land-use Conflicts. The public could be sharply divided with very strong opinions on the best use of land, especially when the land available is limited and the proposed uses are mutually exclusive. For example, a city on a flood plain surrounded by mountains and the sea may require increased port and airport facilities, office and industrial development, space for both residental construction and agriculture to supply food, recreation facilities and protection of prized wildlife habitats. Even a small proposal with minor environmental effects could touch in an important way on many or all of these interests.

(6) Supply and Demand. In all of the above cases, public concern will be heightened in relation to perceived imbalances between supply and demand of resources and their development within a local, regional or national context.

12. Road Reconstruction, Yukon.

3.9.3 Specific Criteria for Quantification of Effects

Several specific criteria are employed in describing and analyzing impacts. These criteria are not mutually exclusive, but are very much interrelated:

(1) Magnitude. This is the probable severity of each potential impact, in the sense of degree, extensiveness, or scale. (For

example, x% of the Montane Forest Zone (z hectares) was removed from use by the Banff Highway Project of which y hectares were valuable wetlands habitat and nearly the whole area was ungulate feeding habitat.)

(2) Prevalence. This is the extent to which the impact may eventually extend as in the cumulative effects of a number of highway or pipeline stream crossings. (For example y streams were crossed by the Banff Highway Project, z of these are productive fish habitats and one stream of particular spawning importance required relocation.)

(3) Duration and Frequency. Will the activity and its impacts be long-term or short-term? If the activity is intermittent will it allow for recovery during inactive periods? (e.g. the Banff Highway Project example results in removal of z hectares of the Montane forest over the long term.)

(4) Risks. This is the probability of serious environmental effects. Accurate assessment of risk is dependent on the knowledge and understanding of the activities and the potential impact areas (e.g. risks to wildlife crossing the Banff Highway).

(5) Precedent. Does the proposal create a precedent that is likely to be duplicated or extended elsewhere? (e.g. twinning of the first section of the highway could lead to further twinning at a later date which would increase the magnitude and prevalence of impacts.)

For each of the applicable general criteria identified in Section 3.9.2, an attempt should be made to quantify and document the impact by the specific criteria mentioned above. Where baseline data is lacking, quantification may be difficult or impossible and the degree of uncertainty should be recorded. This may result in the need for an Initial Environmental Evaluation document or it could result in a referral for a Panel review.

3.9.4 Determination of Potential Impact

It is now necessary to determine the facts about the potential environmental impact with information from technical experts and project planners. This may be a difficult task at the early stages of project planning, but there need not be exhaustive or detailed work at this point. Rather the procedure should be iterative. It is usually impractical and often unwise to carry out detailed ecological fact-finding before some form of public consultation has taken place to determine the social relevance of the ecological issues. If an ecosystem component has little public value, it may not be worth spending much effort examining it before determining whether there should be a public review. This is not to say that it may not be an important issue to resolve. It may in fact be of considerable scientific importance but may not warrant an independent public review.

The meaning of an environmental impact is the value placed on the change by different affected interests, In order to relate this subject to individuals, groups, organizations and agencies, specific questions need to be raised which focus on specific issues and impacts, such as:

(1) Who is interested in the issue and what are the chief concerns?

(2) Can the project-induced changes in terms of location, magnitude, direction, intensity, timing and duration be estimated?

(3) How much change can be tolerated? What is the threshold of concern, that is, the point at which an impact becomes unacceptable?

These questions help to differentiate between two important components of a potential environmental impact: its fact and its meaning.

3.9.5 Threshold of Concern

Next it is necessary to determine the threshold of concern. This is a maximum or minimum number, or other value for an environmental impact or resource use which, if exceeded, causes it to take on new importance. The threshold value helps to define the environmental concern about the relative importance (significance) of exceeding that threshold (See Requirement 2, Section 3.7.3). While it is often difficult to establish numerical values for thresholds, this work does help the decision-maker in many ways:

(1) Thresholds help focus analysis on definite measurements of environmental impacts;

(2) Thresholds help to establish monitoring needs or criteria for mitigating the action; and

(3) Understanding thresholds aids in grasping the significance of the environmental impact and assists project personnel, scientists and interested groups in the resolution of issues.

There is a variety of ways of categorizing thresholds. One of the more useful ways is to relate them directly to the general value criteria (See Section 3.9.2) which will take on different priorities in different circumstances.

When it becomes apparent that an impact is likely to exceed the threshold of concern for one or more of the high priority criteria (in Section 3.9.2), the project should be referred for public review.

It is recommended that projects be analyzed to determine if any of the criteria mentioned above apply. If so, this should be documented in a worksheet for more detailed analysis using the specific criteria provided in Section 3.9.3. An example of worksheet is given in Appendix 4. The analysis can rely upon baseline information on the physical and biological environment and a description of natural resource uses and of the socio-economic situation as well as the outline of the project proposal. Baseline information is normally available from departments such as Fisheries and Oceans, and Environment Canada and provincial resource management agencies. In some cases more study may have to be commissioned and an initial assessment performed.

3.9.6 Examples of Past Referrals under EARP

Project types which have reached the Panel stage include the following. Experience has shown that there is often a need to take particular measures to eliminate or mitigate the adverse effects of such projects.

(1) major airport developments;

(2) hydroelectric dams;

(3) offshore hydrocarbon exploration and development;

(4) oil and gas pipelines;

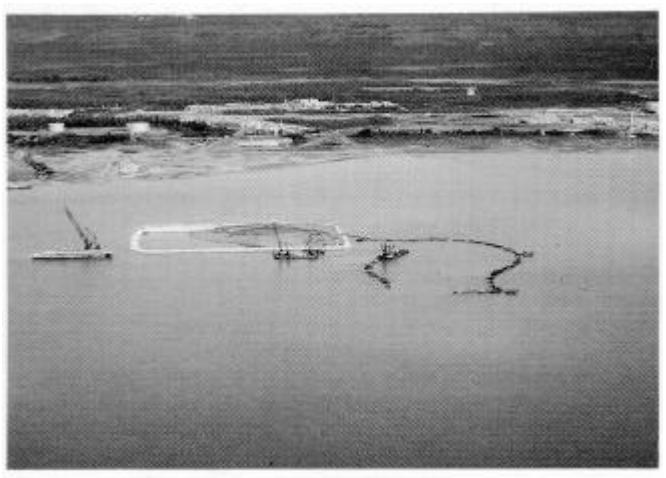
(5) major highway development;

(6) large nuclear generating stations;

(7) major railway development and relocation;

(8) uranium refining projects; and

(9) major port development and expansion.



