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Strategic Issues in the Atlantic Region
Damage Assessment Volume 1

Applying Environmental Damage Assessment and Restoration Tools in the Atlantic Region

Prepared by:
Strategic Issues Group
Corporate Affairs Branch
Environment Canada - Atlantic Region

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Applying Environmental Damage Assessment and Restoration Tools in the Atlantic Region

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Applying Environmental Damage Assessment and Restoration Tools in the Atlantic Region

Executive Summary

The restoration of environmental resources and services has been recognised as essential to providing Canadians with a healthy and sustainable environment. Successful restoration requires a commitment to pursuing legal and compensatory actions, judicial awareness of the role of the Environmental Damages Fund, a comprehensive and co-ordinated approach to damage assessment and restoration, an understanding of the values of resources and services and a decision-making protocol for the distribution and use of the Fund. Following the discussion of the 1997 Assessment and Restoration of Environmental Damages in the Atlantic Region workshop, this report surveys these issues and recommends possible courses for policy development and action.

Domestic and international legal tools provide Environment Canada with a wide range of responses to oil pollution from prosecution to negotiated settlements to compensation. In order to fully exploit these options it is necessary to engage in prosecution of environmental offences as successful outcomes will encourage polluters to engage in other courses of legal action such as mediation and alternative protection measures. Availability of the full spectrum of legal action in turn creates more opportunities to gain financing for the Environmental Damages Fund.

Effective restoration requires a structured approach to damage assessment that allows for thorough evaluation of injuries and planning of appropriate responses. The American Natural Resource Damage Assessment system offers a guideline that combines scientific and economic assessment in order to produce cost-effective and technically feasible restoration strategies. While this method is compatible with existing Canadian practices and with the Fund's criteria, issues of information quality and apprehension regarding economic valuation will have to be addressed by an increased focus on providing reliable scientific data on vulnerable resources.

Courts play an equally important role in ensuring that economic sanctions such as court awards and fines are deposited in the Environmental Damages Fund. As judicial awareness of the Fund's role in restoration efforts is currently lacking, it is necessary for prosecutors to provide information concerning the Fund and potential court involvement to judges. In order to gain an appropriate level of financing when asking for restoration-

oriented awards, prosecutors must also educate the courts on the ramifications of pollution and resource damages to the relevant ecosystem.

Financial administration of the Fund requires criteria for both applicants and decision-makers. Standards should ensure that proposed funding recipients have conducted restoration in a cost-effective, technically feasible, scientifically affirmed and participatory manner. Additional criteria should be implemented so that neither funding nor services are duplicated and that decisions are made transparently and at the appropriate time.

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Applying Environmental Damage Assessment and Restoration Tools to Oil Pollution Incidents in the Marine Environment (Atlantic Region): Options for Legal Action

1.0 Introduction

Canadian and international law provide a variety of responses to incidents of oil pollution and to the resulting or potential damage to natural resources. Environment Canada's legal options include the laying of charges under various statutes, recovery of assessment, cleanup and restorative costs, engaging in settlement talks, and application to compensatory funds. In order to determine which of these options will best suit the department's goals of protecting and conserving the environment, it is necessary to first determine the objectives of pursuing legal courses of action and to assess the strengths and weaknesses of the department's evidence. The purpose of this paper is to assess the merits of the legal options in light of goals and evidentiary requirements and to provide a menu of recommended and required steps in the legal sphere.

2.0 The Objectives of Initiating Legal Action

2.1 Prevention

The most common reason for pursuing legal remedies and penalties is to prevent future harm to the environment. This is accomplished by establishing a standard of conduct for people and industries engaged in potentially damaging activities. When courts issue orders or impose fines and sentences they are indicating to both the polluter and to potential offenders that the demonstrated behaviour has exceeded society's standards and is therefore unacceptable. As legal sanctions consequently carry a high degree of stigma, corporations and individuals adjust their conduct in order to avoid the economic and social consequences of being labelled a polluter. The adoption of environmentally friendly practices in turn leads to avoidance of further environmental damage.

2.2 Restoration

Like prevention, restoration is a long-term goal. Instead of correcting polluters' conduct, however, restoration focuses on returning the affected natural resources to the condition they would have been in had the pollution not occurred. This involves the rehabilitation of the resources and their ecological role in addition to compensating for the interim loss

or diminishment of their services[1]. In terms of legal action, the goal is to recover the economic equivalent of the damage incurred and the costs associated with the restoration project.

