MITIGATION AND COMPENSATION IN THE ENVIRONMENTAL ASSESSMENT PROCESS

An Exploration and Analysis of the Issues

September 1987

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Foreword

The Canadian Environmental Assessment Research Council (CEARC) was established on January 30, 1984 by the federal Minister of the Environment to advise government, industry and universities on ways to improve the scientific, technical and procedural basis for environmental assessment (EA) in Canada. CEARC perceives EA as a planning component which takes into account the ecological and related social implications of development activities.

CEARC is currently in the process of establishing research programmes related to improving the practice of environmental assessment. The Council has identified compensation and mitigation as an area of research interest. Although an integral component of the EA process, little attention has been given specifically to this area of study. In this sense, CEARC views mitigation and compensation as an emerging theme in the EA context and hopes to encourage a better understanding of the issues as well as the development of new and innovative ideas in the area.

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1.0 INTRODUCTION

1.1 The Concepts Of Mitigation And Compensation

The need to reduce or eliminate adverse environmental effects of development projects has long been recognized. The concept of mitigation has performed an integral role in the responding to this need. Studies documenting the adverse effects of human developments on the environment and measures proposed to mitigate against these effects date back to the mid-nineteenth century. Early studies, for example, after examining the nature and extent of changes to the environment attributable to human action, urged that developments be designed to minimize disturbance through the use of "protective" and "precautionary" measures. Mitigation, in this sense, was a vital component of development practices prior to the formalization of EA practice in the last two decades.

Dispite the longevity of their application, mitigation responses have not been completely effective in eliminating the adverse impacts of development. Alternatively, effective mitigative responses may not be viewed as feasible or desirable in the circumstances. The concept of compensation has responded to the need for a complementary tool to address these remaining impacts. With its roots entrenched in a traditional legal framework,

compensation was initially only available in response to direct impacts to individual proprietary interests. In the last two decades, however, social perceptions of fairness and equity, especially in regard to the social and natural environments, have undergone a dramatic evolution. As a result, the concept of compensation has forged a more comprehensive role in the EA process by responding to an array of non-proprietary impacts.

As the magnitude of development projects has grown, a greater sensitivity has sharpened the identification of related adverse impacts. Thus, the need to strengthen the ability to offset these impacts has become apparent. The scope of mitigation and compensation responses has rapidly broadened as the technical ability to replace or enhance lost or threatened environmental components has developed. The availability of a "technological fix" for adverse impacts of developments has, as a consequence, blurred the delineation of the concepts of mitigation and compensation in the context of environmental assessment.

Mitigation and compensation are now well established as integral components in an increasingly formalized EA process. Commonly accepted definitions have, however, been slow to evolve. While formalized guidelines and procedures for conducting EA's are now well established, the application of the concepts of mitigation and compensation, within this framework, has remained relatively informal. As a result, a number of issues relating to the implementation of mitigation and compensation measures remain

unresolved. Further, an expression of the functional objectives behind each of these measures is largely unstated, making an evaluation of the effectiveness of selected responses difficult.

1.2 Examining the Concepts

1.2.1 The Mitigation and Compensation Committee

Reviews of EA's and their related processes have been ongoing for a number of years and have led to the creation of an extensive empirical data base. Examinations of the concepts of mitigation and compensation in the EA process, however, have not kept pace with other related research initiatives. As a result, there is a dearth of research documenting current mitigation and commpensation practices in Canada and their functional relation to other developing EA issues. Thus, there is a need to explore more fully the concepts of mitigation and compensation in the context of EA.

In response to this need, CEARC established the Mitigation and Compensation Committee (Committee). The committee seeks to redress the absence of a supporting data base and to further an understanding of the function and application of these integral components of the EA process. The primary tool of the Committee

for implementing this strategy will be a research prospectus, which will identify areas of research in need of examination and prioritize their exploration. Through the research prospectus, a guidepost will be established for the encouragement, directly and indirectly, of research initiatives designed to further an understanding of the role of mitigation and compensation and to develop innovative methods for their implementation and evaluation.

1.2.2 The Mitigation and Compensation Workshop

The first step of the Committee toward the development of a research prospectus was to conduct a workshop to foster a dialogue among experts and practitioners from across Canada. Prior to the workshop a background paper was prepared to serve as a framework and a point of reference for the workshop discussion. The background paper was forwarded to all participants prior the the workshop held in Ottawa in July, 1986. The workshop was structured around three sessions, which focussed respectively on the definition, implementation and effectiveness of the concepts. For each session, three participants were asked to provide comments outlining their perspective of the theme so as to facilitate the general discussion. A final session provided an opportunity for all participants to comment on a suggested summary of the workshop discussion. The proceedings of the workshop are found in Part 2.

1.2.3 Mitigation and Compensation Case Studies

A number of issues requiring further research were identified at the Ottawa workshop. The workshop, however, highlighted the lack of a clear understanding of current mitigation and compensation practices in Canada in the EA process. The Committee determined to attempt to address this lacking before identifying and prioitizing necessary research initiatives. Thus, a series of case studies were commissioned to examine mitigation and compensation in the context of development projects. The cases studies are intended to examine those issues raised at the workshop, as well as to explore any other issues which may be identified. Eight development projects have been chosen through a pre-selected criteria. A questionnaire was developed to serve as a basis for interviews with representatives of project proponents and affected parties for each of the projects examined. The results of these interviews are found in Part 3.

2.0 WORKSHOP PROCEEDINGS

2.1 INTRODUCTION

One area of research currently identified as a priority by CEARC is mitigation and compensation. Research in this area was initiated by the CEARC Mitigation and Compensation Committee through the commissioning of a background paper for a workshop. The background paper, prepared by David Scriven, attempts to provide a framework within which an exploration of the major issues needing resolution in the area of mitigation and compensation may be accomplished. The workshop was held at the University of Ottawa on July 16 and 17, 1986 and provided one of the first opportunities for a dialogue among experts and practitioners in the area of mitigation and compensation from across Canada. The proceedings of the workshop are documented below.

The workshop was comprised of three sessions with themes: definition, implementation and effectiveness. Each session was initiated by short presentations by three delegates previously selected by the Chairperson of the CEARC Mitigation and Compensation Committee followed by discussion open to all

participants. A summary of the proceedings follows the discussion on the three themes. The desire of the Mitigation and Compensation Committee was to keep the workshop discussion as informal as possible.

The study of mitigation and compensation in the context of the EIA process is an emerging theme in Canada. Thus, the discussion on many issues often overflowed from the confines of the three themes which formed the framework of the workshop. As a result, although comments are generally presented in the order in which they occurred, some liberty has been taken to facilitate the flow of discussion of certain issues. It should be noted that the intent of these proceedings is not to provide a verbatim record of the workshop comments. An effort has been made, however, to retain as much of the participants own language as possible. A list of the participants is attached at the end of the proceedings.

2.2 OPENING REMARKS

Grace Patterson, chairperson of the CEARC Mitigation and Compensation Commmittee welcomed the workshop participants. She noted that the participants came from all regions of Canada with a wide range of backgrounds, including representatives of government, crown corporations, industry, academia and law. Leon Mitchell, a lawyer with the firm of Taylor, Brazzell and McCaffrey in Winnipeg, was introduced as the facilitator for the workshop. Mr. Mitchell acted as mediator in the negotiations which led to the signing of the Northern Flood Agreement, and is an acknowledged expert in the field of mediation.

Ms. Patterson noted that CEARC is currently developing research programmes in the area of mitigation and compensation. The primary objective of the workshop is to identify and consider ways of effectively exploring those issues needing resolution in the area of mitigation and compensation. The workshop discussion will act to provide direction for planned case studies and this work will together form the basis of a research prospectus.

David Scriven, author of the background paper, noted that we live in a dynamic society with a need to make decisions which affect all facets of our lives. In the context of resource development, it may be possible to agree upon certain objectives, such as ensuring that such development be sustainable or that the process provide as much public participation as possible. There is a perceived need, however, to develop more specific principles and methodologies to guide this decision-making process. This is especially true in regard to the area of mitigation and compensation in the context of the EIA process. The first step toward achieving this goal is to start asking questions, and this is the task of the participants at the workshop.

Drawing from comments of the participants, which had been provided to him prior to the workshop, Mr. Scriven highlighted some of the perceived issues concerning mitigation and commpensation. There is a sense that it is difficult to define the two concepts as they are still evolving, yet their definition would help demonstrate the current state of the art. There exists a general sense that mitigation should be given priority. There was a belief expressed that other methods of valuating impacts, in addition to economics, need to be explored. Perceived risks, as opposed to formally assessed risks, are rapidly becoming a factor in mitigation and compensation decisions, although our knowledge of how to address these risks is limited. Finally, Mr. Scriven noted that there is a general perception that, because the process of determining mitigation

and compensation is still evolving, there is a need to be creative and flexible.

2.3 DEFINITION

The first theme examined was the definition of the concepts of mitigation and compensation and related issues. The three delegates selected to present preliminary comments were Daniel Granger of Hydro Quebec, Daryl Carter of the law firm of Carter, Lock and Repka in Saskatchewan, and Audrey Armour of York University.

Daniel Granger stated that mitigation and compensation need to be analyzed and understood within the framework of the relationship between environmental protection and economic development. In Mr. Granger's experience, the use of the term mitigation may be presently restricted by its traditional definition, which places it in opposition to environmental protection. He believes that this traditional framework has expanded to encompass such approaches as the seeking of a common perception on the best use of a resource and the sharing of resources. In light of this development, the concept of mitigation has developed a wider meaning which includes enhancement measures. This broader approach has been integrated into the decision-making process at Hydro Quebec.

As the concept of mitigation is an evolving one, Mr. Granger noted that it is difficult to achieve an authoritative definition. Such a definition would, however, be useful and should include statutory, negotiated and other methodological elements. He also asserted that to effectively relate it to the state of the art, such a definition should be derived from case studies. Mr. Granger argued that the improvement of our knowledge of natural systems, social values, and their sensitivity to the changes produced by development, will facilitate the integration of mitigation in the context of the environmental assessment process so that many of its functions become standard practice. Through integration of this broader sense of mitigation, a better balance in the relationship between the environment and development will be achieved.

The differences between the definitions of mitigation and compensation, Mr. Granger noted, are significant. The measurement and valuation of environmental losses is often a very complicated process. For this reason, the definition of compensation should be limited in its application to resources that can be clearly identified as lost, partially or completely, and for which a value can be positively measured and compensated in cash or in kind. Any broadening of the present use of the concept of compensation would have a major impact on the environmental assessment process.

Although the concepts of mitigation and compensation are related, Mr. Granger asserted that they must be clearly distinguished within the context of the environmental assessment process. In his view, efforts must continue to further the integration of mitigation into this process. Compensation, on the other hand, is a tool which may be specifically used to identify and measure environmental losses. Priority should be clearly given to mitigation so that it precedes any attempts at compensation. It was pointed out by Mr. Granger that 'cheque-book' diplomacy is a major concern for government agencies, however, this problem is likely to be averted once mitigation is effectively integrated into the environmental assessment decision-making processes.

Mr. Granger, commenting upon a further concern, noted that the natural environment can never be a party to the negotiation process. Thus, he suggested that legislative protection was necessary. In light of this statement, Mr. Granger was questioned as to whether he would include the need for negotiation in his definition of mitigation. In response he noted that, in his view, many proponents are already doing much more than the word mitigation implies. For this reason, he suggested the possibility of replacing the definition of mitigation with a broader term encompassing those acts of mitigation already in current use. This does not, however, imply the need to define standard acceptable practices, which he felt would prevent a natural progression toward the development of better environmental protection methods. Instead, such statutory

requirements could compel proponents to indicate that all possible steps had been taken in the negotiation process to address the concerns of all intervenors.

Daryl Carter asserted that definitions of mitigation and compensation were fairly straight-forward and that not much would be accomplished by trying to improve upon them. Further, through his experience in representing farmers' associations, he believed that the concepts of mitigation and compensation should not be separately defined. He illustrated this concern through the example of an oil company's proposal to locate a well in the middle of a farmer's field. Mitigation of this proposal is aimed at minimizing the disruption to the farmer by locating the well near the periphery of the field. The alternative would be to locate the well in the middle of the field and settle with the farmer by compensating him for the disruption. Mr. Carter asserted that, as evidenced in this illustration, limited definitions can justify the actions of a proponent who does not want to consider mitigation options. In his opinion, the two concepts are viewed as equal integral components of the negotiating process between the proponent and the farmer.

Mr. Carter asserted that the process of compensation is limited by the market-value approach to valuation of lost resources. He noted that certain resources are difficult, if not impossible, to evaluate in economic terms because such a process ignores the value of the resource to its owner. For example, a pipeline

across the prairie is like a thread across a football field to a proponent, but it represents a slash across the Mona Lisa to a farmer. A further limitation is that the market-value approach is premised upon the principle of substitution, that is, if you pay the affected party sufficient compensation, that party can replace what has been lost by purchasing a substitute. In Mr. Carter's view, in most cases this principle does not work in addressing social or environmental impacts. In the case of the loss of a person's land holdings, it is rarely possible for the owner to enter the market place and purchase what has been lost.

Mr. Carter further stated that definitions of mitigation and compensation are not of great value if the process applied in their determination in not fair. When the valuation of a lost resource is delayed, then the process is unfair because an affected landowner with a limited cash flow may be forced to accept a lower assessment. The time at which a resource is valued may also cause inequities if it does not take into account the possible future worth of a resource. Instead of a lump sum payment, annual payments which are reviewed on a periodic basis would constitute a preferable method of valuation. Mr. Carter noted that the latter approach is now occuring to some extent in Alberta. A final comment noted the importance of including the costs of assessing a lost resource in the final determination of compensation. In this way participants are not discouraged from ensuring a full assessment of the resource.

The third and final panel member for the discussion of this theme was **Audrey Armour**, who noted that there is a lot of fuzziness within the definitions of mitigation and compensation. This lack of clarity is found in discussions between practitioners and the public, and amongst practitioners themselves, as evidenced by the comments of the two previous panel members. From the public's point of view, for example, compensation is often seen as a form of mitigation, because of the manner in which alternatives are presented to them by proponents. This is especially true in regard to addressing social impacts, which are often intangible and thus, monetary compensation is viewed as more appealing. Also, negotiating parties often use the same terms but intend and apply different meanings, which leads to further misunderstandings. These circumstances demonstrate the need for working definitions of the terms mitigation and compensation.

According to Ms. Armour, current definitions have become too broad, so that the present use of the terms mitigation and compensation are ambiguous. This is particularly true concerning enhancement and substitution measures. An offer to enhance recreational facilities in a community in lieu of maintaining water quality standards for swimming in a local river provides an example of this confusion. It should be made clear that such a proposal is not mitigation, but rather compensation, because it does not mitigate the original impact of polluting the local waterway. An offer of land as a substitute for a local park that is adjacent to a proposed landfill site provides a further

illustration. If the original park served a specific purpose for local residents, then the offer of substitution does not mitigate their loss.

Ms. Armour expressed a final concern that mitigation proposals by proponents often give the appearance that care has been taken to respond to all impacts. As a result, attention is rarely given to those impacts which may result from proposed mitigative responses. This is a serious omission as these impacts are often as significant as those flowing directly from the proposed project.

A comment was made that the negotiation model employed by Hydro Quebec in siting transmission lines through farmland may respond to certain concerns expressed by the panel members concerning the use of compensation. This model employed joint planning between the utility and the farmers as opposed to the more traditional approach in which mitigative measures are proposed by the proponent and net impacts are addressed through compensation. It was noted, however, that while this approach addresses concerns of social inequity, it may limit the number of interests which are given a voice in the process.

Jon O'Riordon noted that the use of mitigation and compensation is perceived differently in the public and the private sectors. While it is difficult to identify who has suffered a loss as a result of an impact on public resources, the public sector is

generally content to spend money in the name of compensation. On the other hand, the private sector is less eager to make cash payments for impacts from proposed projects. Further, expenses incurred as a result of implementing mitigative measures have more beneficial tax implications for private proponents.

Ian Blue cautioned that precise definitions of mitigation and compensation may effectively freeze the state of the art, thus transfering the responsibility for deciphering the implications of these definitions to lawyers. This does not imply that ad hoc working definitions would not be of benefit. He emphasized, however, that the meaning of the terms mitigation and compensation are dynamic and should be allowed to evolve as the environmental impact assessment process develops.

In response to Mr. Blue's comments, Nick Poushinsky asserted that the fact that mitigation and compensation are dynamic concepts is not a valid argument against ensuring necessary statutory protection. Legislation is required to protect both the public and the environment. Of specific concern is the fact that the issue of need is often forgotten in the process of assessing mitigation and compensation options. As mitigation in its broadest sense would allow for the rejection of a proposed project, there is merit in enshrining that notion in law.

Wayne Barchard agreed that a clear definition of mitigation is important. Such a definition should cover the spectrum of

options from project rejection through to compensation. Further, the boundaries for negotiation should be established to ensure that all interests are represented.

Susan Bonnyman commented that no definition can replace the value of doing the job well. She expressed concern that presently the public possesses a poor equity position and that this must be turned around. For example, full disclosure by a proponent is of limited value if public interest groups do not have the resources to retain an expert to review it on their behalf. Thus, one of the first steps necessary is to financially empower such groups so that they can effectively participate in the process.

Reflecting upon her experience at Ontario Hydro, Alanna Quinn found that the agenda for negotiations is generally set by the affected public interests. In this framework, an attempt to establish distinctions between definitions of mitigation and compensation is not of significant value.

2.4 IMPLEMENTATION

The second theme examined was methods of implementing mitigation and compensation in the context of the environmental impact assessment process. The three delegates selected to present preliminary comments on this theme were Jon O'Riordon of the B.C. Ministry of Environment, Betty Nowicki of the Northern Flood Committee, and Wayne Barchard of Environment Canada, Atlantic Region.

Jon O'Riordon initiated his comments by noting that British Columbia has a 10 year history of addressing impacts of development through mitigation and compensation measures. During that time over $13 million has been negotiated for five projects concerning road and hydro dam developments which resulted in loss of wildlife resources. In the planned Peace River Site "C" Dam project $10 to $12 million has been recommended for environmental, agricultural, social and heritage impacts by the British Columbia Utilities Commission, which conducted a public hearing on the project.

Building upon this experience, the province of British Columbia

established guidelines for mitigation and compensation in 1978-1979. The main objective of these guidelines was to provide some consistency to negotiations with developers. The guidelines do have an economic flavour, which is useful. Since the implementation of the guidelines, higher settlements have been achieved through negotiations with British Columbia Hydro. Further, ministries other that the Ministry of Environment, such as agriculture and heritage resources, as well as other resource sectors, have become parties to mitigation and compensation negotiations.

Dr. O'Riordan noted that beneficial mitigation and compensation responses are achieved through procedures which are enshrined within the regulatory process. For this reason, not all losses receive equal attention because a comprehensive legislative framework is not in place. For example, while waste, water and fisheries legislation provide adequate protection for such impacts, losses of wildlife and social impacts have limited regulatory protection.

Mitigation and compensation conditions are established by the British Colulmbia Cabinet, Dr. O'Riordan asserted, and linked directly with the approval-in-principle decisions made by the Environment and Land Use Committee of Cabinet. Dr. O'Riordan noted, however, that a growing trend exists to move the negotiations process to an earlier stage, that is, before the project has been approved in principle. For example, in the case

of the Site "C" Dam proposal, there were no direct negotiations between the Ministry of the Environment and British Columbia Hydro. Instead the issues were arbitrated by the British Columbia Utilities Commission Inquiry Panel. In 1984, however, the Ministry of the Environment and British Columbia Hydro successfully concluded negotations for mitigation and compensation of environmental impacts of the proposed Murphy Creek project on the Columbia River near Trail, British Columbia. British Columbia Hydro has yet to apply for an Energy Project Certificate for this project.

As this trend continues, Dr. O'Riordan noted that the issue becomes, how early in the process should negotiations concerning mitigation and compensation become a component? In this regard, he noted that the context of mitigation and compensation issues is tied to resource management objectives. Thus, the Ministry of Environment is developing objectives through its planning process for ambient air and water quality, as well as for fish and wildlife resources in particular areas of the province. In addition, management plans are being developed for defined ecosystems, such as the Fraser River Estuary. In this way, present and potential levels of development can be considered in the planning process. When these objectives are unattaionable due to development proposals, however, it may be necessary to advise the politicians prior to an approval-in-principle decision being made.

Dr. O'Riordan emphasized the important role which economics performs in arriving at mitigation and compensation agreements. In the process used by the B.C. Ministry of Environment, economic analysis allows a dollar value to be placed on non-economic activities such as recreational hunting and fishing. Experts who apply this approach agree that there are certain losses which cannot be economically evaluated, for example, aesthetics, and the free-flowing condition of a river. For this reason, economic evaluation is not the sole criterion. The use of economic valuation, however, does provide at least a fall back position for government in its negotiations. In addition, those losses which cannot be evaluated economically are noted in a statement given to Cabinet before a final decision is made.

Two approaches further address the limitations of the economic valuation process. First, priorities are established to ensure that attempts are first made to respond to a loss through replacement in kind. Preference is given to the replacement of equivalent species in the same region, then to replacing a similar species in the affected region, and finally where this is not possible enhancement will take place in a different region. Secondly, an interest bearing fund could been set up by the B.C. government from compensation dollars received, which could be available over a period of years to respond to contingencies. This would remove problems in timing the implementation of a mitigation programme. For example, land purchases could be delayed until the best price is available, instead of buying

immediately. Furthermore, operational costs required to administer mitigation programmes could be offset by the interest earned on the capital. In some cases, negotiations include a contingency fund to ensure that funds are available in the event of unaticipated impacts.

In light of this last comment, Daryl Carter questioned how future problems are brought to the attention of ministry officials. Mr. O'Riordon clarified this point by explaining that projects are reviewed every five years, and the fund may then be re-negotiated. The contingency fund is used only for unanticipated impacts and would require the agreement of both parties. An independent arbitrator can rule if there is no agreemnt between the parties. This concern was supported by Andy Hamilton who criticized the approach whereby all mitigation is performed at the beginning of the project. He noted that our limited knowledge of potential impacts makes it imperative that the assessment of impacts be a continuing responsibility. Otherwise the community and the resource base end up bearing the loss. Carol Ann Rolf noted that, unless the process is carefully designed, a negotiating community can be at a severe disadvantage at an early stages of the project approval process. As a result of unequal information and resources, a community may have limited negotiating power. She suggested the negotiation of a monitoring program as a response to this concern.

Some criticism of the B.C approach was made by Nick Poushinsky

who suggested that governments and agencies such as Hydro have similar interests, in that they would both prefer lump sum payments in order to absolve themselves of any future liability. Mr. Poushinsky also expressed a fear that a similar approach would be used in assessing social impacts, an area which he felt is presently underdeveloped in the environmental impact assessment process.

Barry Sadler asserted that the B.C. approach to implementation of mitigation and compensation was a systematic one, which was effective in terms of environmental protection. He did, however, note that as predictive methods are limited, more detailed monitoring and audits were needed. Through these techniques it is possible to ensure that the terms of a negotiated agreement are upheld. Negotiation is a social process, he noted, and thus the political climate is bound to have an effect on the extent of negotiations. For this reason, it is important to have a parallel set of of scientific and social analyses of mitigation and compensation options. Mr. Sadler stressed that the effectiveness of the negotiation process is highly dependent upon the participation and good faith of all parties involved. In order to establish that good faith, he felt that it is vital that both parties be provided with equal opportunity to review available scientific and social analysis.

The need to ensure long term review was reiterated by Lino Grima, especially in light of the length of persistence of certain

toxics contained in hazardous waste. Thus, he expressed a hope that a guarantee to take care of the consequences of a project in perpetuity could be obtained through negotiations.

Panel member **Betty Nowiki** based her comments on her experiences regarding the Northern Flood Agreement between the governments of Manitoba and Canada, Manitoba Hydro and a coalition of Indian bands. The project, which involved the diversion of the Churchill River to produce hydro-electric power, was originally identified as significantly impacting the native Indian groups due to extensive flooding of their reserves. A very detailed and complicated agreement was reached by mediation among all the parties. Over the course of the following years, implementation of the contract has proved to be time consuming and ineffective.

Ms. Nowicki presented the findings of two reports commissioned to determine the reasons why implementation of the contract has been thwarted. The reports first identified as a major problem area the lack of a schedule or time frame for the implementation of responsibilities identified within the agreement. Also missing was an institutional mechanism for overseeing the implementation of the agreement. A further problem arose from the lack of a clear definition of roles and responsibilities within and between responsible government departments. In addition, although an arbitration process was built into the initial contract to specifically deal with conflicts, the design of this process has

caused further delays. Overall, it was found that there exists a lack of goodwill and experience on the part of the governmental parties with respect to the procedure for implementing such an agreement.

Ian Blue noted that all parties to the agreement were well represented and wondered whether public hearings would have improved the outcome of the contract. Ms. Nowicki explained that the process of arbitration, established in the contract, was expected to handle any difficulties that arose. It was also noted that Manitoba Hydro has attempted to buy out of its responsibilities under the agreement and, in fact, has approached each Indian band on an individual basis for this purpose.