13. Artificial Island Construction for Oilfield Development, Norman Wells, N.W.T.

3.9.7 Types of Activities which May Warrant a Referral

Certain types of activity warrant special study because of potential for significant effects and public concern. Some examples follow.

(1) Proposals that Compete with Existing Land and Water Use Policy or Practice:

(a) There are zones where land and water use has either been designated explicitly by government or implicitly by geographic reality or popular perception. Some projects with potentially significant environmental effects have been in conflict with existing land-use policy or plans. For example, when industry proposed to build a uranium hexafluoride refinery at Port Granby, near Lake Ontario, it chose a site located on prime agricultural land. During public review the local residents saw the proposal as an industrial intrusion that threatened to remove land from farm use and alter their life-style. The proposal did not conform to regional plans nor did it adhere to provincial policies for prime agricultural land. The Panel recommended that the project should not proceed.

(b) New airports or harbour facilities near major urban centres also pose questions of land use. The expansion of the Vancouver International Airport, the reactivation of the Boundary Bay Airport, and the Roberts Bank port expansion, all in the area of metropolitan Vancouver, required reviews by Panels partly because they were in sharp competition for the limited land available in the Fraser River Estuary.

(2) Proposals in an Ecologically Sensitive Area:

(a) Closely related to the issues of land use and fresh and marine water use are special areas recognized as being ecologically sensitive. It is generally recognized that large developments in such areas could have significant environmental impacts. The Fraser River Estuary is one example.

(b) Another sensitive area is Lancaster Sound in the Northwest Territories. When industry proposed (1977) to drill a single exploratory well in search of hydrocarbons in the Sound, there was concern that it could significantly affect this fragile Arctic environment and consequently the project was referred for a Panel review. Similarly, the proposals for the Arctic Pilot Project and the Beaufort Sea Hydrocarbon Production projects were considered significant partly because both proposed shipment of hydrocarbons by icebreaking tanker through Lancaster Sound.

(3) Offshore Hydrocarbon Exploration and Production:

(a) It is generally recognized that major proposals involving offshore hydrocarbon exploration, production and transportation in a previously undisturbed area could have significant environmental impacts and consequently may be the object of a public review by an Environmental Assessment Panel. As a result, several offshore production projects and an offshore exploration project have been referred for public review.

(4) Threats to Agriculture, Fishing and other Traditional Methods of Food Production:

(a) Canada is a primary producer of agricultural and other food products. Since special emphasis has always been placed on such activities, any major threat to them is seen as having potentially significant adverse environmental effects. Historically, fishing has always been important and potential oil spills or blowouts in areas of high yield are viewed with concern, as is any development near the mouth of a salmon river.

(b) In northern Canada, pipelines and hydroelectric dams and transmission lines could disrupt fishing in rivers and the migration of caribou. As well, hydrocarbon development and proposals that include increased shipping could threaten fish

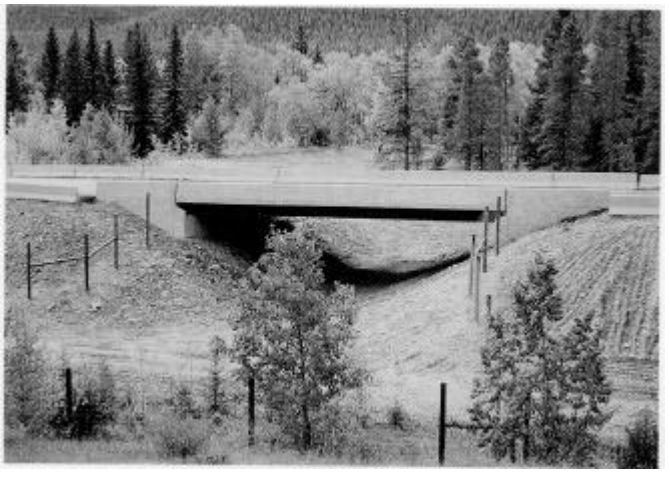
and marine mammals which are among traditional food staples of native people.

The impacts of these activities could be potentially significant, thus requiring public review by an Environmental Assessment Panel. Examples of past projects include:

Port Granby Uranium Refinery, Shakwak Highway Project, Lancaster Sound Offshore Drilling, Arctic Pilot Project, Lower Churchill Hydro, Alaska Highway Gas Pipeline, Beaufort Sea Hydrocarbon Production, Grand Banks Oil Production, and CN Rail Twin-tracking in British Columbia.

(5) Proposals that Could Threaten Features of the National Heritage:

(a) There are certain features of geography which Canadians consider part of their national heritage and any proposed change should therefore occur only after careful consideration. For example, an important change to a national park could be considered to have potentially significant environmental impacts and might require a Panel review. Such was the case when Public Works Canada proposed to widen the existing Trans-Canada Highway in Banff National Park from two to four lanes. An improved highway meant more people could easily visit and enjoy the park and an improved traffic flow on the Trans-Canada route would result. On the other hand the influx of traffic and people could also detract from the park's natural beauty and perhaps disturb wildlife. Panels have reviewed plans to widen two segments of the highway.



14. Animal Underpass at Trans-Canada Highway, Banff National Park, Alberta.

(b) A similar project involves a proposal by CP Rail to construct a second track through Glacier National Park. The project involves a 14.5 km tunnel and 16 km of new surface right-of-way.