While the principle of cost recovery is clearly established in Canadian law, restoration and resource valuation processes have yet to be addressed either by the legal system or by legislation. It is possible that courts will reject the economic values attributed to the resource as being subjective[2] or unsubstantiated. In addition, courts may be unwilling to hold polluters responsible for indirect ecological affects or for the often high costs of damage assessment, especially when their liability is based on negligence or carelessness.

3.0 Canadian Legislation

3.1 Canadian Environmental Protection Act (CEPA)

CEPA is a general statute that, among other concerns, pertains to the discharge of toxic or dangerous substances at sea. Polluters can be charged for violating section 67(1) if they have deliberately dumped a proscribed substance at sea, and under section 115 if they have intentionally caused an environmental incident or if they have acted with complete disregard to the consequences of their actions. The inclusion of the terms 'intentionally', 'recklessly' and 'wanton disregard' into CEPA's provisions requires that the prosecution prove the occurrence of the pollution and that the polluter acted with some awareness as to the nature of the act[3].

CEPA offers a wide range of options for both the department and for people who may have been affected by the pollution. If polluters have intentionally caused damage to the environment and/or death or harm to people, section 115 states they can be fined up to one million dollars and/or sentenced for up to five years in prison. For violations of section 67(1) polluters can be fined up to $200,000 and/or imprisoned for up to six

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1 Dave Sawyer, Damage Assessment and Oiled Seabird Compensation (Draft), 4. Services are considered to include direct uses such as consumption and income generation and such passive uses as aesthetic value and the knowledge that the resources will be enjoyed and used by future generations.

2 The most commonly supported – and most controversial – approach to resource valuation is the contingent valuation method, or CVM. In this approach, a sample of citizens are asked how much they would be willing to pay for the resource's service. The method has been criticised as leading to overstatement of values and overly generous damage claims.

3 There are three forms an environmental offences may take. *Mens rea* offences are based on the presence of a particular state of mind such as intent or recklessness. Absolute liability, which are rare in Canada, and strict liability offences require only the commission of an act. The difference between absolute and strict liability is that when a polluter is charged with an absolute liability offence she or he cannot defend the discharge by saying she or he acted with due diligence. For additional information, please refer to Elizabeth J. Swanson and Elaine L. Hughes, The Price of Pollution: Environmental Litigation in Canada (Edmonton: Environmental Law Centre, 1990).

months under section 116.[4] In addition, courts may impose a further fine under section 129 if it is found that the polluters acquired a monetary benefit because of their actions.

In addition to these sanctions, section 130(1) contains guidelines for court orders. Orders can be made at the court's discretion either to supplement sanctions or in place of them. The Department may request that the court consider:

- prohibiting the polluter from doing or continuing the act that caused the pollution;
- take any action deemed appropriate for remediation and prevention of further harm;
- publish the facts of the incident and of the prosecution;
- notify anyone who may be affected by the pollution;
- post a bond against non-compliance of the Act and/or its regulations;
- inform the Department about any activities that may be of interest to it;
- compensate the Department for any expenses incurred as a result of the pollution;
- perform community service;
- finance research into the use and disposal of the pollutant in question;
- any other condition deemed reasonable by the court.

In addition to these prosecutorial remedies, section 136(1) allows anyone affected by the incident to pursue a civil action against the polluter. The polluter can be sued by individual citizens or by government for the value of the lost resources or services and the reasonable costs of assessing the damage. Section 136(3) states that a conviction under the act can be used as proof that the polluter has not fulfilled his/her duty to transport or to dispose of the pollutant in a safe manner. The government is also allowed under section 77 to recover the reasonable costs of mitigating and remediating the damages to the environment.

3.2 Revised CEPA, 1998

Several notable amendments to CEPA have been proposed as a result of the legislation's mandatory five-year review[5]. While the offence provisions themselves have only been slightly altered, there have been significant changes in the range and strength of the responses to these offences. According to section 272(2) every person who breaches a provision, obligation or prohibition included in CEPA or its regulations or who violates a court order or an environmental protection agreement can be convicted of either an indictable or a summary offence. An indictable offence carries a maximum fine of a million dollars and a maximum prison term of three years; a person convicted of a

4 The severity of the sanction depends on whether the polluter was charged with a summary or an indictable offence. Summary offences are considered to be less serious than indictable offences and consequently have a smaller maximum fine and shorter maximum prison sentence.

5 As of June 16, 1998 the Bill had passed second reading and is anticipated to be in force in late 1998.

summary offence can be fined up to $300,000 and/or imprisoned for no more than six months.

If the offence in question was committed intentionally, recklessly or in wanton disregard for human life and safety, and results in diminish use of the environment, the offender can be fined under section 274(1) for up to a million dollars and/or imprisoned for five years; the possibility of charges under the Criminal Code is maintained under section 274(2). Like the original act, the revised CEPA allows for additional charges if the incident occurs over the course of more than one day under section 276.