Although it was felt that all parties to the Northern Flood Agreement were given competent counsel, Leon Mitchell explained that the reason for failures in its implementation are related to the fact that the present day matters of concern were not dealt with during negotiations. Part of the contract contained an agreement to come to a consensus at a later date regarding such matters as the identity of the arbitrator. While Mr. Mitchell noted that one of the strengths of the agreement was the existence of a perpetual instrument for settlement of future claims, problems in drafting this arbitration process were a major factor in creating delays.

Ian Blue noted succinctly that one should never put into an

agreement a term agreeing to agree.

Wayne Barchard of Environment Canada, Atlantic Region commented on the implementation of mitigation and compensation from a environmental perspective. He noted that he does not consider social impacts unless they are directly related to an impact upon the physical environment. In his view, a workable scheme of implementation should begin with a clear policy statement, definitions and guidelines backed by clearly enunciated political will.

While mitigation is now a well established concept, he believed that there is a need for further clarification of the concept of compensation. A definition of compensation should include a trigger mechanism to determine at what point this option needs to be considered. As well, such a definition must include the scope of compensation to be required.

Overall, Mr. Barchard felt that negotiated contracts represent the most efficient means of enforcing environmental protection because their obligations will have the force of law. Mutual obligations can be clearly stated and can include the obligation of ensuring that the contract is implemented in an environmentally acceptable way. Monetary penalties can be included to ensure that the agreed upon work will be carried out. The key to success is to ensure that the obligations, and a method of indicating the satisfactory completion of those

obligations, is clearly defined.

As to the application of compensation in the environmental impact assessment process, Mr. Barchard felt that it should be the last environmental control option to be considered. While compensation in kind is a relatively simple matter, the valuation of non-market resources is sophisticated and not terribly relevant. The use of compensation is basically an admission of defeat, an admission that one is unable to find a means to protect the environment and thus, steps must be taken to provide recompense for the inevitable environmental damage.

2.5 EFFECTIVENESS

The third theme examined methods by which the purposes of mitigation and compensation may more effectively be achieved. The three panel members selected to present preliminary comments on this theme were Alanna Quinn of Ontario Hydro, Archie Pick of Interprovincial Pipe Line Limited and Leslie Gratten of Mobil Oil Canada.

Alanna Quinn noted that Ontario Hydro uses Community Impact Agreements to manage impacts arising from development projects. These agreements are established through negotiations with the affected municipality and include a provision which allows for supplemental agreements. Prior to negotiations, Ontario Hydro provides the community with funding to obtain experts to review impact assessments and other documentation relating to the proposed project. Pursuant to the negotiated agreement, money is set aside in a trust fund and earmarked for various purposes and an arbitration process is included to respond to any future disputes. Through these agreements, a long-term relationship between Ontario Hydro and the municipality is established. The

need for a long-term relationship was emphasized by Ms. Quinn because the environmental and social costs resulting from a development project cannot be confined to the period of project construction.

Ms. Quinn felt that while these agreements greatly facilitated the process of responding to the impacts of a project, more needs to be done to ensure that the right decisions concerning mitigation and compensation are found. Although the negotiated agreements currently address economic losses in a fairly effective manner, the issue of responding to perceived health risks remains a problematic one. The gap between formally assessed and perceived risks is, in Ms. Quinn's opinion, the hardest to address in the process of managing the impacts of a project. She noted that perceived risks can be addressed through an ongoing re-assessment of the project, but more work is needed to better understand this approach. Such an approach does, however, underline the need for a long-term relationship between the proponent and the affected interests.

Ms. Quinn had a number of additional thoughts which she felt would help to ensure that intelligent, sensitive and appropriate solutions are found. More effective negotiation skills are needed, rather than technical or mechanical skills, which are already highly developed. The development of programs and policies by a proponent, beyond those designed for specific projects, would also aid the development of an internal expertise

in dealing with mitigation and compensation issues. Ensuring that compensation awards are impact specific, as opposed to all-encompassing lump sum payments, allows all parties to identify which impacts have been addressed and which have not. Finally, it is important to obtain feedback from affected parties to determine their degrees of satisfaction with respect to the process of managing the impacts of a project.

Archie Pick drew from his experience in the Norman Wells Pipeline Project in making his comments. That project was completed approximately a year ago and is now being monitored. Prior to the project, Interprovincial had no stated policy regarding mitigation and compensation. It was their intention, however, to ensure that good relations were maintained between the company and other co-tenants of the land through which the pipeline would pass. It was made clear in their negotiations, that regardless of the effectiveness of mitigation efforts, compensation would be available. Such compensation could be monetary in nature or take another form acceptable to the parties and determined fairly through negotiation. Compensation was not applied, however, to redress cultural or lifestyle changes resulting from the project. In this regard, Mr. Pick noted that the concepts of individual and public interests must be considered. Pipeline projects under federal jurisdiction, for example, are approved by the National Energy Board when they are considered a matter of "public convenience and necessity". As a result of this broader perspective, the Norman Wells Pipeline

Project can be viewed as serving the interests of the general public. In this sense, Interprovincial considered it the responsibility of appropriate governmental agencies to respond to cultural or lifestyle changes.

From Mr. Pick's perspective mitigation is presently implemented through a combination of regulatory and contractual instruments. While it is important that practitioners indulge in fairness and recognize individual and societal rights, he stated that there is no evidence that the present approach is not working. Compensation, in Mr. Pick's view, should be a procedure of last resort. He stated that more study is required regarding who pays compensation to whom, how much should be paid and when it should be made available. He is concerned that attempts to compensate for perceived risks may create more problems than would be resolved.

Mr. Pick remarked on the limited value of class assessments for large, complex undertakings. He felt that government should play a larger role in providing proponents with the tools needed to assess the impacts of their projects. For example, government should carry out more studies to obtain baseline environmental data and make it available to proponents. Finally, Mr. Pick noted that, although there is value in post-project audits to provide feedback in evaluating effectiveness, one should not audit a project that is not complete. In this regard, he noted that for many projects, impact predictions may only be verified

over a long period of operation.

Leslie Gratten, of Mobil Oil Canada, questioned whether it is necessary to go beyond the concepts of mitigation and compensation to develop guidelines for their application. She asserted that it may be sufficient that a proponent demonstrate a commitment to impact management, a term which she felt best described what is at issue.

Ms. Gratten emphasized that priority should be given to mitigation, which entails preventative measures, as opposed to compensation. In her view, compensation should be viewed separately and only applied after mitigation options have been exhausted. Further, she asserted that all parties must accept some responsibility for ensuring that mitigative measures are instituted. In her experience, however, it is often difficult to put these ideas into practice. In the eastern provinces, from which she draws her experience, there is a perception that many affected parties are only interested in compensation. Further, it is often difficult to find representatives of unorganized public groups willing to actively participate in the environmental impact assessment process. Ms. Gratten speculated on whether a greater impetus to mitigate could be achieved if proponents were required to fully compensate all affected interests.

The development of mitigation and compensation responses to

impacts arising form a project must be a shared, long-term responsibility, otherwise, such decisions will be imposed by a third party. Ms. Gratten noted that a regulatory requirement that the parties report back to an independent decision-maker may be a more effective process than the pure contractual model. She also stated that post-project monitoring is an essential element in the environmental impact assessment process. More work, however, needs to be done in regard to the integration of monitoring into impact management practices.

Finally, Ms. Gratten noted that the extinguishing of liability for impacts from a project and the question of whether a public interest lies in privately-owned property are important issues which must be further addressed.

Peter Johnston noted that ultimate decisions on environmental impact assessments in Alberta are made on the basis of political will. He stated that government pressure is exerted upon the Surface Rights Board, which is appointed to make a final determination on resource development projects. Government pressure is exerted in favour of development, he asserted, because it will increase tax dollars. Thus, it is vital to ensure that government intrusions in development project decisions be restricted.

Susan Bonnyman noted that impact management and post-project audits will form the next wave in environmental impact

assessment. She also noted that there is a need to regulate compensation because the development sector is ultimately in the business of making money.

Andrejs Skaburskis agreed that there is a need for regulatory supervision of mitigation and compensation efforts because too much emphasis may be placed upon compensation.

Ian Blue posed the question of how one can evaluate the success of an environmental impact assessment. Wayne Barchard noted that effectiveness is a relative term. From the perspective of the proponent, the environmental impact assessment may be viewed as a success if all claims are quieted. This would not, however, be a good measure of success from a biophysical perspective.

Lino Grima, addressing this issue of evaluating the effectiveness of mitigation and compensation responses to project impacts, felt that there is a need to establish predetermined objectives. He suggested cost-effectiveness; fairness of process; participatory planning; and competent, rational judgements as possible objectives. The importance of creating a culture of participation by the public to ensure an effective process was underlined by Mr. Grima.

Barry Sadler stated that a sufficient margin of error is not employed in determining mitigation and compensation responses. This is especially true in light or our limited knowledge of, and

inability to predict, project impacts. For this reason, it is important to ensure a systematic follow-up of mitigation and compensation responses so as to learn from what has been done in the past. With greater post-project surveillance, there exists an ability to be more creative in responding to unanticipated impacts in future projects.

Alanna Quinn commented that it has been Ontario Hydro's experience that good community relations can be more valuable than monitoring programmes. The latter often take a sponge approach and, as a result, much of the data gathered has questionable value. Andy Hamilton responded that monitoring efforts need to be more focussed. He noted that natural ecosystems should be considered equal stakeholders with property owners and, as they are not currently so represented, good monitoring programs are necessary.

2.6 SUMMARY OF PROCEEDINGS

(i) Definition

1.1 Presently the boundaries between mitigation and compensation are not adequately addressed, thus, definitions of these two concepts should respond to the nature of their inter-relationship.

1.2 As compensation cannot fully respond to impacts to the natural environment, mitigation should be carried as far as practicable before compensation is considered.

1.3 There exists a lack of experience in defining the role of compensation in addressing impacts on public resources.

1.4 Definitions of mitigation and compensation should be developed as the negotiating situation warrants, provided that the full spectrum of options (eg. no project approval through to long-term, periodically reviewed compensation plans) is included, to ensure that all parties have a common understanding of the terms.

1.5 Is "impact management" an alternative and more comprehensive

definition of mitigation and compensation?

(ii) Implementation

2.1 Formal guidelines, such as a corporate policy statement, on mitigation and compensation may be helpful in facilitating consistency and developing internal expertise.

2.2 Negotiation appears to be gaining support as a tool in the environmental impact assessment process, as a result, efforts should focus upon linking this process with the larger approval processes.

2.3 The negotiating process should include all parties and all parties should be given equal bargaining power.

2.4 Statutory provisions should be considered to address the concern that impacts to the natural environment may not be adequately protected, especially in the negotiation process.

2.5 To respond to concerns that negotiated settlements of mitigation and compensation responses adequately protect the natural environment, the idea of an overseeing decision-making

tribunal should be considered. How can such an approach be integrated into the environmental impact assessment process or appropriate legislation?

2.6 There exists serious concern that current economic valuation techniques do not truly reflect impacts on natural resources. Alternative methods of valuating such losses need to be explored.

2.7 Perceived risk, resulting from certain projects, is not adequately understood and addressed in the development of mitigation and compensation responses.

(iii) **Effectiveness**

3.1 Objectives must be well-defined before the effectiveness of mitigation and compensation responses can be evaluated.

3.2 Evaluations of the process of developing mitigation and compensation responses, as well as post-project audits should be helpful in learning from past experiences.

3.3 There exists a need to establish a continuing monitoring and reporting policy for proponents after completion of a project.

It is uncertain whether this should be part of the regulatory framework or corporate policy.

3.4 Long-term liability and responsibility for projects is a major issue that has not been adequately addressed. The term of commitment under a negotiated agreement is a related issue.

3.5 Arbitration and similar dispute resolution techniques are valuable tools and should be included in negotiated agreements to solve unforeseen disputes.

3.6 The issue of who should pay for lifestyle and other social and economic impacts has not been sufficiently resolved.

3.0 CASE STUDIES

3.1 Study Objectives

The primary objective of the case studies is to further define and clarify seven major issues identified by the Committee as a result of the workshop discussion. In addition, a secondary purpose of the case studies is to identify and explore other important issues and perspectives concerning mitigation and compensation in the environmental assessment process that may not have been raised at the workshop or selected by the Committee for consideration.

3.2 Methodology

3.2.1 Selection of Study Projects

To ensure that the projects chosen for review were representative of a broad spectrum of the development projects in Canada, a selection criteria was developed. This selection criteria included five categories, which may be briefly listed as follows: development sector involved, geographic location, size of the

project, level of government review, and applicability of a formal EA review. Over 30 development projects with identifiable mitigation and compensation components were considered from which eight projects were selected through the application of the selection criteria. The eight projects selected are as follows:

1. Atikokan Generating Station 2. Hibernia Development 3. Lake Winnipeg Regulation 4. Norman Wells Pipeline 5. Point Lepreau II 6. Site "C" Peace River Dam 7. Stablex Waste Disposal Site 8. Swan Hills Waste Disposal Site

3.2.2 Data Generation

The data generation technique selected for the case studies was a questionnaire. The questionnaire was designed to address those issues identified by the Committee for examination. An open-ended format for the questionnaire was used, that is, interviewees were asked to describe any other issues perceived that were not expressly canvassed. Thus, interviewees were able to identify and prioritize significant issues beyond the parameters of the seven issues identified. Interviewees were asked to outline definitions applied within the context of the project being reviewed. A draft of the questionnaire was subjected to an external review by an expert in the field. A copy of the questionnaire is attached in Appendix 3.

3.2.3 Issues to be Examined

Seven issues were identified by the Committee after the Ottawa Workshop. These issues formed the primary focus of the questionnaire. The study introduction, which was forwarded to all persons interviewed along with the questionnaire, included the following summary of these issues:

(i) Timing of Mitigation/Compensation Responses. When should mitigation and compensation responses be determined, in light of a desire to address adverse impacts early so as to foster impact prevention (which avoids the impact through project planning decisions), and a need to consider all available data concerning adverse impacts, including unanticipated impacts?

(ii) Secondary Impacts. Mitigation and compensation responses may themselves result in adverse impacts which may be equally or more significant than the adverse impact sought to be addressed. How can these "secondary impacts" be addressed and how can this consideration be integrated into the process of formulating, evaluating and selecting mitigation and compensation responses?

(iii) Valuation of Environmental Impacts. In the process of reviewing alternative mitigation options and quantifying compensation responses, there exists a need to place a value on impacts to the natural environment. Is there a need for new methodologies to value non-economic losses, such as aesthetics, in this process?

(iv) Public Participation. Is it desirable to provide the public with a greater role in the identification of impacts and the formulation, evaluation and selection of mitigation and compensation responsess? If so, how can such participation be fostered?

(v) Dispute Resolution. The use of negotiation, mediation, and other non-adversarial processes as a method of dispute resolution is growing. In light of this trend, are the interests of the natural environment adequately protected? Further, while the scope of mitigation and compensation options considered may be broader in a less adversarial process, is the scope of interests represented too restricted?

(vi) Post-Project Responsibilities. In light of the limited nature of impact prediction techniques, what can be done to ensure that impacts which arise after

completion of a project are adequately addressed? Is enough being done to apply those lessons learned from completed projects to future projects of a similar nature?

(vii) Re-evaluation of Project Need in light of Net Impacts. After the formulation, evaluation and selection of mitigation and compensation responses, residual adverse social and environmental impacts (net impacts) may exist which are not addressed. Is a final balancing of these net impacts with project need fully addressed in the environmental assessment process?

3.2.4 Actors Involved in the Study

Actors in the development, review and implementation of development projects may be defined by their degree of involvement. Pursuant to this approach, three main categories of actors may be described: core actors, support actors and should be actors. For the purposes of the case studies only core actors were interviewed. Within this framework a proponent and an affected party for each subject development project were selected.

The selection of the proponent interviewee was relatively straight-forward, however, it was often difficult to choose one affected party. In making the selection of the affected party to be interviewed a number of factors were considered. These included the range of concerns expressed by the party, the scope of interests represented, and the qualitative and quantitative nature of their participation.

3.2.5 Project Descriptions

To facilitate the interviewing process and to ensure a common understanding of the nature of the development project being examined, project descriptions were prepared in advance of the interviews. These summarys of the subject projects were sent to each party interviewed, along with the questionnaire. In this way, interviewees were given an opportunity to clarify any ambiguities and note any corrections in their content. The project descriptions identified the actors; benefits; statutory and regulatory framework; identified impacts; mitigation and compensation responses; public hearings; dispute resolution techniques; and post-project issues. The final version of the project descriptions are included as Appendix 5.

3.2.6 Nature of the Interviews

Respondents were contacted after receipt of the study introduction, questionnaire, and the project descriptions to arrange a convenient time for the interview. All interviews were conducted by telephone, with one exception. One written response was accepted at the request of the respondent. The task of taking the responses to the questionnaire was divided among three persons.

3.2.7 Content Analysis

A general content analysis was developed to assist in the interpretation of the responses. In addition, all responses recorded were reviewed by one person to ensure greater uniformity in the interpretation. Further, input was received from those persons who recorded the responses at all stages of the analysis.

3.2.8 Fundamental Premises

A number of fundamental premises are used as a basis in the analysis of the responses. The first fundamental premise is that mitigation and compensation are integral components of the EA process. The second fundamental premise is that an ecological perspective with respect to the delineation of the two concepts has been taken. The implication of this second premise is that compensation should not be applied as a tool until all mitigation options have been considered. This is based on the assumption that compensation cannot directly reduce or eliminate adverse impacts to the natural environment.

As a result of this second fundamental premise, working definitions of the two concepts have been developed as follows:

> Mitigation: actions at all stages of a project which seek to eliminate or reduce an adverse environmental impact of the project.
>
> Compensation: actions at all stages of a project which seek to redress an adverse environmental impact of the project through a monetary award, or other response which does not directly eliminate or reduce the impact.

Adverse Environmental Impacts: includes impacts to the social and natural environments.

Finally, it should be noted that the seven issues identified by the Committee, described above, include to a degree implicit and explicit premises.

3.2.9 Study Introduction

It was perceived that the fundamental premises, outlined above, should be stated explicitly. Thus, in addition to the questionnaire and project description, respondents were provided with an introductory document, which outlined the above-noted premises. With regard to the working definitions, interviewees were advised that they are only intended as guideposts for the purposes of the study. As such, they are not meant to limit or restrict the scope of review of mitigation and compensation issues in the case studies. Further, as noted above, the questionnaire asks the respondent to provide definitions applicable to the subject project.

3.3 Description of the Responses

The number of responses to the questionnaire received was substantial. Responses were received from thirteen of sixteen planned interviews. No response was received from the proponent

of the Point Lepreau II Project, although one was promised during discussions after receipt of the interview package. No response was received from either the proponent or affected party for the Stablex Waste Disposal Project. The proponent felt that it could not respond due to time constraints. The affected party selected agreed to the interview and received an interview package, however, after delaying the date for the interview on a couple of occasions, this respondent could not be further contacted. Manitoba Hydro was identifed as the main proponent of the Lake Winnipeg Regulation Project and sent an interview package. After discussion, this party advised that it would decline to respond to the questionnaire. After subsequent discussions, a former representative of the Department of Northern Affairs, Government of Manitoba agreed to respond to the questionnaire. This response was, however, received in written form, while all others were taken by telephone.

Due to the sample size, it may be fair to state that discrete statistical trends cannot be drawn from the responses. It may be stated definitively, however, that the responses provided sufficient data to ensure that the objectives of the case studies were achieved. Not all responses to the questionnaire provided the same amount of detail. This was generally the result of factual differences in the projects, rather than an indication of the intensity of the responses. One major difference is based on the fact that certain projects were in the early development stages, while others have been completed for some time. Further,

some identified issues were less applicable to certain project than others, for example, questions relating to the dispute resolution process (where none was applied) and post-project responsibilities (where the project did not go ahead).

3.4 Issues Analysis

3.4.1 Definition of the Concepts of Mitigation and Compensation

A. Introduction

The definition of the terms "mitigation" and "compensation" formed the basis of a substantial portion of the discussion at the Ottawa workshop. Although not identified specifically as an issue to be examined through the case studies, it is clear that the way in which the concepts are defined directly influences the process of developing mitigation and compensation responses. Thus, the questionnaire asked respondents to provide their definition of the two concepts. To facilitate the examination of the definition of the concepts working definitions were developed and expressed in the study introduction.

The working definitions were as follows:

> Mitigation: actions at all stages of a project which seek to eliminate or reduce an adverse environmental impact of the project.
>
> Compensation: actions at all stages of a project which seek to redress an adverse environmental impact of the project through a monetary award, or other response which does not directly eliminate or reduce the impact.

The working definitions were intended to act as guideposts and respondents were advised that they were not meant to limit or

restrict their responses.

B. Summary of Responses

Most of the respondents provided a definition of both concepts. These definitions, however, were rarely expressed formally, such as in a policy statement. With regard to the definition of "mitigation" respondents generally agreed with the working definition. On the other hand, a number of respondents provided their own definition of "compensation", which often differed in certain aspects from the working definition.

An examination of the responses to this issue will first explore the definition of the concept of mitigation, including its extent of its formal expression, the scope of the definition, and its delineation from the definition of compensation. An examination of the concept of compensation will follow, including the extent of its formal expression and a review of the comparitive perspectives on this expanding concept.

(i) Mitigation

(a) Formal Expression

Most of the definition of the concept of mitigation were expressed in an informal basis. That is, they were not found in

legislation of policy document. Exceptions to the method of expression, applicable to the projects examined, are found in the formal expressions of a definition found in the Northern Flood Agreement and the British Columbia Mitigation and Compensation Guidelines.

The Northern Flood Agreement defines the term "mitigatory measure" as follows:

> ...any work, program or measure which is designed or intended to diminish, prevent, or ameliorate any adverse effect of the Project.

The British Columbia Environmental and Social Impact Compensation/Mitigation Guidelines includes the following definition:

> "mitigation" refers to measures taken in the planning, construction or operation of a project with the specific objective of avoiding or reducing adverse environmental or social impacts.

Certain of the proponents, for example Ontario Hydro, have since developed policy statements, which a definition of the concept of mitigation, subsequent to the completion of the projects examined.

(b) Scope of the Definition

The working definition of mitigation developed for the purposes of the case study included actions which would eliminate an impact, that is, the concept of impact prevention. This is a common theme among the definitions noted above and those provided by the other respondents. Other terms used included the "prevention" or "avoidance" of an impact. One interesting definition expressed in a written response, which is an exception to this scope, came from the proponent interviewed for the Lake Winnipeg Regulation project. It reads as follows:

> Mitigation is activity which reduces the severity of the unavoidable impacts of a project after the impact happens.

This definition would appear to eliminate the impact prevention option by assuming that the impact is unavoidable and has already manifested itself. This is supported by the fact that this respondent, in response to a subsequent question, described impact prevention and mitigation as being two separate options.

(c) Delineation with Compensation

The working definition delineated between mitigation and compensation through the effect of the action, that is, if the action addressed the impact directly so as to avoid or reduce it, then it is considered mitigation. The B.C definition is in line with this approach. The definition in the Northern Flood Agreement would appear to be in line with this distinction, while

the meaning of the verb "ameliorate" is unclear in this context, it appears to be directed towards the actual impact.

Other definitions received were either identical or similar to the working definition. The proponent for the Norman Wells Project, for example, provided the following definition for mitigating project impacts:

> reduce or moderate the negative effects of our activities on the environment, on government service delivery, and local human and commercial resources through effective planning and impact management.

While more specific in the nature of impacts addressed, the delineation expressed in this definition is primarily the same as in the working definition.

(ii) Compensation

(a) Formal Expression

As with the concept of mitigation, definitions of the concept of compensation were generally not formally expressed. The formal definitions of the concept of mitigation, noted above, all have corresponding definitions of the concept of compensation. Although the Northern Flood Agreement does not use the term "compensation", the term "remedial measure" is given a similar meaning. That term is defined as follows:

> ...any work, program or measure which is designed or intended to enhance, preserve, restore or replace in

> kind, wholly or in part, any property, land, land use interest or activity or any person, which has been or may be adversely affected by the Project.

The British Columbia definition in the Compensation/Mitigation Guidelines is as follows:

> Compensation refers to payments (in cash or in kind) which are made by the developer (or pary responsible) with the objective of redressing or offsetting the losses which occur despite or in lieu of mitigation efforts.

Ontario Hydro has subsequently developed a policy which includes a definition of the concept of compensation.

(b) An Expanding Concept

Looking beyond the formally expressed definitions, two general definitions of the term "compensation" were provided which were generally dependent upon whether the response was from a proponent or a non-proponent. As a rule, proponents took a legalistic approach, while non-proponents gave the term a broader social context. For the most part, respondents did not rely upon the working definition and provided an individual response.

A comparison of the definitions provided by the respondents in two of the projects examined demonstrats the expanded definition of compensation that was provided by non-proponents. In the Norman Wells Pipeline Project the proponent defined the term compensation as being to:

provide a payment in monetary or material kind twoards recompensment for specific damages towards an individual.