(c) Other projects that involve construction of works outside national parks, but which could have significant environmental effects within the park, have also been referred to Panels for review. They include the Wreck Cove Hydro Project in Nova Scotia and the Slave River Hydro Proposal in Alberta.

(d) Certain species of wildlife are considered to be of national importance (for example, caribou and the whooping crane). Northern Panel reviews of projects in regions inhabited by the caribou have given particular attention to potential effects on the caribou and its habitat. When CN Telecommunications proposed to build a communications tower in Wood Buffalo National Park, the sensitive question of the fate of the near-extinct whooping crane was identified as a significant issue. The tower would be located in the breeding ground and the guy wires posed a hazard to these rare birds. The project was referred for a Panel review but eventually withdrawn when CN Telecommunications designed another proposal.

(6) The Nuclear Industry:

(a) Certain proposals related to the nuclear industry are considered to have the potential for significant adverse environmental effects. Moreover public interest in such projects is often high.

The following nuclear projects have been referred for Panel review in the past: Point Lepreau Reactor, New Brunswick; Port Granby Uranium Refinery; Ontario Uranium Refinery and a Uranium Refinery in the Rural Municipality of Corman Park, Saskatchewan.

3.9.8 Monitoring and the Management of Follow-up

Where monitoring and the management of follow-up are necessary after initial assessment, this is the responsibility of the initiating department. All or part of the monitoring programs can be delegated to the project proponent where the circumstances warrant such an arrangement.

Environmental monitoring is data collection and evaluation for the purposes of:

(1) determining the effectiveness of environmental protection measures, including the reporting on the adequacy of project impact prediction methods and mitigation measures;

(2) developing a capability to predict environmental change for future projects; and

(3) improving on project management and related programs to better protect the environment.

Potentially significant impacts require monitoring if one or more of the following criteria apply:

(1) The impact and mitigation measures are not well understood.

(2) Project construction and operation methods are not clearly described, or are experimental, or are subject to change.

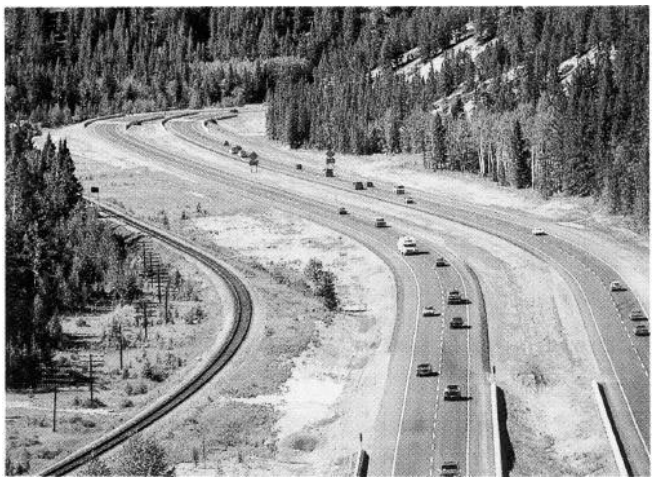
(3) The potential impacts on environments or natural resources are controversial.

(4) Project scheduling is subject to change such that the impacts could be serious.

The initiating department may also set standards for and carry out compliance monitoring of project construction and implementation to check for compliance with regulations, tender documents and codes of good practice. This may call for consultation with government departments having a legislative mandate (e.g. Environment Canada, Fisheries and Oceans).

To facilitate monitoring of complex projects, the initiating department may issue two documents to the project proponent: a set of environmental terms and conditions, and a handbook describing how the on-site mitigation and monitoring is to be done.

Surveillance and supervision of projects are related activities not to be confused with monitoring. They are not considered in this paper except for definitions given in the glossary.



15. Trans-Canada Highway Twinning, Banff National Park, Alberta.

APPENDIX 1. ADDITIONAL CONSIDERATIONS TO AID INITIAL ASSESSMENT

1. CUMULATIVE IMPACTS

Cumulative impact refers to the sum of environmental effects resulting from a number of projects which may occur within a given area and time frame. In order to manage incremental developments (e.g. oilfield exploration, development and processing) or a number of small unrelated contiguous projects, it is important to find ways to overcome additive adverse effects. This is a difficult undertaking at the operational level because the project manager for one proposal is geared to optimize the project and often does not have the mandate to obtain information on and influence the planning of contiguous projects. The initiating department is often best suited to assume such responsibility. Where possible, the initiating department should seek co-operation from other government departments to address cumulative effects.

The cumulative environmental impacts of a proposal need to be examined in much the same way as cumulative economic effects and social effects. The examination is probably best undertaken during the planning process by the initiating department together with other agencies of government (regional government planners, provincial environment and resource managers). Examples of project types with potential for cumulative effects are:

(1) Multiple developments in restricted geographical areas, such as railway, highway, pipeline and transmission lines in corridors.

(2) Industrial effluents emitted into a natural receiving system, such as multiple large and small industrial effluent outfalls on a river system with limited carrying capacity, above which water quality standards are exceeded.

(3) Sequential development, such as looping of pipelines, twinning of highways, influx of residential, industrial, and recreational facilities following access road construction.

Area-wide assessments of potential impacts from several anticipated proposals can be accomplished where the planning process is set up to accommodate this. Such assessments are suited to such developments as oil sand projects, large offshore oil and gas projects, and staged hydroelectric projects.

2. MITIGATION AND COMPENSATION MEASURES

Mitigation applies design and construction principles to minimize or eliminate potential adverse effects and, where possible, enhancement of the environment. Compensation measures are aimed at the re-creation of habitats or valued resources where mitigation is not expected to be completely effective. These measures are an important product of initial assessment, allowing a proposal to proceed sensitively and responsively to recommendations and in accordance with regulatory requirements. Potentially useful measures are presented through project planning and through structured meetings with specialist advisors in environmental and natural resources management. This can result in the removal or reduction of potential impacts and contribute to initial assessment being completed promptly.