While the 1989 version of CEPA allowed for an additional fine to be imposed if the offender had recouped a monetary benefit, the revised legislation relaxes this standard under section 290 and allows the offender to be fined if she or he has received a benefit, advantage or property. This allows for a wider range of supplementary fines as the benefits in question do not have to be characterised as profits or avoided costs. However, the use of this section may be limited as the property, benefit or advantage must be capable of being monetized as their value serves as the amount of the fine.

An important amendment to the punitive sections is the addition of mandatory sentencing criteria in section 287. When imposing sentences under sections 272, 274 and 276 the court is required to take into consideration:

- the risk of harm or harm caused by the offending act;
- estimated total costs of remediation or mitigation programs;
- whether the offender undertook or proposed any remedial or preventative actions such as an appropriate environmental management system;
- whether the offender complied with any reporting requirements under the act;
- whether the offender was found to have committed the offence intentionally, recklessly or inadvertently;
- whether it was shown that the offender acted negligently, incompetently or without concern;
- whether the offender received a benefit or an advantage as a result of his or her acts;
- any evidence that leads to the reasonable conclusion that the offender has a history of non-compliance with preventative legislation;
- all available sanctions that are reasonable in the circumstances of the offence and the offender.

Criteria of this nature ensures that courts impose sentences that reflect the spirit and intentions of the legislation and the magnitude of the offence. They also serve as useful guides for investigations and evidence gathering; the greater the number of requirements that are met, the larger the sanctions that are likely to be imposed.

The court award possibilities presently available under section 130 have been expanded by section 291(1) of the revised CEPA to also include:

- the preparation of a pollution prevention or environmental emergency plan;
- carrying out environmental effects monitoring;
- implementing an environmental management system;
- conducting an environmental audit;
- the allocation of a fine to whatever purpose the court deems to be appropriate;
- creating a scholarship fund;

The added court order options are clearly preventative in nature as they compel the offender to initiate the practices of a good corporate citizen. The fine allocation order is significant as it would allow the courts to designate the money for deposit in the Environmental Damages Fund and therein circumvent the Treasury Board prohibition against using fines for Fund projects.

The amended CEPA also provides the Department an opportunity to create its own punitive and restoration programs with regard to the offender's situation and the nature of the offence committed. The Department can enter into environmental protection alternative measure (EPAM) arrangements with alleged offenders so long as, according to section 296(1), the agreement of the Attorney General has been secured and the polluter has been charged with an offence. The Attorney General must be satisfied that the alternative agreement is appropriate given the need to protect the environment and human health and well-being, the number of times the offender has been convicted, the polluter's history of compliance, co-operation with the investigation and any remedial efforts the offender has undertaken or planned.

The alleged offender, for his or her part, must have been informed of the right to be represented by a lawyer, have accepted responsibility for the incident and have volunteered to be part of the arrangement. Offenders who have not volunteered, who want to proceed with a court hearing or who are charged with certain offences are not permitted to meet their responsibilities through an alternative arrangement. The excluded offences are generally involve significant harm to the environment and/or to people or pertain to subject matters that have no true alternative measures[6].

If the offender qualifies for the program and is willing to participate the Attorney General, in consultation with the Department, can enter into an agreement with the offender. According to section 298(1) the agreement can take any form, including conditions that are available as court orders and requiring the offender to assume the costs associated with monitoring his or her compliance. These broad guidelines would allow the department to arrange restoration projects with the offender along any terms so long

6 Sections 274 (damage to the environment and/or death or harm to people) and 16 (voluntary reports during environmental emergencies) are typical examples of these types of sections.

as the initiative and its expense were considered to be reasonable and, as stipulated in section 299, the arranged activity concludes within three years.

As previously mentioned, section 272(1) states that failure to comply with the EPAM is considered to be an offence. Additional remedies for violation of the agreement can be found under the equitable doctrines of contract law if the EPAM is formalised in written form. For instance, the Attorney General can apply for an injunction in order to stop the offender from committing further acts of pollution or to force him to take precautionary measures. It is also possible to use the doctrines of specific or part performance to compel the offender to fulfil his or her contracted responsibilities.

Similar to the current version of CEPA, the revised CEPA allows the Department to recover the costs of remediation and mitigation under section 136. The Department and any affected citizen or organisation can pursue a civil action in order to gain compensation for damages as per section 40 unless a claim may be made instead against a laden ship under the Canadian Shipping Act.