The non-proponent respondent for that project stated that compensation is a way of restoring one to their pre-project status. To illustrate, this respondent stated that such an approach would require that new traplines be found and incindental costs be paid if a trapline, lost as a result of the project, cannot be restored. This approach to the concept of compensation would, however, include a response to such issues as impacts to their traditional lifestyle. At this point the two parties diverge, as the proponent clearly stated that such lifestyle impacts were not included in their definition of compensation.

The proponent for the Hibernia Project noted that they take a legal approach to the concept of compensation. Their definition would be to put the recipient in no better or no worse position as a result of the project. While the non-proponent essentially agreed with this definition, the two parties have diverged in there efforts to apply it to the specific factual situation of the project. For example, local fishermen are seeking compensation for loss of access to fishing areas cut off by the location of the gravity based structure and fish processors are looking for compensation for indirect losses in the event of an oil spill. While the non-proponent felt that such claims

properly fell within the concept of compensation, it was recognized that new methodologies are required to quantify such losses. The proponent expressed concern that such an expansion of the concept of compensation was too open-ended.

C. Findings

While the parties interviewed were generally in agreement with regard to a definition of the concept of mitigation, disagreement was clearly evident when defining the concept of compensation. It is obvious that this concept is a dynamic one which is currently evolving, in the context of environmental assessment, beyond it traditional legal foundations. As a result, it would appear evident that disagreements will arise which will place an emphasis on dispute resolution mechanisms.

3.4.2 Timing of Mitigation and Compensation Responses

A. Introduction to the Issue

The timing of mitigation responses was identified as an issue at the workshop in Ottawa. In general terms, the nature of the discussion involved an examination of the respective advantages and disadvantages of taking a proactive or reactive approach to the timing of mitigation responses.

In support of a reactive approach, concern was expressed that, due to a limited ability to accurately predict impacts, comprehensive monitoring was considered an important element in designing mitigative responses. A further argument in favour of this approach was based on the belief that the process of developing mitigation responses be flexible so as to allow for the consideration of newly identified impacts.

In support of a proactive approach, it was asserted that reliance on monitoring could significantly reduce the ability to implement impact prevention measures, which were considered a preferred and more effective mitigative approach. The effective implementation of impact prevention options is dependent upon an early response

in the project.

B. Summary of the Responses

Many of the concerns expressed at the workshop with regard to the timing of mitigation responses were echoed in the comments received to the questionnaire. Further, a number of different approaches were taken in this regard, which serve as a basis for comparing comments concerning their effectiveness.

Over half of the thirteen respondents noted that a fair degree of flexibility existed, generally through monitoring, so that newly identified impacts could be addressed. A number of these respondents, however, expressed a need to improve monitoring techniques and expand available baseline data. Impact prevention, was a component of many of the projects examined, three methods in detail.

The examination of this issue will form two parts. The first part will detail comments of the issue of flexibility. In this regard, the comments of respondents for the Lake Winnipeg Diversion Project and the Hibernia project will be compared to the traditional approach to the timing of mitigation measures taken in other projects examined. The second part will review comments regarding impact prevention techniques and their

effectiveness.

(i) Flexibility in Timing Responses

A traditional approach to the timing of mitigation responses, evidenced by the responses, is for the proponent to prepare detailed baseline studies, predict the nature and scope of impacts, and prepare a plan for responding to those impacts identified. The report of the proponent is then subjected to a detailed review by governmental authorities, with input from the public. At the conclusion of the hearing, a number of recommendations are made to the body which has the power to formally approve the project. Often such recommendations will include a combination of specific mitigation responses and a call for further monitoring to determine the full extent of other anticipated impacts, as well as to identify any new impacts. Of the projects reviewed, many followed or would have followed this traditional pattern fairly closely including the Norman Wells Pipeline, Hibernia, Site "C", Point Lepreau II Projects.

Commenting on this traditional approach, the respondent for the proponent in the Hibernia Project asserted that the traditional timing of mitigation responses, developed through an environmental impact statement (EIS), required too much "too early". The respondent noted that at the time the EIS was prepared, the project was still a developing concept with alternative design options. This respondent would prefer to see a

more staged approach that would provide greater flexibility to deal with changes in the project design. Thus, a less detailed EIS could begin the review process, with a proponent being legally required to provide updates as the project becomes more defined and as the data base expands.

The Lake Winnipeg Regulation Project took an approach which was significantly distinct from the traditional approach. By adopting a "wait and see" approach to the timing of mitigation measures, it was anticipated that greater flexibility could be build into the process. The Northern Flood Agreement (NFA), which formed the foundation for this approach to mitigation, included only a handful of specific responses, even though construction of the project has already commenced. Instead, an arbitration mechanism was established to address impacts and develop mitigative responses. Through this mechanism, any person can file a grievance outlining an adverse impact of the project. An appropriate response will be determined either through negotiations of the parties or by arbitration, if necessary. The NFA included a number of guiding principles applicable to all decisions of the arbitrator.

Based on the responses to the questionnaire, this approach to the timing of mitigation responses does not appear to have been entirely successful. While the project was one of the oldest reviewed, it is still in its infancy with regard to the development of mitigation measures. At the time of the

interview, preparations were being made for presentations to the arbitrator for what are expected to be the first final decisions resulting from this dispute resolution mechanism. Further, concern has been expressed that the NFA did not effectively outline the respective obligations of the parties. As a result, studies designed to gather baseline data, to aid the identification of impacts, and to support decisions concerning appropriate mitigation efforts, have been delayed and have only recently been initiated. Finally, such an approach does not foster impact prevention. In this regard the proponent responded that "most preventable impacts were addressed before mitigative, remedial and monetary settlements were discussed."

(ii) Impact Prevention

Three types of impact prevention were demonstrated through the responses. The first, and perhaps ultimate impact prevention measure in terms of effectiveness, is the no project option. Other forms of impact prevention to be examined involve project design decisions and a site selection process.

(a) No Project Option

At the time of the review, the future of three projects examined remained uncertain. Specifically, the decision as to whether the Site "C", Point Lepreau II, and Hibernia Projects would proceed,

and in what form, had not been finally determined at the time of the interviews. It is not necessarily the case, however, that the reason for their uncertain status is due to a desire to mitigate through impact prevention. This issue will be discussed in greater detail under the identified issue of the reassessment of need in light of net impacts.

(b) Project Planning Decisions

Significant planning decisions were evidenced in three of the projects examined. It is not entirely certain though whether they would all be considered as mitigation measures. In the Lake Winnipeg Regulation Project, a decision not to proceed on the original basis of a high level diversion was made after public opposition to the project was raised. While this directly avoided many perceived impacts, it was the only impact prevention response made in the project. The Norman Wells Pipeline Project was made subject to a two year delay. This decision did not address any of the identified impacts directly and would not fit the generally accepted definition of mitigation. The generating station at the Atikokan site was downsized significantly. On the basis of the responses received from the non-proponents, it would appear that this decision addressed many of their concerns. It could, therefore, be viewed as a mitigative response.

(c) Site Selection

One project, which took a distinctive approach to the timing of mitigation responses, is worth being examined in greater detail. In the Swan Hills Project, the process of site selection was viewed by the proponent and non-proponent respondents as acting as an effective impact prevention technique. The proponent respondent noted that the traditional approach, as outlined above, is "largely redundant" and only used to justify a site after it has been selected. The approach taken in the Swan Hills Project was completely anticipatory, in a marked contrast to the approach outlined in the NFA.

The site selection criteria included four groups of constraints: physical, biological, land use, and human. This criteria was developed through a series of community meetings. The successful site was required to meet all criteria. As a result of a restrictive application, a suitable site was located for the facility which precluded the need to mitigate against adverse social and environmental impacts.

The site selection approach used in the Swan Hills Project is not, however, one which is generally available in other projects. It is only an option in those development sectors which have a great deal of flexibility with regard to the location of the project. It is an approach that was not generally available in many of the projects examined, such as the hydro-electric or hydrocarbon projects. It may, however, be an option for the emerging need to develop waste disposal facilities.

C. Findings

It is clear from the comments received that the timing of mitigation responses is a contentious issue, which is subject to a number of different approaches.

While the ability to implement impact prevention through the site-selection process has obvious benefits, it also raise a number of concerns over the lack of a review of the design of the facility. In regard to this concern, the proponent of the Swan Hills project noted that through the site selection process, a sense of trust was established with the public and, as a result, the need for such a review was not raised.

Placing the determination of the need for a review on the affected community, however, may have long-term drawbacks. Through a site selection process, a facility may be located in a remote site where no community exists to raise opposition to the facility. Alternatively, a community located adjacent to the site selected may be in such a state of economic decline that it would welcome the opportunity to host the facility and its expected spin-off benefits. In either situation, the design of the facility is not subject an external review which may identify impacts not identified internally.

D. Suggested Research

Suggestions for further research can be summarized as follows:

- ways to involve the affected parties in all stages of data-gathering and decision-making

- ways to facilitate the communication of the concept of mitigation to lay people in a practical way

- ways to ensure that baseline data takes a comprehensive, integrated and ecosystemic approach

- ways to ensure that traditional knowledge of local affected people is validated and applied in establishing baseline data

- ability to include construction impacts within the scope of project monitoring

- information on post-construction monitoring to determine the effectiveness of mitigation and compensation techniques

- methods to ensure mitigation responses are implemented and effective

- information of the appropriate role of local communities in

establishing monitoring programs

- extent to which previous EIA's can be applied to subsequent projects

- need to develop a comparative database

3.4.3 Secondary Impacts

A. Introduction to the Issue

The task of identifying impacts arising from a project can be overwhelming. This challenge may be further complicated by the fact that mitigation and compensation responses may themselves be the source of adverse impacts. Such impacts, referred to as secondary impacts, may result in adverse consequences which equal or surpass those created by the impact sought to be addressed. The ability to integrate secondary impacts into the process of developing appropriate mitigation responses was identified by the committee as an issue to be explored in the questionnaire.

B. Summary of Responses

Of the thirteen responses received, only four specifically identified secondary impacts or noted that they had been addressed. The remaining responses to this issue stated that no such impacts were identified or did not provide any comment. Respondents who did comment on this issue generally stated that they were not addressed in any different fashion from those

impacts which flowed directly from the project. The specific comments on secondary impacts came from the proponent and affected parties interviewed for the Hibernia and the Norman Wells Pipeline Projects.

The affected party interviewed for the Hibernia Project commented that they did consider some secondary impacts. As an example, this respondent noted that a suggested mitigative response to the impact of perceived stresses on social services, resulting from an anticipated increase in the population, was to isolate the work camps from the local communities. An identified secondary impact of this response, was that such an approach would reduce potential economic benefits to the communities. In this particular case, the respondent felt that the need to avoid the adverse social consequences overrode the potential benefits. In general, however, this respondent stated that secondary impacts were not addressed through a separate process. Instead, the communities raised both direct and secondary impacts in response to alternative proposals of the proponent.

The affected party interviewed for the Norman Wells Pipeline Project noted one example of a secondary impact. In response to concern over erosion along the right of way, wood chips were suggested as a stabilizer, however, there was concern expressed that they would cause more impacts than they would resolve. From the perspective of this respondent, the matter of secondary impacts were addressed in the same way as direct impacts, that

is, in an internal fashion with no expressed evaluative criteria.

The proponents for the two projects referred to above stated that secondary impacts were addressed and provided comment on the criteria applied. The proponent for the Hibernia Project commented that the determination of the scope of impacts that should be addressed was based on practicality and flexibility. With regard to the first component, this proponent noted that a "royal commission" would have been required to gather all of the social baseline data requested by the affected parties. To balance this practical limitation, the importance of remaining flexible, so as to continually identify new impacts and issues, was underlined. The proponent for the Norman Wells Pipeline Project stated that, while no defined parameters were applied, an attempt was made to address all impacts which were considered relevant.

C. Findings

The responses to questions concerning the identification and consideration of secondary impacts indicated that this was not viewed as an issue of major concern. On the basis of the responses which did address this issue, it would appear that secondary impacts have become an accepted component in the development of appropriate mitigation and compensation responses. Considering the limited number of these responses, however, it is

not possible to state that such an approach was generally accepted in the projects examined.

D. Suggested Research

No suggested research relating to the issue of secondary impacts was proposed by the respondents.

3.4.4 Valuation Of Impacts To The Natural Environment

A. Introduction to the Issue

An issue which was specifically identified in the questionnaire concerned problems that may arise in attempting to place a value on impacts to the natural environment. In essence, this concern was premised upon a perception that the process of evaluating and selecting appropriate mitigation and compensation responses is essentially one grounded in economics. As a result, a belief was expressed at the Ottawa workshop that alternative methodologies should be developed which may more effectively address non-economic impacts to the natural environment.

A related issue, involved the setting of priorities between mitigation and compensation responses. A consensus emerged from the Ottawa workshop, that all efforts should be made to mitigate identified impacts before compensation responses are considered.

B. Summary of Responses

The responses to questions concerning the valuation of impacts to

the natural environment did not indicate that this issue was perceived as an important issue. Questions concerning the issue of whether mitigation should be given a priority over compensation in responding to an identified impact resulted in responses which generally supported the consensus of the workshop participants. The comments did, however, provide some interesting perspectives on this issue.

(i) Valuation of Impacts to the Natural Environment

A common concern regarding the ability to effectively address impacts to the natural environment, was that such impacts were often difficult to determine as a result of a lack of baseline data. The non-proponent interviewed for the Site "C" project asserted that one of the biggest issues with respect to the project was the lack of appropriate baseline data, even though such data could have been reasonably attained. Without this data, it was almost impossible to ascertain the extent to which natural resources were being lost or disturbed.

Further, the data that was made available was, in her opinion, limited as it only addressed a resource's current or standing stock and not its carrying capacity or potential. As a result, difficulties existed in identifying many losses to the natural environment as they cannot not be quantified in those terms. Finally, for those impacts that could be quantified, the

limitations in the data base acted as an incentive to compensate rather than mitigate.

The non-proponent respondent for the Norman Wells Pipeline Project echoed these concerns regarding the limited availability of adequate baseline data. With respect to the desired nature of such data, it was stated that more effort should be made to ensure that the perspective of residents who are continuing a traditional lifestyle that is in harmony with the land is made a component of the process of addressing impacts to the natural environment. Further, it was asserted that greater efforts should be made to ensure that a more comprehensive, ecosystemic, and integrated approach to assessing such impacts be taken in the future. Finally, a concern was expressed that research and monitoring studies were often undertaken, although their objectives did not match the specific needs of the project and its related impacts.

It should be noted that most proponents interviewed stated that their assessment of impacts was not based solely upon economics. For example, the proponent of the Norman Wells Pipeline project stated that it did not establish an economic ranking of impacts, but instead tried to address all impacts. The proponent for the Hibernia Project stated that they would first look at identified impacts from a scientific perspective, before determining the socio-economic effects of such an impact of the province. It may be fair to state, however, that the proponent in the Site "C"

Project took a pure economic approach to the valuation of impacts to the natural environment. The non-proponent for that project would likely go farther and state that a short-term economic approach was taken.

(ii) Mitigation and Compensation Priorities

Most respondents generally indicated that mitigation ought to be attempted prior to a compensation response. This perspective was, however, rarely stated explicitly in criteria documentation. One exception to this internal approach is found in the Northern Flood Agreement (NFA). The NFA states that:

> Because mitigatory and/or remedial measures are more likely to have a lasting beneficial effect on the viability of a community and/or on individual residents than monetary compensation, such measures shall be preferred and only where mitigatory and/or remedial measures are not feasible or fail in effectiveness shall monetary compensation be ordered in lieu therefore in respect of any adverse effect.

With regard to the implementation of this principle, it should be noted that the Government of Manitoba, in a response to this issue, stated that the cost of preventing some impacts is prohibitive and that many impacts could not be prevented in a practical way due to the magnitude of the project.

The British Columbia guidelines, through the defintion of

compensation discussed above, would not preclude the consideration of such a response before examining mitigative options. This is due to the fact that the definition states that compensation "may occur despite or in lieu of mitigation efforts." The policy statement of Ontario Hydro, developed after the Atikokan project, does not explicitly state that mitigation must be considered before compensation. Instead, they require that the response which is "reasonably achievable" be undertaken.

When a preference for mitigation over compensation was expressed, it was not necessarily based upon a concern for the natural environment. Thus, while the non-proponent interviewed for the Atikokan project expressed a preference for a mitigative response to address the potential long-term effects of acid depositions on one of the last areas of pristine wilderness in the United States, others provided a more practical rationale. One proponent, for example, stated that they simply prefered to avoid the need for compensation payments. Another proponent noted that response priorities were established through consultations with the affected parties.

Not all persons interviewed agreed that compensation should be considered only after mitigative measures had been exhausted. Both respondents for the Hibernia Project, for example, agreed that certain impacts could not be mitigated and thus compensation could be considered at the outset of the project. While the proponent noted that compensation is viewed as an ongoing policy

to deal with situations where mitigation efforts fail, it added that certain impacts could not be mitigated and that compensation was required to address such impacts. The non-proponent interviewed agreed with this approach, noting that certain impacts would result in a loss of income and thus would require compensation. Further, the non-proponent for the Norman Wells Pipeline Project asserted that if compensation is defined as including issues affecting their aboriginal rights, then these matters went to the heart of the project. Such fundamental issues should be addressed before other impacts of the project are considered in detail.

C. Findings

The majority of responses to questions relating to the valuation of impacts to the natural environment, did not identify this concern as a major issue. This finding could be viewed in a different light when one considers the comments received concerning the broader issue of evaluating and selecting appropriate mitigation and compensation options generally. Many respondents were not aware of any criteria being applied. Instead, it was their belief that an ad hoc approach was used in the process of formulating appropriate responses to impacts of the project. Thus, it is perhaps not surprising that the issue of the valuation of natural resources, as expressed above, was not described as a major concern. The question of a need for a

more systematic process for evaluating and selecting responses will be discussed under a section of new issues identified.

D. Suggested Research

Suggestions for further research can be summarized as follows:

- information concerning the value of involving the affected parties in this process, especially with regard to providing such parties living in a "traditional economy" with the opportunity of determining acceptable trade-offs

- an improved understanding of the workings of ecosystems

- development of amenity valuation techniques, which allow affected parties to place a value on potential impacts

3.4.5 Public Participation

A. Introduction to the Issue

Public participation in the review of a development project has become an accepted practice. The nature and extent of this involvement, however, remains an important issue. This is especially true in regard to the identification of impacts and the formulation, evaluation, and selection of mitigation and compensation responses.

The scope of the subject-matter of this issue is almost as broad as the review of the concepts of mitigation and compensation. The questionnaire addressed the timing, nature, role and effect of the public participation.

B. Summary of the Responses

One general comment summarized the responses to questions concerning the nature of public participation in the process of developing mitigation and compensation responses, "make it meaningful". While public participation formed a component of all projects examined, a number of non-proponents interviewed

expressed the view that, if the comments of the public are not truly being taken into consideration, then it is not worth doing.

The responses received indicated that public input was often requested at an early stage in the review process. This did not necessarily indicate, however, that the process was initiated early in the decision-making process. Instead, a common perception was that the opposite was in fact the case. That is, the input from the public was received at a time which precluded the inclusion of such comments in making project planning decisions. It is perhaps evident that the earlier the input is received in the decision-making process, the greater the ability to effectively and efficiently address the concerns of the public through the whole range of mitigation responses, including impact prevention.

The review of the responses received on this issue will first examine comments received concerning the role and effect of the public's participation in the review of the project. A couple of responses from non-proponents highlighted the importance of the scope of the terms of reference of the public participation will then be examined. In these circumstances, issues of need and alternatives to the proposed project were excluded from the scope of the review. In addition, a number of comments were received from non-proponents and proponents suggesting that the formal nature of the process should be changed. Finally, concern was expressed by non-proponents that avenues of intervenor funding

were uncertain, although such an aspect was often seen as a matter of right.

(i) Role and Effect of the Public

The questionnaire included two questions which addressed the role and effect of the public on the project. The two questions enumerated a list of project review stages which were designed to direct the comments on this issue more specifically. Respondents were asked to provide comments concerning the role of the public in the following:

- development of the project proposal
- identification of impacts
- reassessment of project need
- reviewing alternatives to the project or the project design
- formulation, evaluation and selection of mitigation responses
- formulation, evaluation and selection of compensation responses

Respondents were also asked to describe the effect of public participation on the following:

- scope of impacts considered
- scope and type of mitigation and compensation responses
- time frame of project development and approval

- cost of the project

The comments received regarding these two questions are helpful in demonstrating the nature of public participation processes as perceived by those directly involved.

(a) Role of the Public

The majority of persons interviewed noted that the public had a limited to no role in the development of the project proposal. The role of the public in successfully calling for a review of the original High Level Diversion proposal for the Lake Winnipeg Diversion Project was noted as a limited exception to this rule.

Most persons interviewed noted that the public did perform a significant role in the identification of impacts of the project to be addressed through mitigation or compensation. While this task was generally viewed as an accepted role of the public, it's successful implementation is not complete. For a couple of the projects reviewed, for example, the proponent and non-proponent gave polaric responses to this question, with the latter commenting that their role in this regard was minimal to non-existent.

A consensus did appear to exist with respect to the role of the public in re-assessing project need. That is, the public is

viewed as not having a role in this decision-making process. Further, many proponents noted that this decision was purely political in nature. Finally, some non-proponents did not indicate a desire to raise the issue of need as an issue due to their perception of the projects benefits as being necessary for the economic survival of the directly affected community. This issue will be reviewed in more detail below in a section reviewing responses to the issue of reviewing project need in light of net impacts.

The matter of a public role in the review of alternatives to the project or project design was also one in which a consensus existed that no such role existed. Such a limitation in the mandate of the public review was noted as having a significantly detrimental impact of the success of the overall process and will be discussed in more detail below.

Responses to the question of the role of the public in the formulation, evaluation, and selection of mitigation and compensation responses did not indicate any real trend. In certain cases, the belief was expressed that it is too early to judge how successful the public input was in this regard. Included among those who made this comment was the non-proponent for the Lake Winnipeg Diversion Project, which was one of the oldest projects reviewed. Although generally critical of the public review process, the non-proponent for the Site "C" Project felt that the public did a good job in challenging the adequacy of

the proposed mitigation and compensation options, but was uncertain of the effectiveness of such participation.

(b) Effect of the Public

A wide range of comments were received in response to a question regarding the effect of public participation on the scope of impacts considered. Many noted that the scope of impacts considered were widened. For example, the non-proponent in the Site "C" Project felt that the project would not have received the detailed examination it received had the public not participated in it's review. As was the case in regard to the responses received concerning the role of the public in the process of impact identification, discussed above, a couple of projects demonstrated a major divergence on this question between proponents and non-proponents on specific projects. This would appear to indicate a certain amount of dissatisfaction in the successful implementation of a perceived public role.

In regard to the effect of the public on the scope and type of mitigation and compensation responses, a general consensus did emerge. Most respondents to this question noted that the effect of the public was low to minimal. This is perhaps surprising, in light of the fact that no trend was indicated concerning the role of the public in the development of mitigation and compensation responses. An exception to the general consensus was expressed

by the proponent in the Norman Wells Project, who felt that the effect of the public in this regard had been significant. One non-proponent also felt that their participation had increased pressure on the proponent, at least with regard to compensation.

Most respondents asserted that the public had no effect on the time frame of the project development and approval, stating that this is a matter generally determined by the appropriate government body. Two significant exceptions to this trend should be noted. The two-year delay imposed on the Norman Wells Pipeline Project had a significant effect on the time frame of that project. Further, the non-proponent in the Site "C" Project asserted that the real effect of the public was in delaying the implementation of the project. The effect of the public participation was viewed as having a significant effect in the slowing of the project's momentum. In fact, it was the opinion of this respondent that the project might now be under construction were it not for the involvement of the public.

All persons interviewed noted that the effect of the public participation on the cost of the project was minimal to indeterminable. In those cases where respondents attempted to quantify this effect, the cost of the public's participation was significantly less that one percent of the capital cost of the project.

(ii) Terms of Reference of Public Review

The non-proponents interviewed for the Point Lepreau II and Site "C" Projects expressed the concern that a limited terms of reference for the public review created a process that seriously reduced the credibility of the process.

In the Site "C" Project, a limited terms of reference did not allow for the public to comment on how estimated energy needs could be met through alternative means, such as conservation. The non-proponent interviewed asserted that such alternatives should be viewed as a mitigative response in and of themselves.

To address this problem generally, the non-proponent for the Site "C" project was suggested that a fund be established and budgeted for in the overall capital cost of the project to establish a non-governmental committee. Appointments to such a committee would ensure with representation of proponent and non-proponent interests. This committee would have a specific mandate to develop a terms of reference which would be satisfactory to all parties involved in the process.

The terms of reference for the public review of the Point Lepreau II Project also did not allow for the consideration of alternatives to the project. The mandate for this review was, however, further restricted by the fact that a worst case scenario was not included. Finally, the whole issue of "need"

was removed from the scope of comments that would be considered. As a result, the non-proponent interviewed did not feel that their organization could participate in the process without implicitly accepting these assumptions which eliminated preventative mitigative options. Thus, this respondent and others boycotted the process.