When the initial assessment shows that certain communities or groups of people will be impacted, mitigation and compensation measures can deal with local concerns. Examples include the location of work camps away from communities, and the provision of local employment and business opportunities.

Proposed measures should be clearly defined in the project plan and the initiating department should establish a system for their preparation and approval. This may include the referral of final design documents to resource management agencies for approval or comment. Consultation helps bring about clear direction on mitigation through planning, design, project phasing, construction techniques, and scheduling. The direction becomes the mitigation package resulting from the assessment work. Some measures must be individually tailored to specific project situations. Others can be drawn from reliable resource documents with acceptable mitigative measures. Individual measures need to be field-evaluated to verify their adequacy under a range of conditions.

Here are some examples of common mitigation measures:

(1) In road construction, avoidance of sensitive life cycles of fish and wildlife by installing stream culverts in prescribed time periods and by avoiding wildlife denning areas, migratory bird staging and nesting areas, and fish spawning areas and winter habitats, revegetation of rights of way, housing work crews in camps, and prohibiting work crews from hunting and fishing.

(2) In urban and industrial land development and in forest management activities, provision of buffer strips of undisturbed vegetation along stream banks to preserve the integrity of fish habitat.

(3) In project design of roads, pipelines, and transmission lines, provision for the upstream movement of fish to spawning and rearing areas, in such documents as road culvert design specifications, pipeline stream crossing designs, and transmission line access plans.

These are examples of compensation measures for unavoidable losses:

(1) The reconstruction of riverbeds and reaches to sustain fish populations to make up for impacts from highway, railway, and hydro dam projects.

(2) Land exchange where project impacts affect park lands such as the B.C. Hydro Revelstoke Dam next to the Mount Revelstoke National Park.

(3) Fish hatchery facilities to compensate for fish habitat lost through river blockage by a hydroelectric dam, or preferably, compensation "in kind", by creating habitat to replace that which is lost.

With compensatory measures, in-kind replacement of the resource (land exchange, hatchery fish) may still be at the expense of a complete and functioning ecosystem. Even though the ecosystem may be different following the application of compensation measures, it is self-evident that project planners should strive where possible, for beneficial effects on the environment.

3. SOCIO-ECONOMIC EFFECTS

Initiating departments can review the potential environmental effects of a proposal and the directly-related social effects using the following three categories of impact:

(1) Biophysical impacts which affect residents and users of resources. Examples include impacts on the atmosphere, soil and water resources, fish habitat, and populations of sport and commercial fish species.

(2) Social impacts brought on by changes in community, traditional life-styles and social interrelationships, population numbers and make-up, housing, health and civil protection services.

(3) Economic impacts brought on by such changes in the land base and natural resources base including fish stocks, harvestable wildlife and fur-bearers. These impacts can sometimes extend to changes in prices and wages, employment levels and income distribution, land values, and local government tax bases and revenues.

These categories of impacts may be applicable to certain project proposals depending upon the location and the responsible initiating department. For instance, Indian and Northern Affairs Canada has a broad mandate in northern Canada that could include these categories in project assessment. Land-use planning, benefits for native groups and protection of cultural values in communities are examples of specific issues which could surface in the study of a given proposal.

Although the initiating department will determine the extent to which socio-economic impacts are to be taken into account in initial assessment, as a minimum, the potential social change associated with the biophysical impacts of a proposal must be considered. Departments can set a good example and obtain important public information and reaction to proposals by employing adequate public consultation measures early in the planning process.

APPENDIX 2. GLOSSARY

Boundary — a limitation conferred by space, time, ecology, as well as political, social or economic factors.

Categorical assessment — environmental implementation criteria for any grouping of activity that does not normally warrant individual project assessment.

Class assessment — standardized environmental assessment guidelines to direct the required environmental assessment activities for a class of projects.

Compensation Measures — payment in funds or replacement in-kind for losses attributed to a development; funds being used to re-create lost habitat (for example, artificial spawning beds) or other valued resources.

Cumulative Impacts -the combined effects of components of a development or a series of developments and other activities occurring either simultaneously or sequentially, or in an interactive manner.

Ecosystem — a community of interdependent plants and animals together with the environment which they inhabit and with which they interact.

Environmental Impact — the net change, positive or negative, in human health and well-being, that results from an environmental effect including the well-being of the ecosystem on which human survival depends.

Environmental Impact Assessment — an activity designed to identify, predict, interpret, and communicate information about the impact of an action, on human health and well-being, including the well-being of ecosystems on which human survival depends.

Environmental Impact Statement — a documented assessment of the environmental consequences and recommended mitigation actions of any proposal expected to have significant environmental consequences, that is prepared or procured by the proponent in accordance with guidelines established by a Panel.

Exclusion — a project type with little or no impact on the environment, either individually or cumulatively, and which is not controversial, in which case initial assessment is not required and the project type is entered on a departmental exclusion list.

Impact — see Environmental Impact.

Initial Assessment — an environmental investigation of a proposal and its alternatives to determine on a preliminary basis whether, and the extent to which, there may be any potentially adverse environmental effects. Initial assessment includes the stages of screening and any additional environmental investigations needed to reach an initial assessment decision.

Initial Environmental Evaluation (IEE) — is the documented result of investigation needed to address unknowns associated with the impacts or mitigation possibilities of the proposal under review which are impeding an initial assessment decision.

Initiating Department — any department or agency that is, on behalf of the Government of Canada, the decision-making authority of a proposal in the context of the Process, including those with funding responsibilities or with responsibilities for land, water, or natural resources.

Issue — an unresolved question or concern about an environmental impact, consequence or effect.

Mitigation — an activity aimed at reducing the severity, avoiding or controlling environmental or social impacts of a proposal, through design alternatives, scheduling, and other measures.