3.3 Migratory Birds Convention Act (MBCA)

MBCA is a narrow but strong statute that pertains to birds included in the Migratory Birds Convention. Under section 35 of the regulations it is an offence to deposit oil into any waters or any area frequented by migratory birds. As per section 13(1) a corporation can be fined up to $250,000 while an individual can receive a fine up to $100,000 and/or can be imprisoned up to five years.

The cap on fines and prison terms is extended by section 13(2) to double the amount for any subsequent offence which, according to section 13(3), includes incidents that carry over to subsequent days. An additional fine can be imposed under section 13(5) if the polluter has benefited economically from the incident; this fine can be equal to the amount gained or saved by the polluter even if the upper limit of monetary fines has already been ordered. In addition to these forms of sentencing, section 16 contains court order possibilities similar to those provided by the original CEPA.

3.4 Fisheries Act

The Fisheries Act regulates matters pertaining to the exploitation and preservation of fish and their habitats. Environment Canada is responsible for the enforcement of sections 36 to 42 which concern habitat protection and pollution prevention. Under section 36 it is an offence to discharge any substance that would alter the quality of the water or that has been proscribed in full or above a certain level into the water or upon the shore. In addition, the Department of Fisheries and Oceans can lay charges under section 35 which prohibits any activity that would result in the distruction, alteration or disruption of a fish habitat.

A polluter that has violated either of these provisions can be fined, under section 40, up to one million dollars for an initial offence and can receive a similar fine with the possibility of imprisonment up to three years for any subsequent incidents. Like MBCA and both versions of CEPA, pollution that occurs over the course of more than one day constitutes separate offences for each day in question under section 78.1; the court can also consider an additional fine if the polluter has received a monetary benefit because of his or her actions. Section 79.2 also allows courts to impose orders similar to those of CEPA and MBCA. The Fisheries Act permits government agencies and fishermen to recover costs and economic losses associated with the pollution respectively under section 42.

3.5 Canada Shipping Act (CSA)

Although the department does not have authority over the CSA, the act does provide some recourse for recovering the costs associated with oil pollution damage and correction. Section 677 stipulates that ship owners are legally responsible for oil pollution damage and any reasonable costs[7] incurred by any person for the purpose of preventing, repairing, remedying or mitigating environmental harm. Under section 664, Transport Canada can charge any person or ship with the offence of discharging a pollutant in Canadian territorial seas or in the exclusive economic zone.

Individuals found guilty of a summary offence can be fined up to $250,000 and/or sentenced to up to six months imprisonment; all other parties can be fined a maximum fine of $250,000. Both individuals and organisations that have committed indictable offences can be fined a maximum of a million dollars; in addition, the individual offender can receive a sentence of no more that three years in prison. The sentencing criteria laid out in section 664(2) is very similar to that of the revised CEPA although the CSA focuses on economic benefit as opposed to a wider definition of advantages. Court orders are also available under section 664.1. These are more limited than those listed in either version of CEPA and MBCA as they focus on the actions that constitute the offence rather than the ramifications of the actions on the environment.

3.6 Arctic Waters Pollution Prevention Act

This act pertains to the ocean bordered by the 60th north latitude and the 141st west longitude. Although this area only includes the northernmost tip of Labrador, it is important to consider the options provided by this statute.

Transport Canada can charge any person or ship weighing over 100 tonnes under section 4 if they have discharged any waste in arctic waters or on the adjoining territory. According to section 18(1), this summary-level offence carries a $5,000 fine for a person and $100,000 for a ship. There is also the possibility for a continuing offence infraction under section 18 if the incident occurs over the course of more than one day.

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7 Courts consider 'reasonable costs' to be the expenses that a reasonable person in the department's position would incur.

Section 6 allows individuals to recover their losses, damages and expenses from the party responsible for the pollution; government claims, however, will not be settled until all other cases have been addressed. Liability is limited under section 15 of the regulations to 2,000 gold francs per tonne and to a maximum amount of 210 million gold francs; the award will also be reduced by whatever amount the polluter has spent to repair, remedy or mitigate the damage. Claimants for damages can also apply for compensation from any indemnity bonds or insurance that ship owners may be required to post under section 8.

3.7 Criminal Code

A number of Criminal Code provisions lend themselves well to environmental prosecution and pollution prevention. While criminal prosecution of polluters means surrendering control of legal action to the Department of Justice, a criminal conviction carries a higher stigma that may lead to increased deterrence of pollution.

Of the offences contained in the Criminal Code, criminal negligence under sections 220 and 221 is the best suited for environmental protection. In fact, the laying of this charge in cases of wanton disregard or intentional discharges on the part of the polluter is encouraged under both the original and revised CEPA. If the polluter's actions lead to bodily harm, she or he can be sentenced under section 221 to imprisonment for up to ten years; as per section 220 the penalty is increased to life imprisonment[8] if someone dies as a result of the incident.