According to the non-proponent, although excluded from review, discussion on the issue of need would have been difficult as the proponent to date has not determined the final design of the facility and, thus, the extent of power generation capacity expected to be created. As a result, the non-proponent stated that the whole of the project review may, on this basis alone, be irrelevant. Further, without a review of alternatives to the project, discussion of proposed benefits and impacts could only be assessed in isolation. For example, a statement that a certain number of jobs will be created by the project could not be compared to the estimated job creation attributable to alternative methods of power generation. As a result of a lack of comparative data, any examination of mitigation and compensation responses had no context. Finally, this respondent noted that the lack of relevance resulting from the limited terms of reference was further exacerbated by an inability to include the nature of potential impacts of a worse case scenario in the project review. A consideration of such impacts, while viewed important in all project reviews, was considered of even greater significance in this project considering the fact that nuclear

power was involved.

(iii) Formality and Presentation of the Public Review

A number of persons, when questionned as to how the public participation process could be improved, noted that it could be made more flexible and informal. Further, many asserted that the way in which the process was presented to the public could be improved.

Proponents and non-proponents noted that the current process is too formalized and did not allow for sufficient flexibility to respond to the specific needs of an affected community. The non-proponent interviewed for the Norman Wells Pipeline Project, for example, felt that the process could be improved through the provision of better accessibility to the affected native communities. It was also suggested that the nature of the process should made less formal, such as through the elimination of the cross-examination of witnesses. Further, a greater availability of translation services would be a valuable step toward achieving better accessibility to these communities. The proponents in the Atikokan and Hibernia projects both commented that each project is unique and the public participation process should be able to respond to this fact.

The proponent in the Hibernia Project felt that the public should

be better educated with regard to the nature of the participation available to them. Some education workshops were held in regard to that project and were viewed as being successful. It should be noted, however, that, as was pointed out by the non-proponent interviewed, much of the public was generally apathetic to the review of the Hibernia Project. The non-proponent for the Point Lepreau II Project, who did not participate in the public hearings because of the limited terms of reference, expressed concern that the limited scope of the public review was not effectively communicated to the public. As a result, expectations were not met in the long run in many cases. The proponent for the Site "C" Project supported the concerns of these respondents by noting that the public was often confused as to what dam site was the subject of the hearings. This confusion resulted in suspicion, especially among the local residents of the affected area. Generally, these commentators felt that without better education and communication concerning the review process, the public is presented with an overwhelming task.

(iv) Intervenor Funding

Intervenor funding was available in less than half of the projects examined, although non-proponents generally felt that it was a vital component toward ensuring a meaningful review. When funding was made available, the timing of its provision often created problems. For example, consultants would have to be hired upon speculation. While proponents often recognized the

need for intervenor funding, this was perceived as being a government responsibility. The non-proponent interviewed for the Site "C" Project, stated that funding was provided for that project, but noted that the enabling legislation has since been amended so that if a similar project was proposed today funding would not be available.

C. Findings

The responses indicated that the issue of public participation in the development of mitigation and compensation responses remains a vital one. In fact, it would appear that the effective role of the public, in the projects examined, was more limited than generally perceived. This is especially true with regard to earlier planning decisions, where the public tends to have little to no role.

One respondent, when asked what research would be helpful in furthering meaningful public participation in the development and approval of similar projects, stated that all the necessary research had been done. In the opinion of this respondent, what is needed is the political will to implement such participation.

D. Suggested Research

No further research was suggested other than as noted above in the summary of the responses.

3.4.6 Dispute Resolution

A. Introduction to the Issue

At the Ottawa workshop the use of negotiation, mediation, and other non-adversarial processes as a method of dispute resolution was identified as growing in popularity. In light of this trend, concern was raised with regard to a number of related issues. A perception was expressed that such processes may facilitate the consideration of a broader scope of mitigation and compensation options. A counter-balancing concern was expressed, however, that the scope of interests represented may be more limited than traditional processes. In this regard, a more specific concern was that, as the scope of the parties may be limited, the interests of the natural environment may not receive adequate representation at the bargaining table.

B. Summary of the Responses

Of the projects reviewed, only one applied a formal dispute resolution process. This was in the case of the Lake Winnipeg Regulation Project, in which mitigation and compensation responses are determined on the basis of the Northern Flood

Agreement (NFA). A number of other projects cited the use of what may be termed informal mechanisms. These included the Co-ordinator's Office in the Norman Wells Pipeline Project, a Community Advisory Committee established in the Hibernia Project, and a Community Liaison Committee used in the Swan Hills Project.

In light of the concerns noted above, persons interviewed were asked whether the process was viewed as flexible so that newly identified interests could be involved in the process. With regard to the formal process represented by the NFA, the respondents stated that it did not have such flexibility. The proponent described the parties to the dispute resolution process as being composed of those whose rights could not be expropriated. The non-proponent asserted that the parties to the process were those most affected by the project and subject to the broader concerns raised by the project, such as the matter of aboriginal rights. The informal processes were described by both proponents and non-proponents as being flexible. One non-proponent noted, however, that no public input was obtained concerning their composition.

None of the persons interviewed echoed the concern noted above that the interests of the natural environment may not be adequately represented as a result of limited representation in the dispute resolution process.

The effectiveness of the dispute resolution process is

establishing mitigation and compensation, as a result of the responses, is at best uncertain. Although the NFA governs the process of determining mitigation and compensation responses for the oldest of the projects reviewed, the affected party interviewed consistently noted that it was too early in the process to comment in regard to many of the issues addressed. The affected pary interviewed for the Norman Wells Pipeline Project asserted, however, that a similar dispute resolution process would have been a desirable tool in responding to the issues of land claims and related aboriginal rights. Finally, the affected party in the Site "C" project commented that a dispute resolution process would be valuable in determining the composition of the public review panel.

While few comments concerning the effectiveness of the informal dispute resolution processes were received, the affected party interviewed for the Norman Wells Pipeline Project expressed the belief that their function was more limited. In the opinion of this respondent, these informal processes represented by committees, such as the Co-ordinator's Office, were established more as a device to deflect public or political heat, rather than to facilitate the determination of mitigation and compensation responses.

C. Findings

While the issue of dispute resolution as identified was not drawn out in the responses received, the potential for conflicts to arise in many of the projects examined is very real. In this sense, it is not unlikely that, as many of the project examined have not been completed, dispute resolution will become more important in the future.

D. Suggested Research

Suggestions for further research can be summarized as follows:

- better public education of the nature of the negotiating process

- better processes to address transboundary issues

3.4.7 Re-Evaluation of Project Need in Light of Net Impacts

A. Introduction to the Issue

After the formulation, evaluation and selection of mitigation and compensation responses, residual adverse impacts will often exist which are not addressed by these planned responses. Concern has been expressed that, while these net impacts should be compared with the need for the project before implementation and potential benefits, such a final balancing does not in fact occur.

B. Summary of the Responses

The concern that this type of final reassessment is not being implemented was, on the basis of the projects examined, well founded. Such a final balancing of net impacts with project need or project benefits did not formally occur in any of the projects reviewed.

Specific responses to questions relating to this issue were varied. One non-proponent stated that the net impacts were not assessed because the project was welcomed for its benefits. The non-proponent for the Norman Wells Pipeline Project observed that

net impacts are not necessarily only concerned with the natural environment. This respondent stated that, while there were no major environmental net impacts, many of the affected parties were left with the feeling that they had been "burned". That is, that a social net impact resulted from the perception that the benefits of the project went south while the adverse impacts stayed north. Finally, one commentator noted that not all net impacts are created equal. The non-proponent for the Point Lepreau II Project asserted that, while there are thousands of net impacts, only one impact, the possibility of an accident, is important and should have been sufficient to challenge the perceived need for the facility.

C. Findings

There were, as noted, projects in which the need was re-assessed. For example the Atikokan Project was downsized and the Site "C" Project has been put on hold. There was no indication, however, from those persons interviewed that these decisions were based upon an assessment of the net impacts of the project. Instead, the consensus indicated that these decisions were more economic, or perhaps political, in nature. Further, it should be noted that not all the projects had the ability to downsize, as was done in the Atikokan Project. Thus, in this sense, it may be stated that the ability to address this issue is to some extent more feasible in certain industry sectors.

D. Suggested Research

No specific research was suggested in regard to this issue.

3.4.8 Post-Project Responsibilities

A. Introduction to the Issue

In light of the limited nature of prediction techniques, monitoring becomes an important element in the identification of impacts requiring mitigation and compensation responses. All impacts of a project will not necessarily become evident upon completion of construction of the project facility and, thus, it is often necessary to continue such programs during the lifetime of the project. This requirement raises certain issues concerning post-project responsibilities, which was the subject of much discussion at the Ottawa workshop. As a result, this general issue was identified by the Committee as one requiring further exploration.

A specific post-project issue identified at the Ottawa workshop concerns the ability to learn from past mitigation and compensation efforts. Through post-projects audits of mitigation and compensation responses, many believe that much can be learned regarding the success of such responses that may be applied to future projects faced with similar impacts.

Another specific post-project issue raised at the Ottawa workshop

concerned the ability to settle disputes which may arise upon completion of the project. There is a concern that without the presence of a dispute resolution mechanism, many important issues that were not identified at the pre-construction stages will remain unresolved.

B. Summary of the Response

Respondents were specifically asked whether they had a continuing responsibility for the project. With the exception of those projects which will not be proceeding, all respondents replied to this question in the affirmative. The most common responsibility described was with respect to monitoring. Other on-going responsibilities noted included education, surveillance, and community consultations.

(i) Mitigation and Compensation Audits

For those projects that were constructed, all respondents agreed that post-project audits were a valuable tool in advancing the management of future projects. In fact, the non-proponents for the Norman Wells Pipeline and the Point Lepreau II Project described them respectively as being "crucial" and "a critical tool". Further, there was a general consensus that such assessments should be performed by an independent body. The proponent for the Hibernia Project noted that attention should be

made to ensure that such reviews are properly scoped. Finally, the affected party in the Point Lepreau II Project commented that provision should be made to ensure that adequate resources exist to fund post-project audits. In this regard it was stated that this task is left to government departments who do not have sufficient resources to adequately complete the work.

(ii) Dispute Resolution Mechanisms

Only two of the projects examined established formal post-project dispute resolution mechanisms. The Northern Flood Agreement (NFA) included an arbitration process and the proponent for the Norman Wells Pipeline Project established a compensation policy to address trapline losses. The parties in the Hibernia Project are currently in the process of negotiating a compensation policy, which could address a number of post-construction losses, should the project go ahead.

The arbitration process included in the NFA has been the subject of much frustration for the affected party interviewed, who commented upon the fact that it was a very slow process. This respondent noted that the process has been in place for eight years but there have not been many final decisions and none dealing with the major issues, while others have been settled out of court. The compensation policy developed by the proponent in the Norman Wells Pipeline Project has been relatively little

used.

The non-proponent in the Lake Winnipeg Regulation Project noted that they have taken on the task of complience monitoring. The NFA, other than the arbitration mechanism, does not include any enforcement provisions and does not require a regular review of the status and obligations of the parties. This is perceived by this respondent as a limitation and, thus, the need for complience monitoring was viewed as a potential response to some of the shortfalls of the Agreeement. Commenting on the Point Lepreau II Project, the afffected party noted that it important to ensure that someone is given the responsibility to oversee that suggested mitigation and compensation responses are implemented. This respondent noted that certain required responses for the first Point Lepreau facility have still not be completed. This created a degree of mistrust with the public in regard to the review of the second facility. To ensure effective implementation of this responsibility, This respondent stated that an independent body with some form of regulatory power is preferable.

C. Findings

There appeared to be an acceptance that the identified issues concerning post-project responsibilities were perceived as being important ones to address. As noted, all parties generally

veiwed themselves as having a continuing responsibility of the project. Further, there was a great deal of agreement with respect to the value of post-project audits, although in practice they are quite rare. Thus, the reason for the lack of post-project audits would seem to be based more on a lack of will than a dispute concerning their value. Finally, there does appear to be a perceived need for some form of complience or dispute resolution mechanisms. Presently, however, these mechanisms are not common and often established on an ad hoc basis.

D. Suggested Research

Suggestions for further research can be summarized as follows:

- methods to better co-ordinate post-project research and monitoring to ensure that it creates a valuable data base

- toward the assessment of the effectiveness of measures to avoid predicted impacts

3.4.9 Other Identified Issues

A. Introduction

Throughout the questionnaire, respondents were asked to identify other issues of concern which were not specifically addressed. Two such issues were identified and addressed by a number of respondents.

The first of these issues concerned the lack of an expressed criteria or other process for the evaluation and selection of appropriate mitigation and compensation responses.

The second of these issues concerned the matter of cumulative impacts and the ability to address such impacts within the process of developing appropriate mitigation and compensation responses.

B. Evaluation and Selection Criteria Mitigation and Compensation Responses

In response to the question, if the project was to be reproposed, what would be done differently, one proponent stated that:

> a systematic process for gathering, organizing and evaluating information for all issues is needed to solve problems and make sound decisions.

Other respondents, when asked what would be done differently with respect to the formulation, evaluation and selection of mitigation responses responded that they were not aware that it was being done in any form other on an ad hoc basis.

A comparison of the responses to the questionnaire from the proponent and affected party involved in the Norman Wells Pipeline Project demonstrated a trend of internalizing any evaluative and selection criteria that may have been applied. The proponent for this project stated that the criteria applied in the evaluation of mitigation responses was based upon three components. They were firstly, their experience, as well as that of consultants and the government; secondly, reviews of relevant literature and other research; and thirdly, practicality based upon the location, the environment, available resources, and access. This respondent stated that the "most effective" mitigative options were selected and, if two equally effective responses were available, then the least expensive option would be selected.

When asked about the process of evaluating and selecting mitigative responses, the non-proponent for the Norman Wells Pipeline Project commented that to their knowledge no general

specific criteria existed. Thus, this respondent felt that, if such a criteria was applied, then it was done so internally. Further, it was the belief of this commentator that the process of evaluating and selecting mitigative options was more of a political exercise. That is, if an issue was identified as "hot", then efforts were made to at least create the appearance that it was being addressed.

Other proponents described very loosely structured criteria for evaluating and selecting mitigative responses. For example, one proponent interviewed stated that, based upon consultations with the affected parties, the "least disruptive" design option would be selected. Another proponent simply stated that the process was based upon professional judgement using available information. Expanding upon the use of a similar criteria, a proponent noted that continuity in personnel and the personal dynamism of a planning co-ordinator assisted in making the process a success.

From the responses received, it is clear that often the criteria applied to the evaluation and selection of mitigation and compensation responses is loosely structured. Further, even where such a vague criteria is applied, it would appear from the comments that it is rarely communicated to the affected parties. The result of this failure of communication is that the affected parties operate on the assumption that the evaluation and selection process is primarily self-serving in nature.

C. Cummulative Impacts

The matter of addressing cumulative impacts through the process of developing mitigation and compensation responses to impacts of a project was specifically addressed by the proponent of the Hibernia Project and the non-proponent in the Point Lepreau II Project.

In light of the size of the offshore hydrocarbon reserves that have been identified in the area, the Hibernia Project was described by the proponent as likely being only the first of similar resource development projects through the starting gate to take advantage of the reserves in that area. In formulating mitigative responses, however, this respondant noted that only impacts arising from the construction of one platform in one location in the province were considered. While it was accepted that the review of any such later projects will benefit from the studies conducted during the review of the Hibernia project, this respondent expressed concern that potential additional stresses to the area resulting from subsequent developments were not initially considered.

Concern with the implications of not addressing cummuative impacts was also noted by the affected party in the Point Lepreau II Project, who expressed the belief that a project specific

approach to the scoping of impacts requiring mitigative responses was "myopic". In the context of developing a large scale facility, this respondant noted that it is a mistake to assume that additional industrial developments in the Bay of Fundy will not increase the impacts of existing industry in that area. Instead of a project specific review, it was suggested that an area-wide examination of impacts should form the basis of determining the scope of impacts to be addressed. It was further asserted that such an area-wide context should be built into a general project review criteria.

CANADIAN ENVIRONMENTAL ASSESSMENT RESEARCH COUNCIL

MITIGATION AND COMPENSATION ISSUES

IN THE EIA PROCESS

A Background Document for Roundtable Discussion

David Scriven
June, 1986

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1. INTRODUCTION

The Canadian Environmental Assessment Research Council (CEARC) is a body established to advise on ways to improve the scientific, technical and procedural basis for environmental impact assessment. CEARC perceives environmental impact assessment (EIA) as a planning component which takes account of the ecological and related social implications of development activities. While it is recognized that the EIA process is viewed in a variety of ways, depending upon one's orientation to the process, the goal of CEARC is to break out of the discipline or sector related approach. The Council's stated objective is to "support and promote integrated research in a manner which improves the effectiveness of EIA as part of comprehensive planning and management."

Towards this end, CEARC has identified a number of broad areas of research interest which encompass methodological, procedural and institutional dimensions of the problem. Included within these identified areas are mitigation and compensation. This area is viewed as an emerging research theme in environmental assessment in which a number of new and innovative ideas are being explored. In addition to encouraging a greater understanding of these ideas through integrative research, CEARC will take an active role in support of their development and trial application. Through the formulation of a research prospectus on mitigation and

compensation, CEARC intends to identify and prioritize those ideas towards which its future efforts will be focussed.

In developing a document concerning mitigation and compensation, CEARC is very much aware that all interests must be addressed so as to ensure the ultimate effectiveness of their initiatives. A roundtable discussion is planned to be attended by a cross-disciplinary selection of persons involved in all aspects of mitigation and compensation within the EIA framework. Thus, all orientations to the environmental assessment process are ensured a role in establishing a research agenda.

As a vehicle towards a focussed discussion at the workshop, this background paper is intended to provide a framework within which an exploration of the major issues needing resolution in the area of mitigation and compensation may be accomplished. A synthesis of the dialogue canvassed at the workshop and the background paper will form the basis of CEARC's Research Prospectus on Mitigation and Compensation. While the background paper attempts to delineate broad areas of discussion in a comprehensive format, it must be emphasized that the participants are encouraged to expand the scope of issues addressed. The ultimate purpose of this background paper is to utilize the knowledge and experience of the participants to assist CEARC in forming its agenda formitigation and compensation in the EIA context.

2. DEFINITION

The logical place to commence a discussion of a concept is to ask: what is it? A definition of evolving terms such as "mitigation" or "compensation" do not, however, exist in a vacuum. Many people have different views concerning there form and function and this divergence is reflected in there definition. This perspective of mitigation and compensation as value laden concepts raises the need to address a more basic issue. That is, within the context of the environmental assessment process, the identification of the underlying objectives of mitigation and compensation.

The objective of mitigation should not be dependent upon which party within the process is asked. Indeed, the need for mitigation is premised upon the fact that the players come to the table representing different interests. To illustrate the point, consider how a naturalist would view mitigative measures which address certain perceived impacts of a resource development project but do not reduce impacts which place serious hardship upon an endangered species. In this situation, the naturalist is unlikely to feel that mitigation has served a valuable function. In the environmental assessment of any project many divergent interests will be presented seeking a mitigative response to their perceived impacts. Clearly, mitigation cannot singularly address one or a select few of the interests expressed. Instead,

it is the essence of mitigation to attempt to address as many of the interests advocated as is feasible. Realistically, mitigation is not so comprehensive as to allow a response to all interests, but to the extent that all compelling views are considered, the concept of mitigation will continue to serve a valid function.

The role of compensation in the EIA process is still relatively undefined as a result of its limited application. While the concept has a history of varied forms and functions, underlying all expressions of the concept are the basic objectives of fairness and equity. Thus, the challange facing all persons involved in the meshing of the concept of compensation with the environmental assessment process is the need to use a creative approach that does not lose sight of these underlying objectives.

The concepts of mitigation and compensation will be examined individually in an attempt to clarify their general nature and manifestations within the EIA process. The issue of their interrelationship will then be canvassed. Finally, the implicit subjective nature of the objectives of mitigation and compensation will be examined in an attempt to more clearly define the goals, functions and rationale of the two concepts.

2.1 Concept of Mitigation

In the most general terms, mitigation can be viewed as a planning and management tool to facilitate the integration of natural systems, social values and development initiatives in an integrated process. A knowledge of the basic objective of the concept of mitigation allows discussion of its definition and exploration of the ways in which the various interests sought to be protected may be enumerated. In the course of the examination of the definition of the concepts of mitigation and compensation, examples of legislative or policy examples will be drawn primarily from four sources. This is not intended to be an indication of a limited scope of such examples, but rather as a random attempt to illustrate their nature in summary fashion.

The regulations of the U.S. Council on Environmental Quality cite the following definition of "mitigation":

(a) Avoiding the impact altogether by not taking a certain action or parts of an action;
(b) minimizing impacts by limiting the degree or magnitude of the action and its implementation;
(c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
(d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
(e) compensating for the impact by replacing or providing substitute resources or environments.

The inclusion of the concept of compensation as a part of the definition of mitigation, raises the issue of the interrelationship of the two concepts. This topic will be explored in detail below. As a general rule, Canadian

authorities define the two terms separately. Ontario Hydro's working definition reads:

> "mitigation" is any activity that will eliminate or reduce the severity of the adverse environmental effect, or that will provide offsetting benefits.

The British Columbia Environmental and Social Impact Compensation/Mitigation Guidelines definition is as follows:

> "mitigation" refers to measures taken in the planning, construction or operation of a project with the specific objective of avoiding or reducing adverse environmental or social impacts

Hydro-Quebec's definition of mitigation is simply "(m)easures intended to reduce or otherwise manage the impacts of an activity." The government of the Northwest Territories in a Directive addressing renewable resource compensation uses the B.C. definition of "mitigation" noted above.

The definitions noted above generally refer to different results derived from mitigative measures. A related issue concerns the point at which such measures are considered part of a basic project design as opposed to mitigation. This line has been described as the delineation of a base case. It has been suggested that through a narrow definition of mitigation, environmental conservation practices will be encouraged within various resource development sectors because they would not receive credit as mitigative efforts. In other words, today's mitigative measures may become tomorrow's standard accepted practice. The British Columbia Environmental and Social Impact Compensation/Mitigation Guidelines do not specify a base case,

stating that "(i)t is the merits of the measures, not how they are presented, which are of paramount concern." Clearly, the issue of a base case demonstrates that there are different types of mitigation, such as "statutory" and "negotiated", which are in part determined by the nature of the applicable definition.

FOR DISCUSSION

Are the differences in the definitions noted above significant?

Is there a need for an authoritative definition?

What are the important elements that should be included in such a definition?

To what extent, if any, should a base case play a role in defining mitigation?

2.2 Concept of Compensation

While the idea of compensation has existed for centuries within our traditional legal system, it is a relatively new concept within the context of environmental impact assessment. The common law provided a basis for dispute resolution in an expanding commercial society through which damage to tangible interests, such as property rights or personal injury, could be remedied. Through the mechanism of judicial precedent, various common law doctrines developed in which the nature of the interest protected and the causal link necessary to establish liability were more narrowly defined. In response, many common law forms of compensation have been expanded or replaced by statutory schemes. By statute, the nature of liability has often been expanded to include strict or absolute liability. In the former case, the legislature has supplanted the common by providing certain enumerated defences that are available once the subject act or omission has been established. Other statutory schemes have shifted the traditional onus of proof away from the aggrieved party. Finally, many legislated compensation schemes have expanded the nature of interests which are considered compensible, such as pure economic loss which is generally not available at common law.

While compensation for interference with private property rights has been accepted as a part of major resource development projects for some time, the more liberal approach to the concept,

as evidenced by statute, has yet to be formally accepted within the environmental assessment context. In fact, it may be fair to say that in certain situations a general reluctance to make reference to compensation in this latter sense exists for fear of setting a precedent establishing the concept as an equal component to mitigation. Thus, one of the major underlying issues facing this area of study is the degree to which entrenchment of the concept of compensation within the decision-making framework is desirable and achieveable.

As was the case with the concept of mitigation, an examination of the definition of compensation highlights the different forms the concept may take in the EIA process. Ontario Hydro uses the following working definition of the concept:

> "compensation": is reparation through monetary payment or settlement.

The British Columbia Environmental and Social Impact Compensation/Mitigation Guidelines use the following definition:

> Compensation refers to payments (in cash or in kind) which are made by the developer (or party responsible) with the objective of redressing or offsetting the losses which occur despite or in lieu of mitigation efforts.

Hydro-Quebec does not refer to the concept of compensation in its Environmental Policy but instead uses the term "enhancement" as a complementary measure to mitigation. The Environmental Policy states that:

> (e)nhancement renders most, but not all, of the connotations of "mise en valeur", which can also

> suggest environmental initiatives of a development or conservation nature (recycling paper, for example). The widest definition is intended. In some instances "improvement" best renders the intended notion.

The U.S. Council on Environmental Quality definition of "mitigation", referred to above, includes as part of its definition of mitigation "compensating for the impact by replacing or providing substitute resources or environments."