Monitoring — data collection and evaluation of environmental parameters or processes, for the purpose of:

(1) determining the efficiency of environmental protection measures, including the reporting on the adequacy of project impact prediction methods and mitigation measures;

(2) developing capability for future projects:

(3) improving on project management and planning and related programs to better protect the environment.

Order in Council — approval given on June 2 1, 1984 by the Government of Canada to guidelines respecting the implementation of the federal policy on environmental assessment and review.

Panel — a multi-disciplinary group, usually of 3-6 individuals, appointed on the basis of expertise and objectivity, to evaluate, through public hearings and study, the potential environmental impact of a proposal referred to the Minister of the Environment for review.

Prevalence — the number of incidences or locations of a type of impact that may occur in a given area.

Process — the Environmental Assessment and Review Process of the Government of Canada.

Proponent — the organization, company, or the department planning to undertake a proposal.

Proposal — any program, activity or project for which the Government of Canada has a decision-making responsibility.

Residual Impacts — those predicted adverse impacts which remain after mitigating measures have been applied.

Scoping — a process by which the important issues and alternatives that should be examined in environmental impact assessment are determined.

Screening — a component of initial assessment which categorizes proposals according to one of eight possible decision routes established under the EARP.

Significant Issue — an issue for which there is a high probability that one or more impacts connected with that issue will exceed a threshold of concern such that a public review by Panel is required to address the issue.

Supervision — a continuous overseeing of a project by qualified staff hired by the proponent during the project implementation to see that a project is built according to environmental specifications.

Surveillance — field inspections undertaken or sponsored by a government agency to ensure that a company and its contractors are complying with the environmental terms and conditions applied to a project, and to provide timely reaction to unexpected developments or unforeseen design changes with environmental implications.

Valued Ecosystem Components — the environmental attributes or components identified as a result of a social scoping exercise as having scientific, social, cultural, economic or aesthetic value.

APPENDIX 3. ENVIRONMENT CANADA INFORMATION SOURCES

Pacific: (B.C.-Yukon)	Environment Canada, Pacific and Yukon Region Rm 1560 800 Burrard Street Vancouver, British Columbia V6Z 2G7
Northwestern: (Alberta, Saskatchewan, Manitoba and N.W.T.)	Environment Canada, Western and Northern Region Twin Atria #2, Second Floor 4999 — 98 Avenue Edmonton, Alberta T6B 2X3
Ontario:	Environment Canada, Ontario Region 25 St. Clair Avenue East 6th Floor Toronto, Ontario M4T 1M2
Atlantic: (N.B., N.S., P.E.I., and Newfoundland)	Environment Canada, Atlantic Region 5th Floor Queen Square 45 Alderney Drive Dartmouth, Nova Scotia B2Y 2N6
Que bec:	Environment Canada, Quebec Region 1141 Route de l'Église P.O. Box 10,100 Ste Foy, Quebec G1V 4H5

APPENDIX 4: ISSUES ANALYSIS WORKSHEET
Explanation

Issues usually center around potential environmental consequences. Use this worksheet to organize information about issues, affected interests, and consequences of concern. The significance of issues and related consequences is determined by (1) thresholds, (2) priority ranking of those thresholds, and (3) the probability of exceeding a threshold. When conditions or estimates change, rewrite the entire line on the next available blank line. Enter a new date with the new information. This provides a chronological record of changes in the issue and the analysis of that issue over time.

Instructions

Fill in lines as follows. Use footnotes for further explanation, if necessary.

Issue. Write the issue in the form of a question or concern.

Date. Write the date on which each line is first established.

Affected Interest. Specify who will be affected by the environmental consequences. Usually this will be the group or individual raising some aspect of the issue.

Indicator. Specify the indicator of concern for which a threshold is being established.

Baseline. Wherever possible, write a quantitative baseline value for the indicator. Document the source of this value in a footnote, even if it is an estimate.

Units of Measurement. Specify the units used to describe or measure the indicator. Baseline and threshold quantities should be in the same units.

Environmental Concern. The environmental concern is the heart of any issue. It describes the potential environmental consequence or consequences about which people are concerned. It includes the threshold of concern, the priority of that concern, the probability of the threshold being exceeded, and the context or relative importance of that concern, i.e. why the threshold should not be exceeded.

Threshold. Write the quantity which, if exceeded, would cause concern to the affected interest.

Priority. Assign a priority to the threshold.

Probability. Estimate a probability of exceeding the threshold. Use a footnote, if necessary, to specify any assumptions underlying the estimate or to explain how the probability was derived.

Context. Use this column to explain factors that influence the relative importance of exceeding a threshold; i.e. why exceeding a threshold might be significant. Explain any factors that influence the relative importance of the consequences.

APPENDIX 4. Issues Analysis Worksheet (Haug et al, 1984)

Issue(s) What will be the effect of the proposal on the present uses of the Madison and Flathead aquifers?

File No. WY-O 16-503

Issue No. 1

Page No. 1

Date	Affected interest	Indicator	Baseline	Units of measurement	Environmental concern: Threshold	Pr	P	Context (Relative importance, duration, timing, spatial extent, intensity, risks, thresholds, etc.)
12 Dec.	Charles Short Local irrigator	Artesian pressure at his well head	380	psi	300	5'	0[2]	Loss of pressure reduces effectiveness of his sprinkler system.
12 Dec.	Charles Short Local irrigator	Springs on west face of the Big Horns	5	Number of springs	5	4	0[2]	Afraid that taking water will dry up springs
14 Dec.	Harlon Marks Local irrigator	Pressure at his well head (4 wells)	160	psi	133	5	0[2]	Loss of pressure would make him unable to irrigate half his land.
14 Dec.	John Carter Local irrigator	Pressure at his well head (2 wells)	240	psi	192	5	0[2]	Loss of pressure would force him to pump to operate center pivot sprinklers.
14 Dec.	John Carter Local irrigator	Springs on Big Horns	Unknown	Number of springs	Unknown	4	0[2]	Taking water might dry up springs.
15 Dec.	BLM fisheries biologist	Springs in habitat	Unknown	Number of springs	None	2	0[2]	If base flows are reduced, riparian habitat will be lost.
16 Dec.	BLM fisheries biologist	Base stream flow	980	CFS	Unknown	2	0[2]	Footnotes: [1] Input from geo-hydrologic experts with USGS and the Wyoming State Engineer's Office indicate that the proposed use will have no discernible effect on existing wells, springs, or streams in the next several decades. (From correspondence with Samuel Martins, USGS, and personal interview with William E. Marshal, WSEO) [2] The likelihood that this threshold will be exceeded is therefore essentially zero for the foreseeable future.