It should be noted, however, that criminal negligence does not apply to environmental damage unless it has consequences to human health or life. In addition, the Criminal Code requires more conclusive evidence than does environmental legislation because of the severity of the penalty. Accordingly, the crown must not only show that the incident occurred but that the polluter acted either intentionally or in a reckless manner.

Other possible offences that could be used to criminally prosecute a polluter include common nuisance (section 180), mischief to property (section 430), and possession of a dangerous or offensive volatile substance (section 178). Each of these offences can carry a prison term up to five years. As with criminal negligence, however, there must be a demonstrable injury or death to a human being or a demonstrable detriment to recognised property as a consequence of the pollution.

3.8 Advantages and Disadvantages

It is possible to meet both preventative and restorative objectives through the application of Canadian legislation. Fines and prison terms send a clear message to polluters that

8 Under Canadian law, life imprisonment is a maximum of twenty-five years. For most life terms, parole is an option after two-thirds of the sentence has been served.

such activities will not be tolerated and that all transgressions will be prosecuted[9]. This increases the risks associated with violating the law as fines and legal expenses raise the polluters' costs of doing business. The stigma attached to prosecution also undermines the polluters' reputation and relationship with consumers. In order to avoid these consequences and impact on their profit margins, corporations may take measures designed to minimise or avoid pollution. Prevention can also be achieved through court orders prohibiting or publicising pollution-prone corporations and their activities. Fines and court orders also fulfil restorative objectives as courts can require polluters to participate in environmental restoration by undertaking the action themselves, by doing community service or by financing research.

There are several opportunities to recover the costs associated with remediation and mitigation from polluters. In effect, successful legal action causes the costs of environmental protection and restoration to be imposed on the polluters. Even the threat of prosecution and charges can prompt a corporation to adopt more efficient means of transportation or monitoring, to undertake remedial efforts, or to co-operate with government authorities.

These benefits, however, must be weighed with the difficulties posed by more practical considerations. Prosecution of polluters can be problematic because of the difficulty and expense of obtaining evidence. At a bare minimum it must be established that the ship owner, corporation or individual in question was responsible for the incident in question while more stringent offences under both versions of CEPA as well as the Criminal Code require that certain states of mind be proven as well. Even if the Department can establish that pollution did occur under the mandatory conditions, the court may not accept that damage has occurred to resources unless the Department provides studies and documentation of actual rather than forecasted injured or lost resources.

As environmental prosecution can be a lengthy and adversarial process, there is a possibility that use of this option could undermine the department's relationship with relevant industry actors. Response to environmental emergencies and long-term solutions to pollution depend on continuous dialogue and co-operation between government and corporations. If legal proceedings have been initiated, corporations may not be willing to share information or to notify the government promptly during emergencies for fear of incriminating themselves.[10]

Accordingly, prosecution under environmental legislation should be carefully considered. Prosecution may be most appropriate when polluters have acted deliberately or recklessly, when they have ignored warnings or requests from authorities, when they are repeat offenders or they have refused to take any action to correct or to mitigate the

[9] For a comparison of the fines and sentences available under Canadian legislation, please refer to Appendix A.

[10] Kernaghan Webb, "Pollution Control in Canada: The Regulatory Approach in the 1980's" in Elaine L. Hughes et al (eds.) Environmental Law and Policy (Toronto: Edmond Montgomery Publications, 1993) 198-200, 199.

chances of pollution and damage. Evidence that the corporation in question caused the pollution and, if necessary, acted in a reckless or intentional manner should be conclusive, if not irrefutable.

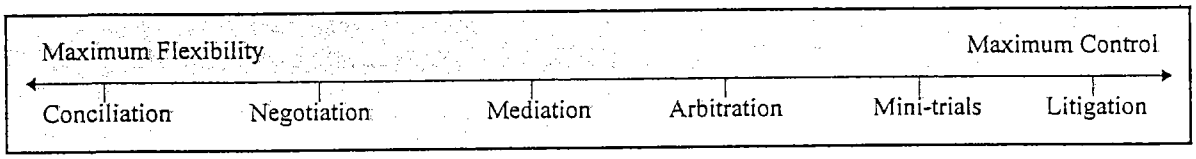
In making decisions regarding whether to proceed with prosecution, however, the Department should not be so selective as to limit the range of enforcement activities to large and/or obvious cases. Prosecution of even complex cases is necessary in order to establish court rules; once it is recognised that the Department can secure convictions, polluters can be compelled to participate in other forms of legal action. Accordingly, a strong legislative base allows the Department the maximum use of its legal options as it will be in the position to decide which option should be pursued.