As a general rule compensation within the environmental assessment context may take three forms. The first is the most obvious one in which an impact is assessed and given a value in dollars which then forms the basis of a monetary award to the impacted party. The second form is replacement in kind, in which an attempt is made to substitute an environment for one eliminated by a development project. An example of this form of compensation may include the construction of a sports complex to replace recreational activities lost as a result of flooding. The third form, enhancement, is one in which an impacted resource is not completely lost as a result of a development and, thus, may in some way be improved so as to compensate for adverse impacts. The clarity of these distinctions is, however, blurred in light of Hydro-Quebec's broad concept of enhancement. Further, the distinction between mitigation and compensation is challenged by the inclusion of both concepts within the encompassing definition of the U.S. Council of Environmental Quality.

FOR DISCUSSION

Are the differences between the definitions of the concept of compensation significant?

Is there a need to delineate and prioritize any perceived distinct forms of compensation?

Is an authoritative definition of the concept of compensation within the environmental assessment context desirable?

What are the necessary or important elements that would be included in such a definition?

2.3 Interrelationship of Mitigation/Compensation

One may say that the concepts of compensation and mitigation may be distinguished by examining the intent of the proposed action. If one is trying to avoid or reduce a perceived impact, then such a measure may be categorized as mitigative in nature. On the other hand, if one is attempting to redress a perceived impact

that cannot be avoided or further reduced, then such a measure may be characterized as compensatory in nature. A vital issue which must be addressed is the question of when one may stop thinking prevention and start considering compensation. It may be trite to say that mitigation should at least be considered in priority, however, it is far from clear whether as a principle it should be necessary to exhaust all possible avenues of mitigation before measures to redress residual impacts can be considered. In a more practical sense, the question of the appropriate timing within the EIA proces of the consideration of mitigation and compensation issues is a vital one.

The B.C. guidelines referred to above state that compensation may occur "despite or in lieu of mitigation efforts" and further notes that a trade-off exists between the two concepts. The guidelines state that:

> (t)he more mitigation, the less resource and social loss and therefore the less compensation is required. By the same token, in some cases it may be more efficient to have less mitigation and pay more compensation, because....the costs [of] mitigatory measures greatly exceed their benefits.

A concern that has been expressed is that without a distinct line drawn between mitigative and compensatory measures, adverse impacts of a development project may be addressed by 'chequebook diplomacy'. Premised upon the idea that persons directly effected by a project are more likely to object to impacts affecting the physical environment, the concern is that the

social impacts on that community may be compensated at the expense of adverse impacts upon the natural environment.

FOR DISCUSSION

To what extent is it considered necessary to delineate the concepts of mitigation and compensation within the EIA process? How can such a delineation be facilitated?

Should mitigation be a pre-requisite to discussion of compensation in the EIA process? If so what form of threshold may be appropriate?

How can the concerns of 'chequebook diplomacy' be addressed within the environmental assessment framework?

2.4 Goals, Function, Rationale

The need to identify the goals, functions and rationale of mitigation and compensation is important for more than just a better understanding of the concepts. Without an awareness of

the underlying objectives of mitigation and compensation, their ultimate value will be undermined. Of central relevance to such an examination is the need to ensure that the issue of whether a justifiable need for a subject project exists is not supplanted by the question of which mitigative or compensatory measures appear appropriate. That is, the concept must not become an end within itself, instead the issue of need for a project should be established before mitigation or compensation issues are addressed. Such an approach allows for the implementation of the more general objective of achieving sustainable development. A better understanding of the specific goals, functions and rationale which serve this end is the vital task which confronts all persons responsible for the creation and implementation of mitigation and compensation policies.

One of the often cited goals of mitigation is the desire to redress regional disparity. The line of reasoning used is that a resource development which seeks to address a need of a province as a whole leaves one region absorbing a disproportionate share of the resulting impacts. Where these impacts are perceived as adverse in nature, the accepted view is that they should to some degree be mitigated. Underlying this approach is the proposition that the impacted region or group shares the same goals or needs and thus shares the benefits of such a development on an equal basis with the whole province. Whether this proposition is in fact true is often difficult to determine and is at best uncertain.

The fact that we live in a dynamic society ensures that the application of mitigation measures to a development project may be viewed as being largely subjective in nature. This observation may be illustrated through two general examples of divergent lifestyles: modern/traditional and urban/rural. The former contrasts the goals of a modern society, dependent on new sources of energy to keep the wheels of progress in motion, and the aboriginal people, who view the natural environment as an integral and equal component in their traditional lifestyle. This disparity gives rise to many fundamental questions. Did the aboriginal people share the need for newly developed sources of power from hydro-electric development projects in the north with the rest of society? Did they share in the benefits? The latter question is highlighted by a recent Globe and Mail article that found that Cree Indians in Rupert House were still dependent upon a diesel generator, while in other areas of the north available electricity is very expensive.

A similar divergence may be seen between urban and rural lifestyles. The siting of a hazardous waste landfill site is an example of a situation in which rural regions are often asked to accept the costs of activities which are not always perceived as benefitting any interests other than urban needs. The loss of farmland to expanding urban centres is another illustration of this potential conflict. The obvious need for sustainable food production clearly emphasizes the fact that to ignore the

concerns of a part of our society ultimately may be detrimental to the whole.

The nature of the goals, functions and rationale of mitigation and compensation will determine its application. A distinct society or region is not likely to have perceived impacts made the subject of mitigation and compensation responses when these impacts are viewed subjectively as benefits. The objective of addressing regional disparity is but one of a number of viable objectives of mitigation and compensation. It does, however, highlight the fact that many of its goals may be subjective in nature. If this is not recognized, then, rather than serving such functions as redressing regional disparity, certain distinct groups within society will instead become disenfranchised by the process. In turn, mitigation measures will become simply a matter of going through the motions.

Another proposed function of mitigation and compensation programs may be seen as the logical extention of the attempt to address the regional disparity of impacts. A model which is designed to address the issue of perceived risks was recently suggested by Burton and Pushchak for the siting of low-level nuclear waste facilities. They state that:

> compensation to communities for risk is the logical extension of compensation for social and economic impacts, particularly for radioactive waste disposal facilities, since perceived risk is the major social and economic impact of such facilities.

Their model would alter the conventional siting process after the selection of a set of suitable candidate sites by allowing candidate communities to negotiate an incentives package. The final selection would be the site that would provide "a least cost location for the facility."

One commentator notes that there is some doubt as to whether such a model would achieve in practice its goal of distributive justice. One expressed concern is that competing groups within the community may cause a misrepresentation of the perceived risksin order to obtain the facility. That is, that less powerful groups in the community may not wish to accept the risk but will not have any influence in the negotiation process. Another concern arises from the issue of how such communities would be able to assess the risk so as to determine the nature of the incentive package offered in the negotiation process. This is a drawback to conventional models as well, as communities are required to review voluminous data detailing the assessed risks.

FOR DISCUSSION

What specific goals, functions and rationales are viewed as complementary to the central objective of facilitating sustainable development through mitigation and compensation policies or programs?

How can such goals be addressed in a manner which recognizes and modifies or otherwise balances their inherent subjective natures?

Is the compensation of perceived risks a desired objective of the mitigation and compensation process? If so, what are the underlying ethical problems of such an approach and how may they be addressed in light of the above discussion?

3. IMPLEMENTATION

This examination of the issues arising from the implementation of mitigation and compensation programs within the EIA process will focus on four general issues. First, the need for specific jurisdictional policy statements concerning mitigation and compensation will be examined. Second, two models of implementation and their advantages and disadvantages will be reviewed. Third, issues relating to the mechanisms used to trigger the process and the scope of application of mitigation and compensation programs will be raised. Finally, methodologies by which impacts are measured and prioritized, including the difficulties of placing a value on the physical environment, will be explored.

3.1 Guidelines

In light of the fact that mitigation and compensation is viewed as an emerging theme in the environmental assessment process, it is not surprising that federal and provincial policies or guidelines are rare. The only province to specifically document mitigation and compensation and their role within its EIA process is British Columbia. This is by no means an indication that the two concepts do not play an important role in the remaining provinces and territories. Rather, it is a matter of identifying

and addressing mitigation and compensation directly rather than responding to similar issues within the broader context of the environmental impact assessment and review process.

While the majority of the provinces implement the concepts of mitigation and compensation on a project specific or generic basis, many development sectors, such as hydro-electric corporations, have developed their own guidelines. It is not certain to what extent such industry standards are the result of discussions within and outside their sector. It is also not clear to what extent, if any, such industry standards affect the impetus for jurisdictional mitigation and compensation guidelines. The Province of British Columbia has taken a major step towards recognizing the concepts of mitigation and compensation in the environmental assessment context. Is this a future trend or is it a unique development premised upon that jurisdiction's EIA framework?

FOR DISCUSSION

Is the establishment of a formal policy on mitigation and compensation viewed as a necessary element of the future development of the EIA process?

What goals or objectives are perceived as supporting the establishment of specific guidelines for mitigation and compensation?

Do existing policies or guidelines serve those goals or objectives? If not, what methods may be used to facilitate their achievement?

To what extent would a continued dialogue between those responsible for the creation of guidelines be beneficial and how may this be facilitated?

3.2 Regulatory v. Contractual Models

Although examples which predate the formal development of the EIA process, such as the Northern Flood Agreement, were contractual in nature, the most common method of governmental response to the social and environmental impacts of development projects is through regulation. There is, however, a growing trend towards a deregulation of the environmental assessment framework, both internationally and in Canada. The Massachusetts Hazardous Waste Facility Siting Act of 1980 is one example of recent U.S. legislation requiring a project proponent to negotiate a

mitigation and compensation agreement with the locally impacted community. In Canada, Ontario Hydro's Community Impact Agreements serve as a model for negotiated mitigation and compensation agreements. Another recent example is the agreement negotiated between Dome Petroleum Limited and the Lax KW'ALAAMA Band Council of Port Simpson which was filed with the National Energy Board and made a condition of the Certificate of Public Convenience and Necessity to be issued by the Board for Dome's proposed liquid natural gas facility. A Canadian legislative example of an EIA scheme requiring mandatory negotiated compensation agreements is the Northwest Territories Policy and Directive on Renewable Resource Compensation.

Advocates of the contractual model present a number of arguments in favour of the deregulation of mitigation and compensation responses in the field of resource development. A negotiated agreement will allow for the direct inclusion of those interests that are directly impacted and, thus, reduce their perception of powerlessness within the EIA process. The increased flexiblility available in the contractual model enables the use of a responsive rather than a predictive approach to the selection of appropriate mitigation and compensation measures. The implicit predictive nature of the traditional environmental assessment process has often been cited as a major shortcoming, especially with respect to northern development projects where the paucity of baseline data on arctic ecosystems makes such an approach tentative at best. The idea of a bargained agreement, it is

further argued, facilitates the degree to which all parties comply with the negotiated terms. Inclusion within such an agreement of an arbitration mechanism, as was done in the Northern Flood Agreement, allows the parties access to a streamlined enforcement process outside the judicial or political forums.

One drawback to the contractual model has already been alluded to in the above discussion concerning the interrelationship of mitigation and compensation. The concern of 'chequebook diplomacy' may arise when no definable party to the negotiation process is vested with the protection of the physical environment as its mandate. Thus, local community impacts of a social nature may be addressed at the expense of adverse effects upon the physical environment because no party is advocating their inclusion in the agreement. A similar concern arises if all affected social interests are not parties to the agreement. An example is the non-inclusion of Dene, Metis or Inuit who have not settled land claims in the renegotiation of mitigation and compensation agreements for northern development projects. A further issue is the possibility of 'community extortion'. A proponent who is mandated to obtain an agreement with an affected community may be forced to implement mitigative or compensatory measures which are not related specifically to the development project so as to obtain community assent. Such concerns are highlighted if the proponent is committed to a particular site or timetable of implementation. A final issue relates to the

potential emphasis of local impacts to the exclusion or reduced attention of broader secondary impacts. This matter will be more fully discussed below with regard to the scope of mitigation and compensation programs.

FOR DISCUSSION

Is the trend toward a contractual rather than a regulatory model for the implementation of mitigation and compensation measures one which should be further examined and developed within the EIA process?

If a contractual model for implementation is considered desireable, what elements are considered necessary to avoid any perceived limitations?

3.3 Triggering and Scope of Application

Most would agree that any form of development will result in some form of impact on the environment in the broadest sense. It is perhaps equally true that most EIA schemes accept that such a wide application of mitigation and compensation measures is not

possible due to prohibitively high administrative costs. The issue of when the nature or degree of a perceived impact is sufficient to trigger mitigation and compensation responses within the EIA framework is a central one. The British Columbia guidelines state that mitigation and compensation should be "considered only for those projects which could have major impacts and for which mitigation and compensation measures could have significant efficiency and equity effects." Another example of the description of a triggering threshold is found in Hydro-Quebec's Environmental Policy which states that the Corporation "manages the significant environmental impacts of its activities by all practical mitigation measures. The term "significant" is interpreted in the following manner:

> Impact, effect, implication or resource that is of material importance to the decision-making process. In environmental evaluation, significance is based on:
>
> institutional recognition (law, policy,official practices), or
>
> public recognition (customs, traditions, preoccupations, concensus),
>
> or
>
> technical considerations (scientific or technical criteria).

Once a triggering threshold is determined, the nature of the scope of considerations that must be addressed becomes a determinative issue.

Assuming that a development project is deemed to be "major" or "significant", how far is one required to follow the trail of the impacts? Such a question raises the issue of the extent to

which political jurisdictions may act as artifical barriers to a systemic approach to mitigation and compensation. For example, Canada, the United States and Russia share the clockwise currents moving around the Beaufort Sea. To what extent must a Canadian environmental assessment of the impacts of northern development in the Beaufort Sea address international concerns in defining appropriate mitigation and compensation responses? The Hibernia Development Project with a location in the Grand Banks that has been characterized as an "ornithological crossroads" in the northwest Atlantic which Canada has an international obligation to protect under the Migratory Birds Convention is another example of this scoping concern. Similiar potential conflicts arise from the often divergent mandates of the federal, provincial and territorial governments. Efforts are underway to address these issues. In the international forum, the OECD has issued and updated guidelines specifically related to the EIA process. On the national scene, recent proposed amendments to the Canada Shipping Act, are in part designed to mesh the present compensation fund for oil spills with international compensation funds established through convention.

FOR DISCUSSION

Is it necessary or desireable to have some form of threshold within the context of the EIA process so as to practically limit the impacts which trigger the need for mitigative and compensatory responses? If so, what are the objectives of such an approach and how may their achievement best be ensured in their implementation?

Is it desireable or possible to attempt to overcome impediments to mitigation and compensation efforts caused by political boundaries?

3.4 Methodologies

The implementation of mitigation within the environmental assessment scheme is generally a two step process. First, the perceived impacts of the project and the offsetting benefits of proposed mitigative measures must be measured. Second, the measurement data together with the estimated cost of the proposed impact responses is fed into some general formula which will serve to assist in prioritizing the mitigative options. Economic analysis enters the discussion at this point, although alternative or cooperative theories are gaining acceptance.

One of the generally perceived difficulties in using economic theory to measure the loss of social or natural resources is that they are not valued in the marketplace. One method of responding to this deficiency is the artificial placement of such resources into a theoretical market which attempts to provide them with an economic value. The British Columbia Compensation/Mitigation Guidelines, for example, adopt economic principles which "simulate the results of a system in which all resources were privately held." Within this context, these guidelines include the following principle:

> Measurement: The concept of opportunity cost (alternative value foregone) should be used to establish values for environmental losses or social costs. The techniques used to measure opportunity cost will vary depending on the nature and type of impact or loss. For example, to measure the opportunity cost of a resource loss, one would estimate the net value of that resource (the economic rent) in its best alternative use, or in the case of multiple use resources (e.g. land), in its best combination of uses which are mutually compatible . . .

Similar methodologies in different jurisdictions, in an attempt to address this problem, seek to determine the prior revenue generated through recreational activities which occur within the impacted environment or quantify the question: how much are you willing to pay to maintain a threatened resource?

In addition to the artificial nature of applying economic theory to value resources, there remains the issue of whether certain resources are open to any method of valuation in economic terms. Economic valuation inherently requires that a resource have some

form of predetermined use or function within the "market". In this way non-exploited resources become "useless" and thus of nominal economic value. As a result of this limitation of economic valuation, a question remains as to how a value may be placed on resources that are valueless in economic terms but in social or political terms are necessary to protect and preserve.

The continued use of economic theory to value resources is in part based upon the fact that those persons involved in the EIA decision-making process are more comfortable and familiar with its terminology. Yet the process is clearly artificial, anthropocentric and does not in any way reflect the true value that a resource may hold as a component within an ecosystem. Alternative methods of valuation do exist, such as an ecologically-based approach referred to as bioenergetics ecology which equates economic activity to energy flow and use. Although there appears to be a general awareness that economic theory cannot answer all valuation issues within the environmental assessment process, there appears to be little development of alternative methodologies which would more realistically express a resource value in environmental terms.

Economic theory will continue to play a role in the second stage of implementation, that is the prioritizing of mitigative and compensatory responses to perceived impacts, as long as the cost of the proposed measures is included as a consideration.

Examples of economic formulae used at this stage include cost/benefit analysis and cost/efficiency analysis. There is, however, a school of thought which advocates that all impacts must be mitigated, or alternatively compensated, regardless of cost. While this approach has gained limited acceptance in Europe, in Canada, the cost of mitigation measures remains to varying degrees a consideration in the EIA decision-making process.

Ontario Hydro's Mitigation of and Compensation for Adverse Environmental Effects Corporate Policy, after noting that legislative requirements must be achieved, states that mitigative measures must be such that they are "reasonably achievable". That term is interpreted as including "activities or performance levels that can be accomplished within an appropriate time frame and at a cost that is justifiable in relation to the resulting benefits." The British Columbia guidelines state that:

> mitigation should only be undertaken if the present value of the benefits exceeds the present value of the costs (e.g. the net present value is positive). If a range of alternative measures is being considered, that measure which offers the highest net present value should be selected.

The term "present value" is not defined in the Guidelines, but may be described as the amount of money that, if invested today, would provide an equivalent stream of income over a chosen period of time. As there is no one current rate of interest on investments, the rate at which one must borrow money is generally applied. Hydro-Quebec's Environmental policy in regard to the

Means of Implementation of Mitigation includes the following statement:

> Hydro-Quebec gives preference to mitigation measures promising the greatest benefits (degree to which target impacts will be mitigated), taking into account the technical feasibility, cost and environmental impacts of the measures considered.

The last reference highlights the concern that secondary effects of proposed mitigative measures be included within any evaluation and decision-making process. In prioritizing mitigation measures, one must be aware of possible impacts which may flow from the measure itself. Secondary impacts may, in fact, transfer a direct impact of the development to a different region or community and, thus, defeat the original purpose of implementing the measure.

FOR DISCUSSION

What alternatives exist to economic based evaluation methodologies? If viable, what impediments are perceived to the development and implementation of such alternatives within the EIA process?

The methods of prioritizing by cost/benefit and cost effectiveness have been referred to in the above discussion. Are their similarities greater than their differences?

What other considerations are perceived as viable in such an evaluation process?

To what extent is a uniform approach to measurement methodologies desirable and/or possible?

4. EFFECTIVENESS

Having defined the concepts, their objectives and forms of implementation, issues still remain concerning methods by which the purposes of mitigation and compensation may be effectively achieved. Three specific ideas are examined for discussion, however, it is perhaps most likely that participants will have additional thoughts in this regard. The specific areas examined are class assessments, coordination of programs and monitoring and evaluation.

4.1 Class Assessments

The concern that administrative costs are prohibitive to the mitigative and compensatory assessment and response to all impacts of development may to some extent be alleviated through class assessments. The establishment of class assessments requires the gathering of extensive base line data for certain definable impacts or projects which lead to the establishment of standardized mitigative measures. While not providing the same degree of attention to detail, class assessments may allow an expanded threshold of considered projects and impacts. Thus, smaller projects or impacts that may not otherwise be considered in the EIA process may be addressed by a generic framework developed for that type of project or impact. The value of

addressing those projects which otherwise may not be the subject of mitigation and compensation is perhaps obvious. The idea that such projects may cummulatively have equally significant effects to those which meet the threshold test, especially when concentrated within a locality, underlines the potential of class assessments.

Generic mitigative responses to projects or impacts that would not otherwise be caught within the web of environmental impact assessment is only one function of the class assessment. Many people feel that, as the process is presently structured in certain jurisdictions, the time and energy expended to comply with the complex regulatory scheme is non-productive and acts as a disincentive to development. In this context, the idea of class assessments may act as a means of streamlining the EIA process. A concern expressed, however, to such a broader application is that a standardized approach to mitigation and compensation will reduce the level of creativity and inventiveness that serves as a cutting edge leading to the implementation of more efficient or effective measures.

FOR DISCUSSION

Are class assessments a viable method of addressing the noted concerns or other perceived concerns and ultimately increasing the efficiency or effectiveness of mitigation and compensation in the EIA process?

What limitations or drawbacks to class assessments must be noted and addressed in their future development and implementation?

What efforts are necessary to ensure that a sufficient and accurate base line data exists or may be developed so as to facilitate the development of class assessments?

4.2 Coordination of Programs

Earlier discussion on compensation noted that a number of statutory schemes have developed in light of perceived shortcomings of the common law. Examples of federal legislation which address environment related injuries in some form are the Canada Shipping Act, Oil and Gas Production and Conservation Act, Artic Waters Pollution Prevention Act and Fisheries Act. There

are also numerous examples of similar provincial legislation. As a general rule, these legislative schemes are not developed in a comprehensive fashion. Instead, there is a tendency to enact a statute in response to an immediate perceived public need. An example is the passage of the Arctic Waters Pollution Prevention Act, which passed through Parliament in response to public concerns expressed in the wake of the voyage of the Manhatten through the Northwest Passage. In addition, different federal and provincial ministries have been given the responsibility of administrating this myriad of legislation.

Placed against this background of statutory compensation schemes are a number of voluntary compensation programs established by various industry sectors. An example of such a program is the Fishermen's Compensation Policy of the Offshore Operators Division of the Canadian Petroleum Association. While the exact legal status of such plans are uncertain, their intent is to address gaps or limitations in the common law and statutory compensation frameworks. Superimposed upon this seemingly open-ended array of compensation schemes are compensation and mitigation agreements which are generally project or site specific. Examples of such agreements are the Community Impact Agreements used by Ontario Hydro at their Darlington Generating Station and elsewhere and the Wildife Harvesting Policy of Interprovincial Pipe Line (NW) Ltd. used in the Norman Wells Pipe Line Project.

The issue of how these compensation schemes may be coordinated so as to provide a comprehensive and efficient method of redressing social and environmental injuries is a complex one. This challenge takes on an additional dimension when viewed from the perspective of the Metis, Dene and Inuit people who will most likely be in the position of having the greatest need for such schemes as development in the north expands. Where land claims have not been settled, no established connection exists between these people and the societal framework from which the benefits of such compensation programs are derived. Land claims aside, it is clear that the accessibility of frontier societies to the forums in which their interests may be asserted is limited.

FOR DISCUSSION

To what extent can the broad array of compensation schemes which may provide redress to perceived impacts resulting from a project subject to assessment be addressed within the EIA framework?

In what ways may compensation schemes established within the environmental assessment process facilitate resolution of regional problems such as a lack of access?

4.3 Monitoring and Evaluation

The issue of monitoring and evaluation as a means of increasing the effectiveness of mitigation and compensation programs is one which CEARC has enumerated as one of its broad areas of research interest. Using the term "post project evaluation", CEARC's Philosophy and Themes for Research notes that:

> (s)ome form of systematic audit of the lessons of case experience is necessary in order for these to be extrapolated to ongoing work and for the general improvement of the practice of EIA.

The ability of such measures to increase the effectiveness of the EIA process is perhaps most positive in respect to mitigation and compensation programs. In the above discussion the need for an expanded data base has been highlighed. To the extent that such information may truly assist the implementation of mitigation and compensation programs it must be based upon objective assessments of our experiences.

FOR DISCUSSION

What elements should be included within any post project evaluation to ensure that the data necessary for the improved effectiveness of mitigation and compensation is obtained and useful.

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OTTAWA ONTARIO
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Note: "*" denotes observer
"PD", project director
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CASE STUDIES EXAMINING MITIGATION AND COMPENSATION ISSUES IN THE ENVIRONMENTAL ASSESSMENT PROCESS

Case Study Questionnaire

I. GENERAL

1. Do you have additions, corrections, or clarifications concerning the "Project Description" document sent to you along with this questionnaire?

II. MITIGATION RESPONSES

2. How do you define the term "mitigation"? Was your definition altered by your experience with this project, and if so, how?

3. What mitigation responses for the project did your organization propose and which were accepted?

4. At what stage in the project was consideration of mitigation responses to adverse environmental impacts initiated and subsequently completed? Was the process flexible in the sense that newly identified impacts could have been included in the process?

5. Upon what basis was it determined that mitigation, as opposed to other options, should be used to address predicted impacts?