Pr – priority; P – probability

Use a numbered footnote to identify any item or entry that requires further remarks. These might be assumptions, qualifying statements, literature references, or other explanatory information. Writer remarks on reverse side. 8206 15

APPENDIX 5. PARKS CANADA PROJECT REGISTER AND SCREENING FORM

Parks Canada / Parcs Canada

ENVIRONMENTAL ASSESSMENT AND REVIEW PROCESS

PROJECT REGISTER AND SCREENING FORM

Park or Site | 051 | Screening Report No. | Registration Date | 015

PROJECT IDENTIFICATION

Title | 005 | Location

Proponent | Estimate $ | 104 | P/Y | 194

PROJECT DESCRIPTION

Purpose | A,.. Affected (ha)

Agencies Involved | 101 | Contractual Arrangements

Work Plan | Information Deficiencies (Project Design)

Work Schedule | Other Project Components Subject To Separate Screening

SITE DESCRIPTION

Zoning | Present Use

Resource Values

Information Deficiencies (Resource Base)

SCREENING PROCEDURES

Information Sources: Literature Consulted ☐ Unpublished Information ☐ Consultations ☐

Attach list of titles/names as appropriate for • bovm categories.

Site Reconnaissance ☐ | Date | Other ☐ | Specify

Attach maps, photos, plans If • vmolmbl..

SCREENING RESULTS

As indicated on matrix ☐ As described below. Attach • xt,m pages • s necessary • "d include secondary • "d tertiary impact description.

Mitigative Measures

Residual Impacts

Monitoring Requirements

PC859E (11/81)

SCREENING REPORT

Prepared by (Name • "d Title) | 102 | Completion Date | 006

Prepared by' (Name • "d Title) | 102 | Completion Date | 006'

Accepted by: (Name • "d Title) | Date

Registered by: Regional E,A,R P Coordinator | Date

SCREENING DECISION (To be completed by signing authority) | 103

a) Project • nvironmmntally • ccmCtmblm – without mitigating measures ☐

– with mitigating measures c l

b) Project needs modification c l

c) Further screening required ☐

d) Project not environmentally acceptable ☐

e) I.E.E. required ☐

Signature: Superintendant and/or Regional Director | Date

Date

Comments

PC859E (11/81)

☐ NO IMPACT

⧅ UNKNOWN IMPACT

☒ IMPACT – DESIGN SOLUTION

■ IMPACT – NO DESIGN SOLUTION

POSSIBLE ACTIVITIES

RESOURCES SUBJECT TO IMPACT			Blasting	Building	Burning	Burying	Channelling	Clearing	Controlling Erosion	Cutting Trees	Demolishing	Disposing of Hazardous Wastes	Disposing of Sewage	Draining	Drilling	Excavating	Filling	Grubbing	Handling & Storing Hazardous Substances	Impounding	Increasing Aircraft Traffic	Increasing Automobile Traffic	Increasing Motor Boat Traffic	Increasing Pedestrian Traffic	Planting	~~Scarifying~~	Spraying	Spreading	Stream Crossing	Trenching	Using Equipment	REMARKS
Construction Phase																																
Operation Phase																																
Maintenance Phase																																
Water	Ground	Quantity																														
Water	Ground	Quality																														
Water	Ground	Feature of Special Interest																														
Water	Surface	Quantity																														
Water	Surface	Quality																														
Water	Surface	Drainage Pattern																														
Water	Surface	Feature of Special Interest																														
Land	Soils	Susceptibility to Erosion																														
Land	Soils	Drainage Properties																														
Land	Soils	Compaction																														
Land	Soils	Organic Content																														
Land	Soils	Chemical Composition																														
Land	Soils	Feature of Special Interest																														
Land	Permafrost	Distribution Profile																														
Land	Permafrost	Depth Profile																														
Land	Permafrost	Surface Conditions																														
Land	Permafrost	Feature of Special Interest																														
Atmosphere	Microclimate	Temperature																														
Atmosphere	Microclimate	Humidity																														
Atmosphere	Microclimate	Winds																														
Atmosphere	Microclimate	Insolation & Radiation																														
Atmosphere	Microclimate	Feature of Special Interest																														
Atmosphere	Quality	Chemical Composition																														
Atmosphere	Quality	Particulate Loading																														
Atmosphere	Quality	Feature of Special Interest																														
Species & Pop.	Flora	Terrestrial																														
Species & Pop.	Flora	Aquatic																														
Species & Pop.	Flora	Species of Special Interest																														
Species & Pop.	Fauna	Terrestrial																														
Species & Pop.	Fauna	Aquatic																														
Species & Pop.	Fauna	Species of Special Interest																														
Cultural Features	Social	Visitor Experience																														
Cultural Features	Social	Public Safety																														
Cultural Features	Social	Lifestyle																														
Cultural Features	Hist.	Known Value																														
Cultural Features	Hist.	Potential Value																														
Cultural Features	Hist.	Feature of Special Interest																														
Cultural Features	Arch.	Known Value																														
Cultural Features	Arch.	Potential Value																														
Cultural Features	Arch.	Feature of Special Interest																														

BIBLIOGRAPHY

Barnett, D.M., D. Desjardins and R. Friesen. February 1984. Environmental assessment and review process (EARP) in the Northern Affairs Program, DIAND: information for Proponents. Indian and Northern Affairs Canada, Ottawa. 24 pp.