4.0 Settlement Possibilities

Settlement is an attempt to reach a mutually beneficial compromise through negotiation, mediation or arbitration prior to or during legal proceedings. Settlement is almost always preceded by the laying of charges under a statute or the commencement of legal action. By participating in talks, the polluter benefits by avoiding prosecution and the potentially severe sanctions. The department gains by avoiding the uncertainty of the legal system and by securing some, if not all, of its objectives. This process is also valuable as it maintains or creates working relationships between industry and government.

4.1 Alternative Dispute Resolution (ADR)

Settlement talks have evolved from one-on-one decision making to include a wide array of techniques collectively known as alternative dispute resolution (ADR). ADR processes can be tailored to fit a particular relationship or conflict situation; options include conciliation, negotiation, mediation, arbitration and mini-trials and can call upon the assistance of a third party. Each of these options has varying degrees of flexibility in decision making and control through the imposition of a structure:



Instruments with a high degree of flexibility such as conciliation and negotiation allow the participating parties the opportunity to freely discuss issues and to come to creative solutions. The lack of a formal structure, however, increases the likelihood that settlement will not be reached. More controlled systems such as arbitration include decision makers and facilitators in the process in order to ensure that discussions continue and that a decision is reached. These systems can be rigid, therein reducing each party's ability to direct discussions and to influence the decision.

4.11 Mediation

Of the alternative dispute resolution mechanisms, mediation is possibly the best suited for environmental disputes as it contains elements of both flexibility and control. Mediation is flexible in that the parties decide upon the rules of the process, the objectives to be discussed and the identity of the mediator. The mediator is a neutral third party who acts as a facilitator during the discussions. The use of a third party is a form of control as the mediator ensures that all opinions on the subject are heard and that discussion focuses on the key areas identified by the participants. However, flexibility is maintained as the mediator is not in the position to make decisions; the ultimate outcome of the discussion is solely under the control of the parties involved.

The first step in mediation is to establish the nature of the problem and the objectives each party hopes to achieve. At this point the mediator assists by clarifying and summarising statements. Once there is consensus on which issues require resolution the mediator assists the parties in determining alternative agreements that allow for mutual benefit. While it is not necessary or even likely that the parties benefit equally from the process, the decision that has the best chance of success often has one party gaining a highest possible benefit at the lowest possible price for the other party.

For instance, the Department and a polluter may come to an agreement that the latter will not be charged with an offence if she or he accepts responsibility for the resource damage incurred. This arrangement may have a better chance of success if the Department subsidises part of the expenses associated with the polluter's cleanup and restoration project; as this entails a lower cost for the polluter, it is more likely that she or he will comply with the agreement.

While mediation is traditionally undertaken by two participants, it is possible to extend participation to any party who has a significant interest in the proceedings or who has been affected by the incident in question. In this way, all relevant issues can be addressed and resolved at the same time, therein potentially avoiding further litigation or prosecution. However, the most difficult aspect of multiparty mediation is selecting which parties have a sufficiently pertinent interest in the proceedings and which of these groups should be invited to attend. Participation should be voluntary and should be extended to those parties who are affected by the agreement, those needed to successfully implement it, or those who could undermine it if not included in the discussions. For example, talks between the Department and a polluter could be extended to include community groups who live in the area affected by the pollution, other government agencies with environmental or ship conduct responsibilities, and representatives of the implicated industry.

4.2 Advantages and Disadvantages

Settlement through ADR techniques clearly has both preventative and restorative potential. An agreement reached between two parties can stipulate that the polluter will invest in better equipment, train its staff on the consequences of inappropriate disposal or engage in restoration activities. While the course of action agreed upon in this voluntary process is not in itself legally binding, the parties can formalise the agreement by entering into a contract or, as per the revised CEPA, creating an EPAM agreement.

As with prosecution, ADR processes are not appropriate for all situations and disputes. If participants have a reasonable chance of succeeding in the legal system, it is unlikely that they will agree to the mediation process as it represents an unnecessary downgrading of their objectives. Even if they do participate they would not be bargaining in good faith; participants confident of a legal victory may merely be fact-finding or delaying the process while they develop their arguments. Ultimately, such tactics only serve to augment any existing tensions.

ADR is also not suited for complex situations with potentially large numbers of participants or that require resolution of contentious issues. The larger the number of participants, the more difficult it is to identify issues and objectives and to reach a meaningful consensus. Participants' arguments or agendas may also be based on moral, cultural or economic considerations that cannot be negotiated and that could lead to greater impasses.[11] The number of interests represented by this greater participation will also make it difficult to identify a neutral mediator.