6. How were alternative mitigative responses evaluated and selected?

7. Mitigation responses may themselves result in adverse environmental impacts (ie. secondary impacts). Measures proposed to address secondary impacts may also result in adverse environmental impacts. Were the adverse environmental impacts of mitigation responses considered in the evaluation and selection process? If so:

(a) Did the criteria used in their evaluation differ from those used for direct impacts, and if so, how?

(b) How many iterations of impacts resulting from mitigation responses were considered in the evaluation and selection process?

8. Were there any other issues that arose in the formulation, evaluation, and selection of mitigation responses which were or should have been addressed?

9. What information or research would be helpful to further the understanding and use of the concept of mitigation in the environmental assessment process?

III. COMPENSATION RESPONSES

10. How do you define the term "compensation"? Was your definition altered by your experience with this project?

11. What compensation responses for the project did your organization propose and which were accepted?

12. At what stage in the project was the use of compensation to address adverse environmental impacts first considered and subsequently completed? Was this process flexible in the sense that newly identified impacts could have been included in the process?

13. Was compensation used only after all reasonable efforts had been made to address adverse environmental impacts through other options?

14. If not, upon what basis was it determined that compensation, as opposed to other options, should be used to address predicted impacts?

15. Were there any other issues relating to compensation which were or should have been addressed?

16. What information or research would be helpful to further the understanding and use of the concept of compensation in the environmental assessment process?

IV. VALUATION OF ENVIRONMENTAL IMPACTS

17. What criteria were used to valuate predicted losses, impairment or disruption to the natural environment? Did these criteria differ those used for other predicted adverse impacts?

18. What criteria were used to determine which predicted adverse impacts to the natural environmental required a mitigation or compensation response?

19. Did this process address all predicted adverse impacts to the natural environment? If not, which adverse impacts to the natural environment were not addressed and why?

20. Were there any other issues pertaining to the valuation of natural resources which were or should have been addressed?

21. What information or research would be helpful to further the valuation of adverse impacts to the natural environment?

V. PUBLIC PARTICIPATION

22. At what stage in the project, if any, were avenues for public participation initiated and subsequently closed? What methods were used to obtain input from the public?

23. How would you describe the role played by the public in the development and assessment of the project? In particular,

(a) in the development of the project proposal?

(b) in the identification of adverse social and environmental impacts of the project?

(c) in the reassessment of project need?

(d) in reviewing alternatives to the project or project design?

(e) in the formulation, evaluation and selection of mitigation responses?

(f) in the formulation, evaluation and selection of compensation responses?

24. What effect did public involvement have on the following:

(a) the scope of adverse impacts considered?

(b) the scope and type of the mitigation and compensation responses considered?

(c) the time frame of the project development and approval?

(d) the cost of the project?

25. What mechanisms (such as intervenor funding) were used to ensure that the public could participate in a meaningful way in the development and assessment of the project?

26. Were there any other issues pertaining to public participation that were or should have been addressed?

27. What information or research would be helpful to further meaningful public participation in the development and approval of similar projects?

VI. DISPUTE RESOLUTION

28. What dispute resolution mechanisms (for example, mediation, arbitration), if any, were used to address competing interests, especially with respect to mitigation and compensation issues? At what stage in the project did this dispute resolution process commence and subsequently end?

29. How were the parties to the dispute resolution process selected? Was this process sufficiently open-ended so that newly identified parties could have been included?

30. What methods were employed to ensure that all parties to the dispute resolution process had equal bargaining power?

31. Were there any other issues relating to the reconciliation and accommodation of competing interests which were or should have been addressed?

32. What types of information or research are needed to facilitate the use of dispute resolution mechanisms in the development and approval of similar projects?

VII. POST-PROJECT RESPONSIBILITIES

33. Does your organization have, or plan to have, a continuing responsibility for the project? If so, please describe?

34. Are any issues still outstanding which require resolution? What mechanisms are planned or in place to resolve existing and future concerns?

35. Were there any other post-project issues which were or should have been addressed?

36. Are post-project audits viewed as a valuable tool in advancing the management of future development projects? If so, what types of information or research are needed to facilitate the use of post-project assessments?

37. What other types of information or research would be helpful to further post-project management of similar projects?

VIII. RE-EVALUATION OF PROJECT NEED IN LIGHT OF NET IMPACTS

38. What were the net impacts of the project (that is, those impacts which were not eliminated, reduced or redressed through mitigation or compensation responses)?

39. In light of these net impacts, was project need re-evaluated, and if so, upon what basis?

IX. OTHER ISSUES AND TRENDS

40. If the project was to be reproposed, what would be done differently? In particular, what changes would be made in,

(a) the identification of adverse impacts?

(b) the formulation, evaluation and selection of mitigation responses?

(c) the formulation, evaluation and selection of compensation responses?

(d) the valuation of impacts on the natural environment?

(e) the dispute resolution process?

(f) the use of public participation?

(g) post-project management and assessment?

LIST OF QUESTIONNAIRE RESPONDENTS

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Minnesota Pollution Control Agency: C. David Thornton

Lake Winnipeg Regulation and Churchill River Diversion

Department of Northern Affairs: Andy Miles

Northern Flood Committee: Betty Nowiki

Hibernia Development

Mobil Oil Canada Limited: Susan Sherk

Trinity-Placentia Bay Development Association: David Stacey

Norman Wells Pipeline

Inter Provincial Pipe Lines Limited: Don Wishart

Dene Nation: John McCullum

Peace River Site "C" Dam

British Columbia Hydro Power Authority: Tom Thompson

Peace Vallley Environmental Association: Adrian Peacock

Point Lepreau II

New Brunswick Conservation Council: Janice Harvey

Swan Hills Waste Disposal Facility

Alberta Special Waste Management Corporation: Dr. Jennifer McQuaid-Cook

Town of Swan Hills: Mayor Margaret Hansen

ATIKOKAN GENERATING STATION

PROJECT DESCRIPTION AND IDENTIFICATION OF ACTORS

The Atikokan Thermal Generating Station (TGS) was proposed in 1977 by the Hydroelectric Power Commission of Ontario (Ontario Hydro), a crown corporation established to meet the electrical power needs of the people of the province. The TGS was planned originally to consist of four 200 megawatt (Mw) coal-fired boiler units. However, due to a decline in the estimated growth in demand for electrical power, but also due partly to public opposition to the facility, to date, only one of the four units has been constructed.

The originial estimated cost of the four units was $562 million (1977 dollars). By November, 1985, when the one unit was brought into operation, $760 million has been spent on the project. It currently operates for two shifts per day (16 hours), five days a week.

The TGS is located near Marmion Lake, 22 km northeast of the Town of Atikokan, off Highway 622. Atikokan is a community of less than 6,000 people in northwestern Ontario, and is located over 200 km northwest of Thunder Bay. The site is 18 km from the Quetico Provincial Park, a wilderness theme park, and just less than 60 km from the U.S. border and the Boundary Waters Canoe Area (BWCA), a U.S. national wilderness park, in the State of Minnesota.

In early 1970s, Ontario Hydro undertook a series of studies to determine how northwestern Ontario's electrical power demands could best be met. The studies concluded that there was a need for additional generating capacity and that the best means of meeting the anticipated demand would be to construct a lignite coal-fired thermal generating station.

During 1973-74, as part of the site selection process, Ontario Hydro officials began meeting with representatives of a number of government ministries and agencies to consider a number of possible locations for the TGS. Although the development was begun before public participation was widespread in such projects, Ontario Hydro's site selection process involved meetings with a number of municipal officials and interest groups.

In 1974, the Town of Atikokan, which was not one of the sites which was under consideration by the project team, made a submission to the utility requesting that the facility be located near the town. Atikokan's future had been in doubt since 1972

when its two iron ore mines announced that they would be closing permanently in several years. Studies indicated that a technically feasible site was located near the town. Ontario Hydro subsequently chose this site for its project proposal to the Ontario government. Later that year, an Order-In-Council passed by cabinet gave Ontario Hydro approval to purchase the land for the proposed Atikokan site.

Intensive studies were subsequently initiated by the utility to determine the impacts of the construction and operation of the facility on the environment. Air, water and soil studies were undertaken to develop baseline information, and a community impact study was begun to assess the impacts on the Town of Atikokan.

In July, 1977, the Ontario government gave the utility approval to begin construction of the first two 200 Mw units. The units were intended to be in full service by 1983-84. However, in 1979, based upon revised estimates of the growth in electrical power demand, the project was downsized from 800 Mw to 400 Mw (two 200 Mw units). New in-service dates were adopted: the first unit was to be operational by 1984 and the second by 1988.

Ontario Hydro's decision to downsize the TGS was also taken after there had been strong adverse reaction to the project from U.S. and Canadian environmental groups, and to a lesser extent, the Minnesota Pollution Control Agency (MPCA), the U.S. Environmental Protection Agency (EPA) and the U.S. State Department. These groups had expressed concern about the potential damage to the environment which would occur as a result of the SO2 and nitrous oxide emissions from the TGS. The strongest emotional reaction against the facility was received from the U.S. environmental groups who argued that the emissions would do irrepairable damage to the BWCA. The BWCA is one of the few remaining areas of the U.S. which has a relatively pristine environment and its natural beauty has been the subject of numerous books and articles over the course of many years.

Ontario Hydro, and eventually the Government of Ontario and the Government of Canada on behalf of the utility, had argued that since the plant would be burning Saskatchewan lignite coal, with a sulphur content of less than 0.5 per cent sulphur by weight, that the sulphur dioxide emissions would be low enough that flue gas scrubbers would not be needed. Over 99 per cent of the particulate emissions would also be removed with electrostatic precipitators. It was also determined that the effects on the environment would be negligible.

The debate which erupted over the building of Atikokan signalled the first time that transboundary air pollution had become a bilateral issue between the two countries. Some commentators viewed Ontario Hydro's decision to eventually downsize the facility as somewhat of a peace offering after what became rather thorny issue between the two nations.

Project proponents included the Government of Canada, the Government of Ontario, Ontario Hydro, and most of the people of Atikokan. Opponents of the project included a small number of Atikokan residents with environmental concerns, a number of provincial and national environmental non-governmental organizations (NGOs), U.S. regional and national environmental NGOs. Concern was also expressed by the MPCA and the EPA.

PROJECT BENEFITS

Ontario Hydro's rationale for building the Atikokan TGS was that additional electrical generation was needed to match forecasted increases in electrical demand in the Ontario Hydro West System. In 1977, the Ontario Hydro planners estimated that the long term growth rate in electrical demand was approximately 7% per annum, which means that the demand would double every decade. It was argued that a reserve generating capacity was needed to provide an acceptable degree of reliability in electrical supply.

The Town of Atikokan benefitted from the employment brought about by the construction of the TGS. The workforce required to construct the facility was forecasted to peak at 1,035 in the spring of 1981. Despite reductions in the size of the project, however, the actual workforce peak at 1,232 in the summer of 1982. The presence of this large workforce was predicted to be the most important impact on the town. However, any negative effects that were anticipated to result from the workforce were reduced or eliminated by the population decline which accompanied the closing of the area's two iron ore mines.

Construction of the TGS has contributed to the diversification of Atikokan's economy and has reduced the instability associated with single resource production and processing. Approximately 60 operations workers are employed at the TGS on a full time basis.

Money was made available to the Town of Atikokan by Ontario Hydro to upgrade some municipal services after it was determined that the workers and their families would place significant demands upon these services. While some of the services, such as the town's police force, were upgraded only during the life of the project, Atikokan benefitted through the permanent improvement to several roads, the library and the sewage treatment plant (See Mitigation and Compensation).

STATUTORY AND REGULATORY FRAMEWORK

Since the Atikokan proposal had been made prior to passage of the Environmental Assessment Act [R.S.O. 1980, c. 140, as amended), the Ontario Ministry of the Environment (MOE) advised Ontario Hydro that it would not be required to submit an Environmental Impact Statement (EIS). However, the MOE did require Ontario

Hydro to follow a document entitled the "Draft Environmental Assessment Guidelines for Potential GS in the North Channel Area" in the preparation of its impact studies.

Upon receiving approval to acquire the Atikokan site, Ontario Hydro launched a series of environmental, social and economic studies to determine the potential impacts of the project.

MITIGATION AND COMPENSATION

Ontario Hydro has adopted a policy toward mitigation and compensation of adverse environmental impacts resulting from activities of the corporation (Ontario Hydro, 1983). The policy defines mitigation as "any activity that will eliminate or reduce the severity of the adverse environment effect, or that will provide offsetting benefits." Compensation is defined as "reparation through monetary payment or settlement."

Predicted adverse impacts resulting from the Atikokan project were:

1. Degradation of air, water and soil quality
   - by using up available "air quality increments"
   - sulfur dioxide and nitrous oxide emissions, resulting in acidic deposition to water and soil

2. Adverse community impacts

These are each considered in more detail below.

1. Degradation of air quality

The environmental groups opposed to the construction of the Atikokan TGS argued that significant emissions of SO2 and nitrous oxides would lead to degradation of air, water and soil quality.

The Atikokan GS was to originally consist of four 200 MW coal-fired units using lignite coal as fuel. Electrostatic prepcipitators were included in the design to reduce the amount of particulate matter leaving the station. A 165 m stack was to be used to disperse pollutants not trapped in the prepcipitators. The facility design also included a system to dissipate waste heat through the use of lake water. Scrubbers to reduce sulphur dioxide (SO2) emissions were not included in the design.

Ontario Hydro proposed to burn low-sulphur lignite coal from Western Canada. The low sulphur content of lignite coal means that more must be burned to attain a specified level of heat. It was estimated that 125 to 225 tons of SO2 would be emitted per day from the plant.

A number of U.S. interests and agencies argued that the Atikokan GS needed scrubbers to reduce or eliminate the SO2 emissions. and

that emissions would need to be cut by 90% or a reference would be submitted to the International Joint Commission (IJC).

Concern was expressed by the Minnesota Pollution Control Agency (MPCA) that air quality increments would be used up, leaving no room for future sources of domestic pollution. Also, under the U.S. Clean Air Act, every geographic area has been classified. The BWCA had received a Class I designation, the most sensitive of classes, and one which prohibits further degradation. The Atikokan GS would lead to a violation of this classification. However, when the project was first proposed, the BWCA was a class II designation, one which would not be violated with the operation of the GS. The area was upgraded in 1977 when the Clean Air Act was amended.

As a result of the issue, the U.S. Environmental Protection Agency (EPA) undertook an indepth environmental review of the project. That study found that the project would violate the Class I air quality designation rarely. Further, the EPA found that the GS by itself would not significantly damage terrestrial and aquatic ecosystems through acid deposition, but that its emissions would combine with pollutants coming from other parts of the U.S. to exacerbate an existing problem.

Ontario Hydro and Canadian governments' positions was that they were not required to follow U.S. law, but only international law. International law requires that any pollution originating in Canada must not cause transboundary injury, but it does not prescribe that it would be required to abide by the higher standard of U.S. domestic law. They further stated that the pollution in the area was of a regional nature, with much of it originating in the U.S.

The issue was resolved in 1979 when Ontario Hydro announced its decision to half the size of the GS. It was generally agreed that the incremental pollution resulting from the two 200 MW generators would not be significant.

2. Adverse community impacts

While it was assumed that the full extent and the nature of the impacts of the Atikokan GS could not be known beforehand, it was perceived that the construction of such a large facility in a small community would have some definite adverse impacts. Therefore, the proponent and local authorities agreed that a community impact agreement ought to be signed.

This agreement:

*establishes a comprehensive monitoring system with categories of data gather and compared are (based upon assumption of Hydro planners would have difficulties in calculating real impacts on community):

-population
-employment and income
-housing
-education
-social conditions
-municipal services and facilities
-roads
-municipal finance

*compensation

*about $1.1 million was set aside to offset potential impacts- funds are released from this account only when a case can be made that the impact will occur or has occurred as a as result of Hydro construction activities; more specifically,

1. Station A Account - for impacts to physical community infrastructure [funds remaining in account after expiration of agreement revert to Hydro]

2. Station B Account - for psycho-social impacts [funds remaining in account revert to town]

3. "Special Grants" - for building permits and special projects such as the new sewage treatment plant

*arbitration clause

The primary community impact issue was that of housing needs. It was anticipated that there would be a serious housing shortage when the project was in full construction. Hence, mitigation options were created where 80 new homes would be built by Ontario Hydro; a developer would build the homes and rent out the homes; or incentives to upgrade existing properties would be provided.

In studies conducted by Ontario Hydro, it was found that:

-not as many people were leaving the area as predicted
-most wanted to rent, not buy
-workers preferred to live in town, not in work camps

In addition, some of the mining operations in the area were closing. As a result, none of the anticipated mitigation responses were needed since, by the spring of 1982, the housing situation did not turn out to be critical.

PUBLIC HEARINGS

Because the project was proposed prior to the enactment of the province's Environmental Assessment Act, there were no legislatively mandated hearings on the proposal.

DISPUTE RESOLUTION

There was no general dispute resolution mechanism employed with respect to the Atikokan proposal. However, community impact agreements were employed with respect to socio-economic issues.

The main functions of the community impact agreements are:

-monitoring of changes occuring in the community through the construction agreement
-rationalization of compensation
-dispute resolution mechanism (arbitration)
-overcoming obstacles to local approvals

Ontario Hydro states that the primary purpose of the agreements is to set out a process through which both a local community and Ontario Hydro can protect their interests.

POST-PROJECT ISSUES

Aside from an on-going responsibility for on-site monitoring, no post-project (unresolved) issues have been identified.

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HIBERNIA DEVELOPMENT PROJECT

PROJECT DESCRIPTION AND IDENTIFICATION OF ACTORS

The Hibernia Development Project is planned to develop the resources of the Hibernia oil field, which lies 315 km east-southeast of St. John's, Newfoundland, on the northeast corner of the Grand Banks. The project design involves the use of a fixed production system, including a gravity base structure [GBS] and shuttle tankers which would transport the oil to shore. The total estimated cost of the project is over four billion dollars.

The Hibernia oil field was discovered in 1979. The GBS mode of development was selected over the floating production system in August of 1985. Mobil Oil Canada Ltd. [Mobil] filed the Hibernia Development Plan and the Hibernia Benefits Plan, which together constitute the application for approval, on September 15, 1985 with the Canada Oil and Gas Lands Administration [COGLA] and the Newfoundland and Labrador Petroleum Directorate [NLPD]. Production is scheduled for 1990's.

Mobil is the major project proponent, representing the interests of Gulf Canada Resources Inc., Petro-Canada Inc., Chevron Canada Resources Ltd., and Columbia Gas Development of Canada Ltd., who have varying interests in the joint venture. The list of affected interests is diverse and includes onshore, as well as offshore, interests. Various organizations, whose interests included affected communities, the fishing and related processing industry and wildlife, addressed both socio-economic and environmental impacts of the project.

Pursuant to the Atlantic Accord, and enabling legislation, The Canada-Newfoundland Offshore Petroleum Board [Board] was established and given a substantial part of the joint management responsibilities. Prior to the formation of the Board, the Hibernia Environmental Assessment Panel was established to make recommendations on the terms and conditions of the project. COGLA and NLPD received the initial application and played a continuing role in the review and development of the project.

PROJECT BENEFITS

The reserves at the Hibernia discovery are estimated at 83 million cubic meters. It is estimated that project benefits will include a cumulative Gross Domestic Product increase of nearly $14 billion. Mobil estimates that potential Canadian content is estimated to range from 36 to 52 percent and from 19 to 23 percent for Newfoundland. Currently Newfoundland has a serious unemployment problem with a rate of approximately twice the

national average. Mobil estimates that approximately 21,500 person-years could be created worldwide for its downsized fixed production system. 14,500 of these people-years would be based in Canada and 9,500 to Newfoundland. Production phase annual employment is estimated at 1090 persons.

THE STATUTORY AND REGULATORY FRAMEWORK

The governments of Canada and Newfoundland, within the framework of the Atlantic Accord, are primarily responsible for the approval of the project. The Board has been delegated a number of responsibilities in the approval process.

The Atlantic Accord provided the basis for an environmental assessment of the project by the Panel, whose mandate was to make recommendations on the terms and conditions under which the project could proceed in a safe and environmentally acceptable manner.

The environmental assessment by the Panel was commenced before the Board was formed, but completed so that the Board could consider its recommendations in it final decision on the application.

The environmental assessment process took place over a period of approximately 10 months in 1985. The Panel was established in March and operational procedures for the environmental assessment and review process were issued in April. Mobil submitted an Environmental Impact Statement [EIS] in May. Copies of the EIS were distributed by the Panel and written comments were accepted up to the beginning of August. The panel retained independent technical advisors who provided comments on the EIS. Public information sessions were held in June throughout the province and the transcripts were distributed to all participants. After review of the submission, the Panel requested further information from Mobil in August. In that month, Mobil submitted its EIA Update to the Panel, which described the preferred mode of development and highlighted those aspects which differed from the original EIS. In September, Mobil submitted an EIS Supplement, which was generally distributed. The Panel then scheduled 11 days of public hearings throughout the province in October. Transcripts of the proceedings of these hearings were made available to the public. The final report of the Panel with its recommendations was issued in December.

In making its decision on the application, the Board considered the recommendations of the Panel, as well as reports by COGLA and NLPD.

The final decision of the Board includes a number of terms and conditions which will require specific approvals as the project develops. The mandate of the Board will continue past the exhaustion of resource extraction at the Hibernia site and, as a

result, will oversee all aspects of the project.

Note: are the terms mitigation and compensation defined in the mandates of the Panel, Board, the Atlantic Accord or enabling legislation?

Note: does Mobil have an internal policy for mitigation and compensation.

MITIGATION AND COMPENSATION

One of the most significant environmental features of the Hibernia region is sea ice and icebergs. The Panel was generally satisfied that the GBS would be able to withstand iceberg impacts, but recommended that the tanker loading facilities should be designed to ensure that oil spills are avoided. In regard to a threat of iceberg scour to the pipelines, Mobil proposed the use of wellhead control valves below maximum scour depth and burying or including safety connections in the flowlines and gathering lines. The Board required Mobil to design export lines and loading platforms so that they can be flushed. Further, the Board retained the right to approve the design iceberg scour depth.

Concerns were expressed concerning seabed stability and seismecity of the region. Mobil did not anticipate serious concerns in this regard. The Panel, however, recommended that the results of ongoing studies in this area be incorporated into the design of the GBS and other offshore components of the project. The Board included this recommendation as a term of its approval.

The Panel also recommended that an effective ice management system should be an integral component of the project, that the design should take into account episodic waves and that a dedicated weather forecasting system should be developed. The Board required a further study on the estimation of extreme winds as a term of its approval.

The main concern with regard to impacts on the environment resulting from the project involved the concern of oil spills. In this regard, the Panel concluded that there is a significant chance of a blow-out during the life of the project. Further, it noted that there is a greater likelihood of a spill resulting from storage or transfer because of the difficult conditions. The Panel noted that dispersion offshore is likely in most instances.

Mobil proposed a double hull design for the shuttle tankers with complete segregation of cargo and ballast tanks. The Panel adopted these design features, but noted that a mechanism should be developed to ensure safe routing of the tankers over sensitive environmental areas. Mobil stated a

commitment to a detailed oil spill contingency plan. The Panel noted, however, that present capabilities for oil spill clean-up offshore are severely limited due to the harsh conditions.

The most sensitive group of animals potentially affected by the project are seabirds. The area is described by Department of the Environment officials as an "orthinological crossroads". Mobil does not propose any specific mitigative measures for seabirds. The Panel concludes that large numbers of seabirds could be killed in the event of an oil spill and prevention is the best option to deal with this possibility. Potential oil spills also concerned those involved in the fishing industry with regard to the tainting of catches. Mobil stated that it did not believe that tainting would be a widespread problem. The Board made it a condition of its approval that Mobil submit a comprehensive Environmental Protection Plan.

A further concern of fishing interests was the loss of access resulting from the establishment of an exclusion area around the project's offshore facilities. Mobil suggested an area of 8km by 13 km. The Board required that the dimensions of the fishing exclusion zone be determined by Mobil in consultation with the DFO and the fishing industry.

With regard to abandonment of the project, Mobil planned to leave the GBS in place, but did not think that this would make the area unfishable. The Board required that all subsea facilities be designed so that they could be removed, including the GBS and that the area be returned to a fishable condition.

With regard to an effects monitoring program, Mobil stated that it could be implemented promptly if a spill or blowout occurs. Government agencies, however, felt that, as a result of a limited understanding of the region, a program should be prepared to address the uncertainty associated with Mobil's impact predictions. The Board required the approval of an effects monitoring program and further required that Mobil provide instrumentation for structural and foundation integrity monitoring.

With regard to economic impacts, the main concern was ensuring that maximum employment and training opportunities were made available to Newfoundlanders. Mobil stated that it would ensure local hiring by its contractors through a Contractor Human Resources Committee. The Panel suggested that a local hiring policy be adopted by government. There was also concern expressed that union involvement would restrict local hiring. The Panel did not feel that this would pose a restriction to Newfoundlanders. The Board made it a condition of its approval that Mobil submit a training and staffing plan reflecting the maximum reasonable employment and training of residents of Newfoundland. The Board further required a comprehensive listing and advance notice of all major contracts and purchase orders.