Beanlands, G.E. and P.N. Duinker, 1983. An ecological framework for environmental impact assessment in Canada. Institute for Resource and Environmental Studies, Dalhousie University and Federal Environmental Assessment Review Office, Ottawa. 132 pp.

Bishop, A. B., 1973. Public participation in environmental impact assessment. Paper presented at Eng. Foundation Conference on Preparation of Env. Impact Statements, New England College, Henniker, New Hampshire, U.S.A.

Canada Oil and Gas Lands Administration, Environmental Protection Branch. 1983. Environmental assessment process and procedures. Ottawa. 39 pp.

Canada Oil and Gas Lands Administration (COGLA), Environmental Protection Branch. 1984. Initial environmental screening for renewed exploratory drilling in Central Hudson Bay. COGLA, Ottawa. 64 pp.

Canadian Electrical Association. 1984. Biological Mitigative Measures for Canadian Hydra Facilities. No. 315, C.E.A., Montreal. 250 pp.

Canadian Forestry Service. 1984 Guidelines for environmental screening of program activities Ottawa. 10 pp.

Case, A.B. and D.A. Rowe. 1978. Environmental guidelines for resource road construction. Fisheries and Oceans Canada Information Report N-X-162. Ottawa. 41 pp.

Council on Environmental Quality. 198 1. Memorandum for general counsels, NEPA liaisons and participants in scoping. Subject: Scoping Guidance. U.S. Council of Environmental Quality, Washington, D.C. 19 pp.

Dane, B.B. 1978. Culvert guidelines: recommendation for the design and installation of culverts in British Columbia to avoid conflict with anadromous fish. Fisheries and Oceans Canada, Marine Service Technical Report No. 811, Ottawa. 57 pp.

Daugherty, T.E. 1979. Virginia's early co-ordination process: Scoping. Env. Action Plan Report 8. U.S. Fed. Highway Administration, Office of Env. Policy, Washington, D.C. 18 pp.

Dryden, R.C. and J.N. Stein. 1975. Guidelines for the protection of fish resources of the Northwest Territories during highway construction and operation. Fisheries and Marine Service Technical Report Series No. CEN/T-75-1. 32 pp.

Duinker, P.N. and G.E. Beanlands, 1983. Ecology and environmental impact assessment: an annotated bibliography. Institute for Resource and Environmental Studies, Dalhousie University and Federal Environmental Assessment Review Office, Ottawa. 35 pp.

Environment Canada. 1979. Environmental Code of Good Practice for Highways and Railways. EPS 1-EC-80- 1.

Environment Canada. 1980. Environmental Code of Good Practices for General Construction. EPS2-EC-80-1.

Environment Canada. 1982. Guidelines on procedures for environmental screening of departmental projects. Departmental Committee on Environmental Assessment Review Process. Ottawa. 12 pp.

Environment Canada. 1982. Intervenors handbook for the federal environmental assessment and review process. Regional Screening and Coordinating Committee, Western and Northern Region, Environment Canada, Edmonton. 30 pp.

Environment Canada. 1983. Environmental Monitoring of Federal and Provincial Projects. Economic and Technical Review Report EPS3-ES-83-2. Environmental Strategies Directorate. Ottawa, 124 pp.

Environment Canada. 1985. The environmental assessment and review process for the annual work plan activities of Inland Waters Directorate Western and Northern Region. Regina.

Environnement Canada. 1985. Guide pour un examen environnemental prealable des projets de dragage et de genie maritime dans le Saint-Laurent. Environnement Canada, Quebec.

Environment Canada. 1985. Environmental Screening Guidelines. Environmental Conservation Service. EABS Series No. 1. Ottawa. 26 pp.

Falk, M. and J. Muller. 1983. A selected bibliography of literature for environmental impact assessment report preparation. Parks Canada, Prairie Region. 222 pp.

Federal Environmental Assessment Review Office, 1976. Guidelines for preparing initial environmental evaluations. FEARO, Ottawa. 182 pp.

Federal Environmental Assessment Review Office 1978. Federal environmental assessment and review process —

guide for environmental screening. Produced with Environmental Protection Service, Environment Canada, Ottawa. 75 pp.

Federal Environmental Assessment Review Office. 1979. Revised guide to the federal environmental assessment and review process. Ottawa. 11 pp.

Federal Environmental Assessment Review Office and Environment Canada. 198 1. Ecological Land Survey Guidelines for Environmental Impact Analyses. ELC Series No. 13. Ottawa. 42 pp.

Fisheries and Marine Service. 1978. Guidelines for land development and protection of the aquatic environment. Fisheries and Marine Service Technical Report No. 807. 55 pp.

Fisheries and Oceans Canada, British Columbia Ministry of Environment, Kerr Wood Leidal Associates Limited and D.B. Lister and Associates. 1980. Stream enhancement guide. Prepared by Stream Enhancement Research Committee, Fisheries and Oceans, Canada, Vancouver, B.C. 95 pp.

Fisheries and Oceans Canada and LGL Consultants Ltd. 1983. Urban development guidelines for protection of fish habitat in insular Newfoundland. St. John's, Newfoundland. 95 pp.

Hart, S.L., G.A. Enk and W. Hornick. 1984. Improving impact assessment: Increasing the relevance and utilization of scientific and technical information, Westview Press, Boulder, Colorado. 440 pp.

Indian and Northern Affairs Canada. 1982. Environmental impact assessment related to highways and roads. Technical Services and Contracts Branch, Ottawa.

Indian and Northern Affairs Canada. 1984. Guidelines for environmental screening. Technical Services and Contract Branch. Ottawa. 14 pp.

Langford, R.W. ed. 1983. A preliminary environmental assessment of offshore hydrocarbon exploration and development. British Columbia Ministry of Environment. Victoria. 334 pp.