ADR, and mediation in particular, is therefore most appropriate in disputes where such issues as responsibility for the pollution and the extent of damages can be readily agreed upon or are incontestable. Participants are then in the position to discuss such issues as how remediation should be undertaken and what preventative steps should be initiated by the polluter. The Department should also consider mediation when its chances at successfully prosecuting an offence are not certain as participating in a mediation exercise will usually increase the likelihood of obtaining legal goals.

It may not be advisable, however, for the department to engage in mediation until environmental legislation standards have been established through successful prosecution. This may send the signal that legislation will not be strictly enforced and that the risk associated with marine pollution is minimal. As previously mentioned, once it is established that the courts will apply these standards stringently and decree heavy sanctions polluters may be more willing to participate in an ADR process.

11 H. Ian Rounthwaite and Dr. Peter Mercer, "Environmental Mediation in Canada" in Elaine L. Hughes et al. (eds.) Environmental Law and Policy (Toronto: Edmond Montgomery Publications Ltd., 1993) 489-492.

5.0 Funding Mechanisms

5.1 International Compensation Schemes and Funds

There are several sources of compensation established in international law for oil pollution damage. The International Convention on Civil Liability for Oil Pollution Damage (CLC) establishes that ship owners are liable for oil pollution damage if it can be demonstrated that the spill emanated from their vessels. It is also mandated that ship owners have insurance in order to provide compensation for natural resource damage and for reasonable costs associated with managing the pollution.

The CLC is not a universal insurance framework as it only applies to laden ships that are carrying persistent oil and to the insurers of such vessels. The loss or damage suffered must have occurred in a member state's territory and must be capable of economic quantification without resort to theoretical valuation models. As a result, non-use values such as aesthetic appreciation and computer-generated estimates of damage will not be accepted as compensible injuries by the CLC administrators.

Despite the limited applicability, certain response activities may be compensated under the Convention so long as they were undertaken for preventative and mitigation purposes and the costs incurred were reasonable. Restoration activities are not specifically included as compensible in the CLC. However, it can be assumed that they could be characterised as activities undertaken to minimise damage as per the requirements of Article 1, paragraph 7.

There are also procedural limitations to the use of the CLC. The claim must be made no later than three years after the injury has been detected or six years after the incident occurred if there has been no evidence of pollution. As the ship owner's insurance can be limited to the ship's tonnage it is possible that the compensation awarded under the CLC will not be sufficient to cover the Department's claim.

The International Oil Pollution Compensation Fund (IOPC Fund) was created in 1971 under the Convention on the Establishment of an International Fund for Oil Pollution Damage (Fund Convention) in order to supplement CLC compensation for ship-source oil spills. A claim can be made to the IOPC Fund if there was no liability for damages under the CLC, the ship owner is financially incapable of meeting his or her obligations or because the damage claim exceeds the owner's liability under the CLC.

The format of the compensation scheme is similar to that of the CLC. The IOPC Fund applies only to laden tankers that are carrying "persistent hydrocarbon mineral oils" and to damage that has occurred in a member state's territorial sea. Damage claims must meet the same criteria and limitation periods as stipulated in the CLC. It is also required that the claimant first attempt to take all reasonable steps to resolve the claim through available legal remedies. Unfortunately, it is not clear whether this requires simply an

application to the CLC or to all recourses for domestic remedies such as CEPA, civil litigation and the Ship-source Oil Pollution Fund.

In 1992 protocols were proposed for both the CLC and the IOPC Fund that would increase the levels of compensation and the scope of application. The amendments would introduce a special liability for owners of small vessels, increase the limitation amount on ship owners' liability to 270 million dollars per incident, include a member state's exclusive economic zone and would permit recovery of reasonable and appropriate restoration costs and for preventative actions even if no damage has occurred.[12] The protocols were anticipated to come into force by late spring, 1998.

5.2 Ship-source Oil Pollution Fund (SOPF)[13]

The SOPF is a fund of first resort[14] for those affected by oil spills in Canadian territorial seas and exclusive economic zone. As a legal person, the Department can make a claim under section 677 of the Canada Shipping Act for oil pollution damage from a ship and for any preventative, restorative, or mitigative actions it may have taken in response to the spill or in anticipation of pollution. The SOPF administration will only grant an application if it can be shown that:

- the damage occurred or the response was conducted in Canadian territorial seas or exclusive economic zone;
- all reasonable steps were taken to recover costs from the ship owner or from the IOPC Fund if it applies;
- the incident was not due to the negligence of a third party, a government agency or of the claimant;
- the incident was not due to an act of war, hostility, civil war, insurrection or an act of God[15];
- the claim exceeds the ship owner's maximum liability under the CSA and which cannot be recovered from the IOPC Fund;
- the ship owner is insolvent;
- the ship owner is not liable because the actual or anticipated damage occurred in Canada's exclusive economic zone or;
- the source of the spill is unknown.