Social impacts resulting from population increases included stresses on housing, the public infrastructure and social services. Mobil stated that owner-occupied housing should not be seriously affected and rampant speculation and inflation should not occur. With regard to both owner-occupied and rental housing, Mobil felt that it could do little other than to be sensitive to the problem. The Panel recommended that special measures be taken to ensure adequate rental housing in St. John's and that the Offshore Development Fund be used as a source for this initiative. Mobil predicted minimum impacts on schools, hospitals and other services, but suggested that certain roads may need improvement. Intervenors expressed concerns that Mobil's predictions were based on inappropriate estimates. The Panel recommended that full consultation should take place between Mobil, government agencies and local agencies to identify necessary improvements. With regard to resulting stresses placed on presently overextended social services, Mobil's position was that this concern is the responsibility of government. The Panel recommended that the Offshore Development Fund should be used to address impacts to social services. Finally, the Panel recommended that community impact agreements should be developed for areas directly affect by the project to address all of the above concerns. The Board did not include a specific condition regarding social impacts.

There were three general areas of discussion concerning compensation. The first concerned damages to fishing operations from oil spills or project debris, which may be either attributable or attributable. The second concerned induced damages suffered by the fish processing industry. The third involved compensation for loss of access as a result of the exclusion area.

In regard to spill or debris damage to fishing operations that cannot be attributed, compensation is available from a fund operated voluntarily by the petroleum industry. When the source can be attributed, then compensation is available through existing legislation. Mobil stated that it is developing a policy to ensure complience with this legislation, similar to the voluntary program. The DFO and other intervenors were critical of this proposal and called for the development by Mobil of a comprehensive compensation/liability plan to cover loss or damage to livelihood, income or property of individuals and businesses. A single agency to handle compensation claims was also suggested.

With regard to compensation to fish processing interests, Mobil stated that it is presently in negotiations and would consider compensation even to an independent plant operator. In sum, Mobil stated that it would consider compensation where there was demonstrated economic loss.

The Panel suggested a compensation scheme if loss of access resulting from the exclusion area could not be mitigated. Mobil asserted that such compensation was unprecedented in its

experience, but that it would consider compensation for lost fishing time or lost fishing opportunity if mutual avoidance could not be arranged.

The Panel recommended that the government establish a comprehensive policy of compensation for various types of potential economic damage to fisheries interests prior to project commencement, with standardized procedures for all types of damages. The Board did not make any specific recommendations regarding compensation, but urged Mobil to consult with fishing interests in advance of installation. The Board noted that it was prepared to act as a consultant in this regard.

PUBLIC HEARINGS

Public hearings were held by the Panel as noted above.

DISPUTE RESOLUTION

A dispute resolution process was not used in the planning of the project.

POST-PROJECT ISSUES

Monitoring programs and compensation programs, discussed above, would be ongoing operations. In addition, various contingency plans for oil spills and evacuation of the GBS are planned.

Project construction has not commenced so a post project assessment cannot yet be achieved.

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THE LAKE WINNIPEG AND CHURCHILL RIVER DIVERSION PROJECT

PROJECT DESCRIPTION AND IDENTIFICATION OF ACTORS

The Lake Winnipeg and Churchill River Diversion Project, is designed to increase hydro-electric generation capacity in the Province of Manitoba. The Northern Flood Agreement [NFA] was the formal mechanism designed to address impacts to the members of five Indian Bands most directly affected by the project. The project combined the regulation of Lake Winnipeg outflows with the diversion of waters from the Churchill Rivers to increase the flow of the Nelson River. A total of fourteen sites on several rivers are identified as locations for generating stations. The estimated cost of the project was in the billions of dollars.

The potential of the Nelson River and Lake Winnipeg was first perceived by the 1940's. Initial planning for a large scale diversion culminated in 1966 with the signing of an agreement between the Manitoba and Canadian governments, in which the federal government agreed to construct a transmission line to be leased back to the province. Manitoba Hydro began studies on a possible diversion and in 1968 announced its plan to raise water levels of South Indian Lake by approximately 35 feet. As a result of public concerns, the Manitoba government established the Manitoba Hydro Task Force [Task Force] in 1970 to perform an internal High Level Diversion review. The Task Force concluded that the project as planned by Manitoba Hydro would result in high water levels which were socially unacceptable. After further studies, funded by the provincial government, an alternative design was formulated, which was approved by the provincial government. An interim licence to commence construction was issued by the provincial government for the Lake Winnipeg Regulation in November 1970 and the Churchill Regulation Diversion in May 1983.

The NFA was ratified on March 15, 1978 by five native Indian communities. The parties to the NFA were Manitoba Hydro, the governments of Manitoba and Canada, and the NFC. Manitoba Hydro, charged with providing a continual supply of power to fulfill the needs of the province, was responsible for the design of the project and the main proponent of the project. The Canadian government, however,as a result of its agreement to build a transmission line, became a co-sponsor of the project. The Government of Manitoba additionally had a number of statutory obligations, including responsibility for Manitoba Hydro as a crown corporation, development of the north, and environmental management. The Northern Flood Committee (NFC) represented approximately 7,500 people from the Native communities of Nelson House, Norway House, Split Lake, Cross Lake, and York Landing, which were most affected by the project. In addition to these parties, the Department of Indian Affairs and Northern

Development (DIAND), as the ministry responsible for status Indians and the lands they occupy, (17,000 acres of Reserve land and 50,000 miles of shoreline may be flooded as a result of the project) played a lead role for the Canadian government in negotiations.

PROJECT BENEFITS

The rationale behind the project was to ensure the continual supply of electric power for the Province of Manitoba. The development of sources of hydro-electric power would reduce the province's dependence upon fossil fuels. The project would increase employment through the creation of a large number of construction jobs and generally provide a significant injection of capital into a somewhat flagging economy.

THE STATUTORY AND REGULATORY FRAMEWORK

A formal environmental assessment of the project was not required by law, as the project predates the Manitoba Environmental Assessment and Review Process, established in November of 1975. In 1971 the provincial and federal governments entered into an agreement, under the auspices of the Canada Water Act 1970, to undertake a comprehensive study of the effects of the project. Pursuant to this agreement the Lake Winnipeg, Churchill & Nelson Rivers Study Board [Study Board] was established to examine the conditions that existed prior to the commencement of the project, to predict effects and to make recommendations to enhance the benefits and mitigate undesirable effects.

The Study Board was established after construction on the project had begun and during its term the project design was changing. It did, however, make certain recommendations on an interim basis so as to facilitate their consideration during construction.

The assessment by the Study Board was governed by the agreement between the province and the federal governments. Project descriptions, water level and flow data and resource data and information requirements were identified by senior federal and provincial representatives, academics and private consultants. A series of seminars were held to identify the socio-economic investigations necessary. The data collection of the contracting agencies occurred between 1972 and 1974. These studies were integrated in 1974 and revised when supplementary data became available. The final report of the Study Board was issued in 1975.

The agreement which established the Study Board did not define the terms mitigation and compensation or specifically address the concepts. The stated objective of the Study Board is to make recommendations for "enhancing the overall benefits with due

consideration for the protection of the environment." With regard to the nature of these recommendations, the agreement states:

> Canada and Manitoba agree to give priority to those studies which may lead to recommendations for modifications or additions to the works, or operation of the works, that may be under construction, approved or proposed.

The position of Manitoba Hydro with regard to impacts of the project was that whatever property damage or economic loss occurred would be fairly compensated. Their objective was perceived, at the time, as the utilization of provincial resources to provide the greatest public benefit, without regard to any specific interests, such as the affected northern communities. Manitoba Hydro did not prepare an internal environmental assessment of the project. The internal studies which were performed focused on the engineering and other technical feasibility studies.

The NFA defines the term "mitigatory measure" as follows:

> ...any work, program or measure which is designed or intended to diminish, prevent, or ameliorate <u>any adverse effect</u> of the Project.

The term "compensation" is not defined, but the term "remedial measure" is defined as follows:

> ...any work, program or measure which is designed or intended to enhance, preserve, restore or replace in kind, wholly or in part, <u>any property</u>, <u>land</u>, <u>land use interest or activity of any person</u>, which has been or may be adversely affected by the Project.

With regard to the use of these concepts, the NFA states, in outlining the role of the arbitrator, that:

> Because mitigatory and/or remedial measures are more likely to have a lasting beneficial effect on the viability of a community and/or on individual residents than monetary compensation, such measures shall be preferred and only where mitigatory and/or remedial measures are not feasible or fail in effectiveness shall monetary compensation be ordered in lieu thereof in respect of any adverse effect.

The most predominant impacts flowed from the drastic increases and decreases in the water levels, including man-made fluctuation in those levels, which reversed traditional seasonal patterns. As the lifestyle of the native Indian communities revolved around the lakes, which served as a source of transportation, food, recreation and income, the impacts were far-reaching. As a result of the changed water regime, navigation has become seriously impeded, access to traplines become difficult, potable water has been difficult to obtain, commercial fishing yields have been diminished with long-term losses projected, mercury levels have drastically increased, docks have been damaged, and fishing nets have been snagged or fouled. In addition, a number of social impacts have resulted from the influx of construction workers and increased access to the native communities.

The NFA took a "management", rather than "predictive" approach, to resolving future mitigation and compensation disputes arising from the adverse impacts of the project. The preamble to the agreement states:

> ...it is not possible to foresee all the adverse results of the project nor to determine all those persons who may be affected by it, and, therefore it is desirable to establish through the offices of a single arbitrator a continuing arbitration instrument, to which any person adversely affected may submit a claim, as well as to fully empower such arbitrator to fashion a just and appropriate remedy.

The NFA is viewed by the NFC as an "open-ended social contract" due to the fact that it addresses comprehensive array of social concerns. On mitigation measure expressed in the NFA is the agreement by the parties, other than the NFC, to implement such recommendations of the Study Board which affect the communities. The NFA states that the residents of the reserves have the right to free and normal navigation of the waterways. Accordingly, it was agreed that certain obstructions would be removed, portage facilities should be constructed and operated, and that efforts be made to remove obstructions during construction.

Addressing the community infrastructure is a large part of the agreement. As such, the federal government recognized a responsibility for ensuring a continuous supply of potable water. Certain measures were required to ensure the safety of the communities, facilitate the continuance of traditional activities and to conform to the aesthetic values of the residents are noted. Such measures are to be performed in conformity with reasonable requirements of a physical development plan adopted by the community and with prior consultation. The agreement also recognized the right of reserve residents to a priority of use of wildlife resources within selected "resource areas", established

an economic development programme through a community development corporation, as well as a community liaison committee, an Employment Task Force and a wildlife Planning and Advisory Board.

Specific compensation measures included the granting of a system of land exchange based upon a 4:1 ratio. In addition, the Canadian and Manitoba governments each agreed to contribute $1,600,000 to a Development Corporation, to be effectively operated by the native communities.

PUBLIC HEARINGS

Public hearings were conducted by the Provincial Governemnt in 1969 at South Indian Lake and Winnipeg. The Study Board, conducted a series of seminars to identify socio-economic issues, but did not hold public hearings. Referendums were held in the Indian communities represented by the NFC, after public meetings, to ratify the agreement.

DISPUTE RESOLUTION

Mediation was used as a dispute resolution process in addressing the concerns of the native Indian communities before the signing of the NFA.

The parties to the mediation process were Manitoba Hydro, the governments of Manitoba and Canada and the NFC.

There was no subsequent review of the agreement, other than necessary ratification by the parties.

POST-PROJECT ISSUES

The NFA, through the arbitration process, establishes an ongoing enforeceable mechanism to respond to any dispute where a person feels aggrieved due to adverse environmental affects which may arise as a result of the project.

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LEPREAU II NUCLEAR GENERATING STATION

PROJECT DESCRIPTION AND IDENTIFICATION OF ACTORS

The project involves the design, construction, and operation of of a second CANDU 630 MW nuclear-powered generating unit at the site of the existing Point Lepreau Generating Station. It would be built beside Point Lepreau I, which is now in operation and was subject an environmental assessment review in 1974-75.

The Point Lepreau complex is located on the Bay of Fundy approximately 80 kilometers from the Maine-New Brunswick border and 42 kilometers west of the City of Saint John. Point Lepreau I occupies approximately 125 acres (50 hectares) with 25 acres (10 hectares) more needed for the Point Lepreau II nuclear station.

The Point Lepreau II project was a joint federal-provincial undertaking. Maritime Nuclear, a consortium of Atomic Energy of Canada Limited and the New Brunswick Electric Power Commission (N.B.Power), were the proponents of the project.

The affected interests or interested persons with respect to the project include:

- *local communities
- *New Brunswick environmental groups
- *local industry

Various federal and provincial ministries were involved in commenting or consulting on the proposal.

At this time, the decision as to whether to proceed with project is still under consideration.

PROJECT BENEFITS

The project was intended to export the power produced at Lepreau II for a profit, at least in the first years of production until there was demand for the power in Canada.

THE STATUTORY AND REGULATORY PROCESS

The governing regulatory framework is the federal Environmental Assessment Review Process (EARP). EARP was established by a Cabinet decision in 1973, and subsequently revised in 1977. While the process was again revised in 1984 through the proclamation of an Order-in-Council on June 22, 1984, the Point Lepreau II evaluation proceeded under the former rules.

Logistical support and coordination for the EARP is provided by the Federal Environmental Assessment and Review Office (FEARO). Because EARP applies to all federal departments agencies, the proponent was subject to the process.

EARP is a self-assessment process - the initiating department undertakes a preliminary screening and evaluation of the proposal. If the initiating department determines the implications of the project potentially significant, the initiating department refers the proposal to the Minister of the Environment for public review. While Point Lepreau I station went through the EARP process in 1975, the incremental impacts anticipated with the Point Lepreau II precipitated another review.

Upon submission of a proposal to the Minister for review, the Minister may appoint an Environmental Assessment Panel - an independent body to hold the hearings and make a report with recommendations to the Minister of the Environment.

In the case of Point Lepreau II, the federal and provincial ministers of the environment issued a terms of reference to the selected Environmental Assessment Panel for the proposal on September 28, 1983. According the terms of reference, the Panel's mandate was to assess the environmental and related social impacts of a second nuclear unit at the Point Lepreau Generating Station and then report its finds to the Ministers of the Environment.

The panel was directed <u>not</u> to question:

* the construction of the second unit for the purpose of exporting power as that matter would be address by the National Energy Board; and

* or Canada's National Energy Policy, and the role of nuclear energy within that policy.

The first stage in the Point Lepreau II review process was a public scoping exercise which was intended to assist in the development of guidelines for the environmental impact statement (EIS). Public meetings were held during this initial process in November and December of 1983 whereby approximately 80 participants were involved, including representation from the proponent, environmental groups, industry, labour, and the universities.

As a result of the scoping process, the Panel issued guidelines to the proponent for the preparation of the EIS in January of 1984. The guidelines directed the proponent to study the following impacts of the proposal:

*impacts on biological environment (non-radiological impacts)
*impacts of radiation on human health
*socio-economic and community impacts
*emergency planning
*decommissioning
*monitoring

The proponent then submitted the EIA on June 6, 1984. In August of that year, the Panel requested additional information, which was complied with in early October.

Notice of public hearings were given on October 12, 1984 with the actual hearings being conducted from November 21 to December 3, 1984 in Saint John, Fredericton, and Pennfield. Apart from the staff of the proponent and various government agencies, approximately 75 persons attended the hearings.

In 1985, the Panel submitted its report to the respective Ministers of the Environment. The Panel concluded:

> "...that the project can proceed without significant adverse effects provided certain recommendations are followed. In order to understand the impacts of Lepreau II, it was necessary to review, to the extent possible, the actual effects of Lepreau I before estimating the effects of Lepreau II. In so doing, we made a number of recommendations that should be implemented now...to ensure that potential impacts are reduced to a minimum and existing concerns associated with Lepreau can be corrected."

For the Point Lepreau II proposal, both the governments of Canada and New Brunswick are responsible for deciding whether or not to proceed with the project, and if so, under what conditions.

MITIGATION AND COMPENSATION

*monitoring

Much of the discussion with respect to monitoring dealt with non-radiological monitoring. The Panel observed that there were inadequate programs in place to sufficiently monitor the impacts on the marine environment. It recommended the formulation of a coordinating committee to coordinate the various monitoring programs and report their findings annually.

*impacts of radiation on human health

Most of the recommendations pertaining to the human health impacts from radiation dealt with updating present standards. For instance, derived emission limits for both Lepreau I and II should be updated to take into account new environmental information from other agencies in the field. Further, information on distribution of radioactive release under various weather conditions should be updated.

Other recommendations dealt with radiation pollution controls, especially with respect for certain such substances, such as tritium and Carbon -14. For tritium, it was recommended a tritium recovery facility be built or a facility outside of the province be utilized to remove tritium from contaminated heavy water. Carbon -14 should be monitored in the stack and removal equipment installed if emission levels approach 1/100 of derived emission limits. Also, the Panel recommended that the regulatory limit for the discharge of radionuclides to the ocean should be made more stringent.

* emergency planning

The Panel recommended that the the communications network with respect to emergency planning be strengthened. The siren warning system should be discontinued owing to its unreliability, and resultant loss of credibility. The telephone system in and about the Point Lepreau area should be expanded in order that it can accomodate the communication loads in the case of an emergency. Further, a number of recommendation were with respect to wardens (those civilians who have designated evacuation responsibilities during an emergency), such as ensuring that they become more familiar with operating procedures of the facility.

Other recommendations dealt the use of potassium iodide pills and the need for more testing of emergency plans, such as through mock exercises.

* non-radiological environmental impacts

The Panel observed that the proponent did not deal sufficiently with the potential impacts of Point Lepreau's cooling water system on the marine environment. It recommended that impringement and entrainment data for Point Lepreau I be collected for at least two years. On the basis of this information mitigation responses can more fully be developed, if necessary.

Further, more information was needed, such as the size, configuration and temperature differentials of the thermal plume, to adequately determine thermal effects on the marine environment in order to formulate, if necessary, proper mitigation responses.

*socio-economic issues

The Panel recommended with, to the extent possible, local workers should be hired. To create a better liaison with the community, more information should be distributed dealing with the proponent's approach to labour-management relations, personnel management, and mechanisms concerning dispute resolution.

It was recommend that a community advisory committed be formed to provide information on problem-solving within the community context.

Finally, it was recommended that local schools, fire protection, and transportation routes should be improved.

*decommissioning

With respect to decommissioning, the Panel recommended that an annual decommissioning levy be imposed with a sliding scaling commencing with a relatively high levy and having it decreased as years go by.

* process issues

The Panel also had a number of recommendations directed toward the EA process itself, including:

-providing funding assistance to public groups in highly technical reviews;
-examining ways to improve the scientfic basic for EIA;
-developing principles to establish what constitutes an adequate baseline for environmental impact analysis;
-considering greater interchange among technical experts in future reviews; and
-creation of a federal government body to undertake a public review of the nuclear energy option within Canada National Energy Policy.

There were no compensation responses.

PUBLIC HEARINGS

The terms of reference permitted a public scoping exercised conducted by the Panel to identify priority issues and concerns and the establishment of a Study Advisory Group to provide advice to the proponent on the scientific design on the EIA.

While environmental groups participated in the scoping process, the hearings themselves were boycotted. The Panel attributed this problem to the perception by the community that the decision to proceed with the project was already made; the local people were overwhelmed with highly technical and complex issues; and the

limited nature of the mandate of the Panel itself.

Environmental groups wanted the mandate broadened to:

-review of the project economics
-alternatives to second nuclear reactor
-desirability of exporting nuclear power
-nuclear energy as a whole (economics in general)
-lack of financial resources for proper input

DISPUTE RESOLUTION

A dispute resolution process was not used in the project.

POST-PROJECT ISSUES

Because the project has not commenced, there are no post-project issue

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NORMAN WELLS PIPELINE PROJECT

PROJECT DESCRIPTION AND IDENTIFICATION OF ACTORS

The Norman Wells Pipeline Project involves the design, construction and operation of a 324 mm. pipeline to transport crude oil. The pipeline, buried its entire length of approximately 866 km, begins at Norman Wells, Northwest Territories follows the east side of the Mackenzie River to Fort Simpson where it crosses the river and runs south-east through to Zama, Alberta. The capital cost for construction of the pipeline was approximately $ 360 million.

The design, approval and construction took place over a period of approximately 6 years. The original proposal was formally tendered to the Federal Government and the National Energy Board early in 1980. Construction began in early 1983 and was completed ahead of schedule in March of 1985. On April 17, 1985 the National Energy Board granted Leave-To-Open the pipeline, which is now in operation.

The project was proposed by Interprovincial Pipe Line (NW) Ltd. [IPL], in conjuction with a proposal by Esso Resources Canada Ltd. to expand the Norman Wells Oilfield from a production rate of 500 cubic metres/day to 4000 cubic metres/day. The pipeline would have the initial carrying capacity to transport 5000 cubic metres/day. Although the oilfield expansion and the pipeline were proposed and reviewed jointly, this case study will focus solely on the pipeline.

The major affected parties were the native people of the Mackenzie Valley. They were represented by the Dene Nation, Metis Association, as well as local Band Organizations and Hunters and Trappers Associations. Individuals residing in the communities nearby the route of the pipeline, as well as business interests in the area, also participated. Governments involved included Canada, the Northwest Territories [GNWT], and Alberta. Federal Agencies that played a major role were the National Energy Board [NEB], Department of Indian Affairs and Northern Development [DIAND], and the Federal Environmental Assessment Review Office [FEARO] Minor roles were played by Transport Canada, the Department of Fisheries and Oceans [DFO] and Energy, Mines and Resources [EMR] and the Department of the Environemnt [DOE].

PROJECT BENEFITS

IPL described the rationale or justification for the project as follows:

New geologic work on the Norman Wells Oilfield showed that conditions were right to apply additional investment to secondary recovery techniques in order to optimize ultimate production; There was a demonstrated need to bring additional national oil supplies on stream and to make some progress on accessing frontier reserves; The market, supply, price, and cost of production and transportation projections made a small scale project economically viable; The characteristics of the Norman Wells oilfield expansion and pipeline project could be shown to be serving a combination of regional and naional interests.

IPL notes that this rationale was judged accurately.

THE STATUTORY AND REGULATORY FRAMEWORK

Final approval of various aspects of the project came from the NEB, DIAND, GNWT, the Northwest Territories Water Board [Water Board] and the Alberta Government.

Environmental assessments of the project were required by the NEB and the federal Environmental Assessment Review Process. The NEB and FEARO panels considered issues relating to the rationale for the project, the potential impacts of the physical environment on the project and the project on the physical and human environment, government preparedness and project monitoring. Assessments of social and environmental impacts of the project were also performed by the NEB, DIAND, and the Water Board.

As the agency responsible for land use and administration in the Northwest Territories, DIAND determined that the proposal should be reviewed by FEARO in February of 1980. DIAND, as custodian of the crown land was also required to grant a right of way and easement for the route of the pipeline. As the agency responsible for the transportation of energy across provincial boundaries, the NEB received an application by IPL for approval in March of 1980. The Water Board, pursuant to the Northern Inland Waters Act, was required to issue water licences for major water crossings. IPL was also required to obtain a Pipeline Agreement and a Development and Reclamation Approval from the government of Alberta. The GNWT administers Block Land Transfers around Norman Wells and Fort Simpson and presently Fort Norman.

An Environmental Impact Statement was submitted by IPL to FEARO in April of 1980. This was distributed and public and technical hearings took place between May and September of 1980. During the course of the FEARO hearings, additional documentation was requested from IPL. The final report of FEARO with recommendations was issued in January of 1981. The panel's overall conclusion was that "before the Norman Wells Oilfield Expansion and Pipeline Project can be built within acceptable

limits of environmental and socio-economic impact, important deficiencies in the Proponents' planning and in the preparedness of government need to be rectified."

IPL made application to the NEB for approval of the project pursuant to the National Energy Board Act. Public hearings were conducted by the NEB between October 7, 1980 and November 12, 1980. The NEB's Reasons for Decision were released in March of 1981 wherein it determined, inter alia, that the installation of the facilities were technically feasible and that they could be constructed in an environmentally acceptable manner. A Certificate of Public Convenience and Necessity [No. OC-35] was issued on October 29, 1981, which included a number of terms and conditions. These terms and conditions, inter alia, required the submission by IPL of a schedule for filing environmental and socio-economic studies, programs, practices, plans and procedures. These filings were required to be served on each party of record, who could then give written comment on the submission. IPL was required to either incorporate comments received or to state in writing its reason for not adopting them. The NEB had authority to give a final approval of all studies, programs, practices, plans and procedures prior to construction.