Leeson, B. 1984. Banff townsite, peripheral land use, initial environmental evaluation. Interim Report II. Parks Canada, Western Region, Calgary, Alberta. 35 pp.

Leopold, L.B., F.E. Clarke, B.B. Hanshaw and J.R. Baisley. 1971. A procedure for evaluating environmental impact. U.S. Geological Survey Circular 645. United States Geological Survey, Washington, D.C. 13 pp.

McHarg, I. 1969. Design with nature. Natural History Press, Garden City, N.Y.

Norton, G.A. and B.H. Walker. 1982. Applied ecology: towards a positive approach. I. The context of applied ecology. Journal of Environmental Management 14: 309-324.

Parks Canada. 198 1. Manual on the application of the Environmental Assessment Review Process within Parks Canada. Natural Resources Division, National Parks Branch, Parks Canada. Ottawa. 179 pp.

Parks Canada. 1983. Guide for the preparation of screening reports. Prepared by A.D. Revill Associates Ltd. for Parks Canada. Ottawa: Parks Canada. 302 pp.

Parks Canada. 1984. Initial environmental evaluation of general dredging, Rideau Canal. Generic document. (excerpt). Prepared by Ecologistics Limited for Ontario Region, Parks Canada, Ontario Region, Cornwall. pp. 38-43.

Parks Canada. 1985. Management directive 2.4.2 procedures for the application of the environmental assessment and review process. Ottawa. 30 pp.

Public Works Canada. 1981. Marine projects — Environmental Assessment and Review Process: pre-screening report, Ontario Region, Public Works Toronto, Canada.

Public Works Canada. 1982. Guidelines to the PWC environmental assessment process. Environmental Analysis Division, Public Works Canada. Ottawa. 38 pp.

Public Works Canada. 1982. Environmental screening, Shamattawa School Complex, Manitoba, Western Region. 24 pp.

Public Works Canada. 1982. Accommodation projects — Environmental Assessment and Review Process: Pre-Screening Report, Ottawa. 15 pp.

Public Works Canada. 1983. Environmental protection plan. Project brief at stage 3, Government of Canada building, Fort Smith, N.W.T. 16 pp.

Public Works Canada. 1983. Public Works Canada, Western Region, Environmental Assessment and Review Process: EARP level 2 — environmental screening. Western Region, Public Works Canada, Edmonton. 24 pp.

Public Works Canada. 1984. EARP Level 2 environmental screening report, Canada Olympic Park. Western Region, Public Works Canada, Edmonton.

Public Works Canada. Updated. Environmental Assessment and Review Process, EARP level 1: environmental pre-screening. Western Region, Public Works Canada, Edmonton. 16 pp.

Raistrick, T.N. 1983. Environmental protection measures for northern road construction and operation: an illustrated guide. Environmental Impact Systems Division, Environmental Protection Service. Ottawa: Environment Canada. 55 pp.

Raistrick, T.N. 1986. The Initial Assessment Stages of the Federal Environmental Assessment and Review Process. A Discussion Paper with Recommendations for Environment Canada, Environmental Protection Service, Environment Canada, Ottawa. In Press.

Rowe, L.W. 1974. Habitat protection: recommended guidelines for construction and forestry. Environment Canada Fisheries Marine Service, Resource Development Branch, Newfoundland Region. Information Series No. NEW/N-74-1. 33 pp.

Rowe, L.W. 1975. Fish habitat protection: guidelines for loggers, St. John's, Newfoundland. Environment Canada Fisheries Marine Service Resource Development Branch, Newfoundland Region. Information Report Series No. NEW/N-75-i. 16 pp.

Sachs, A. and P.B. Clark. 1980. Scoping the content of environmental impact statements: an evaluation of agencies' experience. Draft report for Council on Environmental Quality and Geological Survey, U.S. Department of the Interior. 92 pp.

Shopley, J.B. and R.F. Fuggle. 1984. A comprehensive review of current environmental impact assessment methods and techniques. Journal of Environmental Management 18:25-47.

Towes, D.A.A. and M.J. Brownlee. 1981. A handbook for fish habitat protection on forest lands in British Columbia. Land Use Unit, Habitat Protection Division. Department of Fisheries and Oceans, Vancouver. 166 pp.

Transport Canada. 1979. Environmental Protection — Airport Operations - Phase 2 (AK-75-06-000). Airports and Construction Services Directorate, Airport Facilities Branch, Ottawa. 25 pp.

Transport Canada. 1979. CATA policy and guidelines for public consultation (TP 1567). Air Administration, Transport Canada. Ottawa.

Transport Canada. 1983. Manual of environmental protection: planning - southern Canada (AK-75-02-000). Airport Facilities Branch, Airports and Construction Services Directorate, Transport Canada. Ottawa. 10 pp.

Transport Canada. 1983. Manual of environmental protection: northern Canada (AK-75-03-000). Airports and Construction Services, Airport Facilities Branch. Ottawa. 37 pp.

Transport Canada. 1983. Manual of environmental protection: design and construction — southern Canada (AK-75-04-000). Airports and Construction Services Directorate, Airport Facilities Branch. Ottawa. 11 pp.

Transport Canada. 1984. Initial environmental evaluation — Winnipeg International Airport. Airports and Construction Services, Air Administration, Transport Canada, Ottawa. 10 pp.

Walker, B.H. and G.A. Norton. 1982. Applied ecology: Towards a positive approach. II. Applied ecological analysis. Journal Env. Management 14,325-342.

Warner, M.L., and E.H. Preston. 1974. Review of environmental impact assessment methodologies. Batelle Columbus Labs., Columbus, Ohio.

Westman, W.E. 1985. Ecology, impact assessment and environmental planning. John Wiley and Sons, New York. 532 pp.

Figure 16 ENVIRONMENTAL ASSESSMENT AND REVIEW PROCESS