IPL made an application to DIAND for a lease of the crown land necessary for the pipeline right-of-way. DIAND determined, as there was no precedent for such an application, that, in addition to the normal land use application, a specific easement agreement would be negotiated concerning environmental and socio-economic conditions. The right-of-way was granted in July of 1981 subject to a two year construction delay. The delay was designed to allow for community and government preparation in anticipation of the construction phase. The formal Right-of-Way agreement is dated September 28, 1982 and on the same date, the parties entered into formal Socio-Economic and Environmental agreements. The GNWT played a role in the negotiations of the latter agreement and signed the Block Land Transfers, which contained environmental covenants. These agreements acted as an ongoing regulatory tool which included a subjective performance criteria. In addition, specific construction activities required approval on a site-specific and detailed basis.

The environmental assessment of the pipeline construction was an continuing process up to the completion of the actual construction. In addition, many of the regulatory requirements required monitoring programs to be continued after construction.

Basic environmental control measures and construction practices were expressed in government approved reports and guidelines. Many of the anticipated problems, however, were novel due to the fact that this was the first northern pipeline and many of the mitigating techniques were, as a result, untested and subject to some scientific disagreement. This project was, in a sense, a model or test project.

IPL did not have an internal mitigation and compensation policy prior to the project. In light of anticipated compensation claims, a Wildlife Harvesting Policy was developed to respond to potential compensation claims. This policy is designed to supplement any existing compensation policies of Alberta and the GNWT.

IPL prepared an internal environmental assesment through the development of the EIS, which was required as part of its application to the NEB. Other documentation was prepared by IPL with regard to the application to the NEB and other agencies. IPL retained scientists, engineers, and consultants who had experience with the data base and issues surrounding northern pipeline construction. It also retained the services of a Construction Services Management Group.

MITIGATION AND COMPENSATION

Mitigation responses fell into two general categories, environmental and socio-economic. Major potential environmental impacts identified included terrain disturbance, right-of-way erosion and timing of remedial actions, stream crossings, and protection of raptors and other wildlife. An overall mitigative measure was to schedule construction in the winter. IPL prepared a series of reports concerning the minimization of terrain disturbance and obtained approval for the use of wood chips on sensitive slopes. IPL recognized a long-term responsiblity for the integrity of the right-of-way and has designed a monitoring program to, inter alia, oversee erosion concerns. The location of a pump station was changed to remove it from a sensitive location for the nesting of raptors. Wildlife monitoring during and after construction was also used to address this concern.

With respect to socio-economic impacts, the main concern was the creation of training and employment opportunities for northern residents through the participation of local businesses. Due to the fact that pipeline construction mandated capital intensive operations and possible union participation, there were concerns that it would be difficult to provide expected northern employment benefits. A number of mitigative measures addressed this concern. First, IPL withdrew certain work programs from the mainline contract and made these available to northern businesses. Second, IPL facilitated an agreement between the Pipe Line Contractors Association and their unions. This agreement allowed IPL to ensure that contract bids on mainline contracts included minimum levels of northern business, employment, on-the-job training, and allowed non-union work. Third, IPL established an awareness program for its staff designed to sensitize them to northern perspectives. In part, this program helped address the concern of a "boom and bust" effect. Finally, as part of its Wildlife Harvesting Policy, IPL developed a youth trapper training program, to allay the concern

that traditional lifestyles would be affected. The Dene Nation noted that, as employment files of DIAND and GNWT employment files were not accessible and, thus, it was unclear whether these goals were achieved.

The main compensation component of the project is the Wildlife Harvesting Policy, designed to pay compensation for private property damage and theft or loss of income caused by its direct action or that of its contractors or employees. The policy specifically states that it does not intend to address cultural or lifestyle changes. It adopts a reduced onus of proof and states that IPL will consider alternatives to monetary compensation. A Trapper's Compensation Committee, composed of representatives of IPL, local Hunters and Trappers Associations and the governments of Alberta and the NWT, is established to advise IPL and to facilitate dispute resolution.

PUBLIC HEARINGS

Public hearings were held by FEARO, NEB and the Water Board.

DISPUTE RESOLUTION

No formal dispute resolution process was employed concerning mitigation and compensation issues, other than the creation of the Trapper's Compensation Committee, noted above. Informal mechanisms included the Project Co-ordination Committee and the Community Advisory Committee.

POST-PROJECT ISSUES

Post-project activities consist primarily of monitoring programs of IPL and governmental agencies. These programs address geotechnical, revegetation, raptors, wildlife, water quality and fisheries concerns.

Issues which remain outstanding are the determination of the success of mitigative responses, which will be accomplished through the monitoring programs. In addition, the Wildlife Harvesting Policy, as noted above, includes a continuing informal compensation negotiation process.

A Project Coordinator's Office was established and, inter alia, charged with an end-of-project review. This process is designed to focus on environmental and socio-economic issues through the exchange of information with all participants and discussion thereon.

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PEACE RIVER SITE C HYDROELECTRIC GENERATING STATION

PROJECT DESCRIPTION AND IDENTIFICATION OF ACTORS

The Site C hydroelectric generating station was a project proposed by British Columbia Hydro and Power Authority for the construction and operation of a hydro-electric dam on the Peace River. The six-unit Site C hydro-electric plant would provide approximately 940 megawatt nameplate capacity.

The project requires the construction of an earthfill dam across the main channel of the Peace River, about 1 km downstream of the mouth of the Moverly River, and some 7 km southeast of the City of Fort St. John. The dam height would be about 60 m maximum. The dam would raise the water level about 50 m, and it would create a reservoir 80 km long with an average width twice the size of the river itself and with a surface area of some 9440 hectares, about 4600 hectares of which would be newly flooded land. Facilities include six power intakes, penstocks and generating units. The project also requires a spillway, temporary and permanent access roads, and a diversion tunnel during construction.

In addition to the dam, powerhouse and related facilities, two 500 kilovolt (kv) transmission lines between Site C and the existing Peace Canyon hydro plant, and one additional 500 kv between the Williston Substation at Prince George and Kelly Lake are proposed.

The cost, including interest and transmission lines, is about 3 billion dollars.

The project was originally proposed in the late 1970s. Hydro applied under the new Utilities Commission Act, (UCA) for Energy Project Certificate on Sept. 29, 1980. [see infra] B.C. Order-in-Council April 23, 1981 appointed the Utilities Commission to hear application. A notice of hearing was given on June 30, 1981 with a prehearing conference on October 7, 1981, with formal hearings beginning in November, 1981 and completed in November, 1982. The report of the the Utilities Commission was given to the B.C. Cabinet [Lieutenant Governor-in-Council] in May, 1983.

The provincial Cabinet decided to defer granting an Energy Project Certificate (EPC) for the project until a market for electrical energy was estiblished. The EPC is still pending.

B.C. Hydro and Power Authority was sole proponent of the project. Throughout the project design and evaluation stages, a myriad of

provincial ministries were involved in reviewing and commenting on the proposal such as the Ministry of Lands, Parks and Housing, and the Ministry of the Environment. Local governments in the neighbourhood of the proposed facility, like the City of Fort St.John, were also involved, to varying degrees, in the planning and commenting stages of the project.

At the public hearings, some 115 interventions forwarded responses to notices of hearings. Major environmental groups reviewing the project include: Society Promoting Environmental Conservation, North West Conservation Act Coalition, Peace Valley Environmental Association, and the Treaty 8 Tribal Association.

PROJECT BENEFITS

The primary justification for the project is that it would provide a new source of power, which was estimated to be needed by 1990. According to the proponent, the project was the best available to meet this need, including from a financial point of view. In fact, the project was estimated to only increase hydro rates by 6%.

THE STATUTORY AND REGULATORY FRAMEWORK

The B.C. provincial government was responsible for the review and final approval of the proposed project.

With the proclamation of the Utilities Commission Act (S.B.C. 1980, c. 60), a new process for the review and certification of major energy projects was established in the province. The Act requires that proponents of all regulated projects to obtain from the Minister of Energy, Mines and Petroleum Resources (MEMPR) an Energy Project Certificate (EPC) before starting construction. In practice, proponents documenting their applications for an EPC is to submit an Environmental Impact Statement (EIS) reflecting application requirements.

To obtain an EPC, proponents must submit an application to the MEMPR providing the information that is prescribed in the Regulations under the Act (B.C. Reg. 388/80). On receiving an application the Minister, in conjunction with the Minister of the Environment, can refer it to the B.C. Utilities Commission for review under Part 2 of the Act. In this instance, the Commission is required to hold public hearings in accordance with terms of reference specified by the two Ministers. Recommendations on whether or an EPC should be issued and if so, what conditions should apply, are then made by the Commission to the Lieutenant Governor-In-Council. At that point, the Cabinet can approve or deny the application.(1)

Hydro originally applied under the Water Act (R.S.B.C. 1979, c. 429) which empowered the comptroller of Water Rights to hold a

public hearings to hear the submissions of those who had registered objections to an application for a Water Licence. This Act was replaced by the Utilites Commission Act in September of 1980. However, it should be noted that the EPC must be signed by both the MEMPR and the Minister of Environment and Parks since a water licence is still required under the Water Act.

Once under the ambit of the Utilities Commission Act, the MEMPR amd MOE referred the project under Part 2 to be reviewed by the Utilities Commission. By Order-in-Council dated April 23, 1981, a special division of the Commission consisting of a Chairman and three other temporary Commissioners and one permanent Commissioner was appointed to hear the application.

The terms of reference for the review of the project called for an examination and assessment of virtually all aspects and potential impacts of the proposed project. Specifically, the scope of the review was to include:

(a) Project Justification
(b) Project Design and Costs
(c) Land Use, Environmental, Social and Economic Impacts
(d) Other Matters.

The terms of reference also referred to a number of documents the Commission was to take into consideration in its review, including, inter alia,

-B.C.'s Energy Policy Statement of February 1980 [An Energy Secure British Columbia: The Challenge and the Opportunity]

-B.C.'s Environmental and Social Impact Compensation/ Mitigation Guidelines

-B.C.'s Guidelines for Benefit-Cost Analysis

Mitigation is defined in the Province's Environmental and Social Impact Compensation/Mitigation Guidelines as "measures taken in the planning, construction or operation of a project with the specific objective of avoiding or reducing adverse environmental or social impacts." [p. 4]

Compensation is defined as "payments (in cash or in kind) which are made by the developers for the party responsible for the impacts) with the objective of redressing or offsetting the losses which occur despite or in lieu of mitigation efforts."[p.4]

MITIGATION AND COMPENSATION

The main resource impacts resulting from reservoir flooding, highway relocation, and transmission line construction would be:

-loss of various recreational resources associated with the natural river
-loss of fish habitat
-loss of wildlife
-loss of agricultural and forest land
-loss of heritage resources
-loss agricultural land (existing and potential)

B.C. Hydro assessed the value of each of these resource impacts, in dollar terms, based upon existing and projected use of the resources concerned. Based upon this valuation, Hydro then proposed a mitigation and compensation program aimed at redressing the projected impacts.

Hydro proposed a $5 million dollar compensation program for recreational impacts. The program included, inter alia, providing recreational facilities on its reservoirs, building and operating a boat launch ramp at the dam site, $50,000. to Village of Hudson Hope for improvements to an existing municipal park, development of wilderness-type campsites on other rivers in the region, look-outs and rest stops along the relocated highway, and visitor facilities at the damsite.

For fishery impacts, a $2 million compensation program was proposed.

Wildlife effects from the flooding and from the project-related activities and factors including construction, highway relocation, bank sloughing and shoreline erosion. Mitigation responses includes scheduling the clearing of specific reservoir areas as late as possible to minimize the impact on wildlife and certain rehabilitation measures. Total value of the compensation package was some $700,000.

In regard to agricultural impacts, it was estimated that some 5000 hectares of land directly affected by flooding. Hydro proposed to pay the market price for all private lands required for the project. Compensation for undeveloped Crown lands was not proposed upon the basis that this would result in a mere transfer of money to government for land that can never be developed and that the market value for such lands is close to zero at any rate owing to the costs of developing it.

There was also considerable discussion concerning the climatic impacts on agriculture, and in particular, the effects of the expected increase of fog on crop drying. Hydro concluded such impacts would be minimal owing to increase wind speeds.

In regard to forestry resources, Hydro contented that approximately 3,824 hectacres of productive forest would be lost due to flooding. Compensation for forestry resource losses was

proposed only to be minimal since those resources would otherwise be too expensive to be harvested.

For loss of heritage resources, Hydro proposed that the $600,000. study completed during the evaluation stage was sufficient compensation already, especially in light of the intangible nature of the losses, and that exculvation could take place before construction.

Hydro proposed an entire scheme for community and rural impacts, including a $1.1 million for City of Fort St. John for a new water system and compensation for affected native peoples.

The Utilities Commission, in its report, recommended a compensation package that was considerable more than that proposed by Hydro. (2)

PUBLIC HEARINGS

The Commission planned both formal hearings and less formal community hearings.

The formal component involved 115 interventions. It included six phases: 1. demand; 2. supply; 3. project cost and adequacy of design; 4. environmental land use, social and economic impacts and economic cost-benefit evaluation; 5. financial impacts on Hydro and on Electricity users and 6. final argument.

The hearings began in November 1981 in Fort St. John and Vancouver. There were 116 days of formal hearings with 80 witnesses.

In the determination of cost awards, aside from need, the criterion used was the "degree to which the intervention contributes to the understanding of the issues raised by the application." Apparently, over $200,000. was awarded in costs.

In 1982, 6 less formal community hearings were held in towns located near the proposed project with sixty three individuals expressed their view.

Special hearings were also held with native peoples (at the request of the Treaty and Tribal Association) with 46 native people expressing their views.

DISPUTE RESOLUTION

Apart from the public hearing process, there was no dispute resolution method employed.

POST-PROJECT ISSUES

Because the project has yet to proceed, there are no post project issues.

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1. In addition to this route, in the case of provincially regulated utilities, the Ministers (MEMPR and Environment) can order the the application be heard by the Utilities Commission as an application for a Certificate of Public Convenience and Necessity under Part 3 of the Act or he can order that the project be exempt form all or any provisions in the Act.

2. See p. 267 of SITE C REPORT. [will be photocopied]

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SWAN HILLS WASTE TREATMENT AND DISPOSAL FACILITY

PROJECT DESCRIPTION AND IDENTIFICATION OF PARTIES

The Swan Hills facility is an integrated waste management system for the treatment and disposal of both organic and inorganic wastes. The facility is located 18 km northeast of the Town of Swan Hills, a community of 2,500 people, and is 200 km northwest of Edmonton. Forty-five million dollars was spent on construction. It began full operation in September, 1987.

The wastes sent to the facility are referred to as special wastes since they pose potential environmental and health hazards and thus require special treatment before disposal. Principal components of the facility include a physical/chemical treatment plant, high temperature incinerators, a deep well disposal and secure landfill. The physical/chemical treatment plant and incinerators are used for initial processing and breakdown of the wastes. Treated liquid wastes residues are then disposed of through a deep injection well; treated solid wastes are disposed of in a series of secure landfill cells. The facility has been designed to process between 20,000 and 30,000 tonnes of waste per year; roughly three-quarters of this total is organic waste.

The need for an integrated waste treatment facility in Alberta was first articulated in 1980, in the Hazardous Waste Management Committee's (HWMC) report Hazardous Waste Management in Alberta. The HWMC, a committee chaired by both government and private citizens, was established to consider management options for special waste in the province. The Committee recommended, inter alia, that an integrated waste treatment system should be developed for special wastes, that waste management facilities should be regulated and operated by the province, and that industry, other levels of government and the public were needed to help solve the problem.

Subsequently, at the request of the Minister of the Environment, the Environment Council of Alberta (ECA), a crown agency which conducts independent assessments of environmental needs and programs, undertook an investigation of the types and amount of wastes in the province, the storage and treatment options available, and the criteria to be used for siting a facility. More than 1,000 people attended 16 public hearings and submitted 175 briefs. The ECA's 1981 report recommended, among other things, that legislation to regulate all chemicals released into the environment be enacted, that an Alberta crown corporation be established to oversee special waste in the province and the development of a facility, and that a selection committee be established as soon as possible to begin the search for a

locations.

As a result, the Hazardous Waste Implementation Team (HWIT), also with representatives from government and the public, was established later that year to further examine legislation, transportation, and management issues and to initiate a suitable site selection process that would incorporate both technical and public acceptablility critieria. Siting criteria were developed to facilitate the mapping of possible locations. Locations failing to meet the constraints imposed by criteria in four broad groups (physical, biological, land use, human) were eliminated from further consideration.

From the beginning, the siting exercise was recognized as being a primarily a social, pyschological and political problem, rather than a technical problem. This approach meant that not only was the public informed about the hazardous waste problem, but that they were involved deeply in deciding how to solve the problem. It avoided the problems which had been encountered in a number of other jurisdictions when officials have gone ahead and announced a technically feasible site and then attempted to justify it.

In 1981, a Task Force of Alberta Environment initiated a two-year, province-wide Information Program. The Task Force only approached communities where the local government or the public had invited it. The Team and Task Force members travelled to 65 communities to explain the constraint mapping process, give slide-show presentations, hold open discussions on concerns, record those concerns, facilitate the formation of local action committees and designate delegates for a provincial workshop which was to be held in October, 1981.

The two day workshop proved to be an important forum for information exchange and since the delegates were under no pressure to site the facility, "these people worked very hard at identifying with and understanding the problem, and the majority went home convinced something had to be done and supported the province's efforts... (It was) the single most important activity in the entire program" (Collections, 1987).

The final report of the HWIT (composed of all private citizens) in December, 1981, recommended that the facility should be privately owned and operated, but that it should be managed by an Alberta crown corporation or agency and that the facility should be located on crown land. It further recommended that Alberta Environment should select a suitable private sector operator and proceed to develop a short list of sites.

Fifty-two municipalities subsequently requested regional assessments of constraints. Citizens had full access to these studies and the opportunity to express their views at open public meetings. Environmental constraints excluded many sites from further consideration. Public support was also a requirement of site selection, and a number of sites were dropped after

opposition was encountered.

Some locations requested further, more detailed assessments. By the fall of 1981, following exploratory drilling in Beaver, Provost and Flagstaff counties, several sites presented themselves for more detailed hydrogeologic investigation. Strathcona and Flagstaff Counties were eventually dropped due to public opposition. Information meetings continued to proceed in Beaver County, but again opposition to the plant began to coalesce. A plebiscite held in Beaver County in April, 1982, overwhelmingly rejected the plant.

Realizing that it had underestimated the kind of opposition that siting hazardous waste facilities can elicit, the Task Force decided to change the format of the public meetings. The meetings were made smaller to prevent "hecklers" from taking over and more attention was paid to acknowledging both the negative and positive aspects of hazardous waste management and disposal. Films on environmental disasters such as Love Canal, New York, were shown to participants. This encouraged more open discussion and the development of a rapport between speakers and the public.

The new program was launched in the Towns of Ryley and Swan Hills and southeastern Alberta. Plebiscites were held and strong levels of public acceptance were received from the two towns. Intensive hydrogeological investigations at the two sites subsequently confirmed their soundness and both were recommended to cabinet. In March, 1984, one year after the investigations were completed, cabinet announced the site near the Town of Swan Hills as the successful candidate for the construction of the hazardous waste treatment facility. Since that time, a local citizens' committee has been formed to liaise with the ASWMC and, in concert with Town Council, to monitor plant construction and operations.

The government adopted the HWIT's recommendation that the private sector should build, own and operate the waste treatment facility. Alberta Environment had began soliciting proposals for the facility in 1981; nineteen were eventually received worldwide. In May, 1984, Chem-Security Limited, was chosen as the successful candidate by a committee of experts, pending Canadian majority ownership. Chem-Security was subsequently purchased by Bow Valley Resources Services Limited of Calgary in December, 1984.

The Alberta government had also adopted the HWIT's recommendation of establishing a crown corporation to oversee waste management for the province. Legislation was enacted in April, 1984, establishing the Alberta Special Waste Management Corporation (ASWMC). The ASWMC's mandate is to: 1. oversee the implementation of the special waste management system; 2. ensure the continued health and safety of the citizens; 3. ensure the role of the private sector in the system; and 4. act as a facilitator between the waste generators, the public and the

regulatory agencies of government. The ASWMC owns the land upon which the facility was built and it serviced the site with all the necessary utilities.

In March, 1986, the Government of Alberta announced its acceptance of principles for a joint venture between Bow Valley Resources Limited (CSL) and the ASWMC. The Corporation maintains a 40 per cent interest in the facility.

PROJECT BENEFITS

The Swan Hills waste treatment facility is an integral part of Alberta's Special Waste Management Program, and has been designed to meet the province's current and future special waste disposal needs. First and foremost, by providing a safe method of disposing of these wastes, the facility will result in improved local and regional waste management practices across the province. It therefore reduces the potential for environmental pollution resulting from improper waste disposal and the adverse health effects resulting from exposure to these wastes.

Construction and operation of the facility has also resulted in a number of benefits accruing to the Town of Swan Hills. The most visible benefit has been the employment effect of the facility. X workers are employed by CSL on a full time basis at the facility. All of these workers and their families live in the Town of Swan Hills. Indirectly, this has resulted in the creation of x jobs in the service sector and an expanded municipal tax base.

Since the facility is not located within Swan Hills' municipal boundaries, most of the tax monies collected from the plant accruine to the adjacent Improvement District. Currently, the Town receives approximately $65 in tax revenues for every person living in the Town who works at the facility.

Swan Hill's economy is largely based upon oil and gas production, and as a result, it is subjected to the vagaries of fluctuating prices for these products. The town benefits from the economic diversification this facility introduces both directly, through the operation of the facility, and indirectly, from the enticement that the facility's location offers to other industries wishing to have access to a special waste disposal site.

THE STATUTORY AND REGULATORY FRAMEWORK

Project review was undertaken by a Task Force of Alberta Environment in concert with the Environment Council of Alberta and private citizens. The project's approval was the responsibility of the provincial cabinet.

Alberta's environmental impact assessment process is established pursuant to the provincial Land Surface Conservation and Reclamation Act (S.A., 1973, Chap. x). The Minister of the Environment has the discretion to require an environmental assessment and may require one if a development is expected to result in a significant impact on the biophysical or human environment.

The proposal to construct and operate the special waste treatment facility was exempted from the environment impact assessment process established under the LSCRA. However, this was replaced by an equally if not more stringent process of open public consultation and review undertaken by the Alberta Environment, the ECA and the members of the public across the province.

MITIGATION AND COMPENSATION

During the course of the Information Program, the Task Force heard a number of concerns from the public regarding the perceived adverse impacts of the special waste management facility. Sometimes these concerns did not come to the fore until after the local councils had requested more detailed hydrogeological studies and occassionally, the public felt threatened and requested that the invitation be recinded. The concerns fell into eight classifications:

- adverse effects on human health, especially in children;
- adverse effects on livestock and crops;
- degradation of water and air quality;
- decreased surrounding land values;
- increased risks resulting directly from the operation of the facility, such as explosions or fires;
- increased risks resulting indirectly from the transportation of hazardous waste to the facility, such as motor vehicle accidents, spills, and fires;
- an influx of undesireable industry; and
- that the area would become a "dump" for other regions.

The mitigation of adverse environmental and health impacts was achieved through the use of stringent site selection criteria. The criteria fell into four broad classes: physical, biological, land use and human. Geology, hydrogeology, surface water, topography and seismic activity potential were used as physical constraints. Biological constraints to siting were forestry, soils, wildlife and birdlife. Agriculture, federal lands, provincial crown land and resource extraction constrained siting. Finally, recreation areas and archaeological/historical sites acted to limit the choice of sites.

The main concern with regard to physical constraints was that the site be able to contain any possible spills or leaks. Thus, all locations adjacent to surface water bodies, aquifers, and steep slopes were deleted. The nature of the geology was also considered. With regard to land use, potentially productive

areas with rich soil, timber or game and bird habitats were avoided. Areas of prime farm land, grazing reserves, ecological preserves and renewable and non-renewable resources were noted. All federally-owned land, including National Parks, Indian reserves and military zones were eliminated. Areas of important prehistoric and historic value, as well as existing or potential recreation sites were eliminated.

Money was provided to the Town of Swan Hills to undertake studies of the effects of the construction and operation of the facility on the town. In addition, a small monetary gift was provided to purchase a van to promote the facility.

PUBLIC HEARINGS

Public hearings were not convened under the Land Surface Reclamation and Conservation Act (S.A., 1973, Chap. x). However, the ECA was directed to hold public information sessions. Sixteen public hearings were undertaken before the Council issued its 1981 Report. In addition, Alberta Environment's province-wide Information Program involved the public in numerous presentations and open discussion about the facility. After extensive efforts to solicit input, plebiscites were held in four candidate locations to determine the level of public support for the local councils' applications.

DISPUTE RESOLUTION

The Town of Swan Hills has been negotiating with the Alberta Environment and the ASWMC since x over how the tax monies accruing from the project would be distributed. The Town feels that it deserves more than the $65 per worker it is currently receiving in tax revenues and has considered several options on how to increased the tax revenues accruing from the facility. These negotations were continuing at the time of publication.

POST-PROJECT ISSUES

Air, water, soil, vegetation and mammal sampling prior to startup has provided a baseline against which ongoing monitoring information can be compared. The land surrounding the facility is owned by the provincial Department of Forestry and this ensures that there will be a complete review of future adjoining development.

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