The range of compensation available through the SOPF is more extensive than that which is presently provided by the international funds. The SOPF compensation scheme applies to spills that originate from ships carrying oil as either cargo or as fuel; the international

12 Administrator, Ship-source Oil Pollution Fund, Annual Report 1996-1997 and International Marine Organisation, International Regime for Oil Pollution Liability and Compensation, <http: //www.imo.org/imo/news/296/iopc.htm>

13 For a detailed analysis of claims made to the SOPF, please refer to Appendix C of this report.

14 Ship-source Oil Pollution Fund, Annual Report 1996-1997 1.

15 An act of God is legally defined as an extraordinary and unique event that could not have been anticipated. An example would be a sudden hurricane with no warning in an area with no history of such occurrences

funds, on the other hand, only pertain to laden tankers carrying persistent hydrocarbons. Unlike the CLC and the IOPC Fund, the SOPF is liable for the damages and costs that occur in Canada's exclusive economic zone or that are associated with mystery spills. In addition, the SOPF will compensate any expenses that remain once the liability of the international funds and of the ship owner has been exhausted.

Mystery spill claims represent a significant opportunity as the SOPF will assume the costs of the recovery operation up to its allowable limit. Claimants are entitled to a presumption that a mystery spill originated with a ship if the fund administrator is unable to prove that the spill was caused by a source other than a ship or that the spill emanated from a particular vessel. For example, the mystery spill presumption will stand if a spill cannot be attributable to one of the ships known to be in the vicinity during the incident; it will be denied, however, if there were no vessels in the area or if it appears that one ship could reasonably be held responsible for the discharge.

The latter decision is not entirely adverse to a claimant's position as the SOPF will also provide compensation for expenses resulting from known-source oil spills. In situations where the source of the spill is known, the claimant must merely prove that the incident was the result of a discharge from a particular ship. It is not necessary to prove that the ship's crew acted negligently, recklessly or intentionally.

Once the claim is investigated by the administrator she or he makes an offer for compensation. Similar to the international funds, the SOPF only reimburses the documented costs of remedial and preventative action and compensates for the ascertainable value of the damage. Therefore, only actions and resources that have marketable qualities can be included in the compensation package. For instance, the fund would provide compensation for the labour involved in spill cleanup and for any lost property value; it is not likely that restitution could be gained for injured seabirds as they can only be valued by theoretical models. It is also difficult to calculate compensation for activities that have a multitude of purposes; for example, the fund administration requires that the time a Coast Guard vessel spends on oil spill monitoring to be separated from routine surveillance so that the labour and equipment allocated to that task can be precisely monetized.

The "reasonableness" criteria for expenses has been interpreted by SOPF administrators as being the least expensive method available to accomplish the goals of the intervention. Accordingly, the fund administration may estimate the labour invested into an activity at ten dollars an hour rather than the twenty dollars an hour rate the participants were actually paid because it would have been possible to hire someone for a limited time to work at the lower wage.

If the amount offered in the claim is accepted, the claimant is deemed to have surrendered or abandoned his or her rights to undertake further legal action against the polluter for the purposes of cost recovery. The administrator then has the right to pursue the case in

order to recover the costs of the compensation from the ship owner or from the IOPC Fund.

In May, 1998 amendments that were made to the Canada Shipping Act incorporating the 1992 Protocols gained royal assent. As the earliest the amendments can come into force is early 1999[16], Canada will continue to be a party to the 1971 format of the international fund in the interim. Because the majority of signatory states have abandoned the 1971 framework in favour of that established in the 1992 Protocols, there is a limited financial pool available for Canadian oil pollution damage at the international level.

The amended SOPF has a number of significant changes that favour the Department as a claimant. While the existing SOPF pertains to convention ships only while they are carrying oil, the new fund also includes any oil pollution that occurs after the ships have unloaded their cargo or have exhausted their fuel. Under section 654, the onus is on the ship owner[17] to show not only that there was no longer any oil on board but that there was not even oil residue remaining.

The CSA now makes a specific reference to the ship owner's liability for environmental damage. Under section 677(2), the owner is responsible for the costs of reasonable undertaken measures of "reinstatement". While these activities are mentioned as compensible costs in section 677(1)(b), the use of the phrase "impairment to the environment" suggests that restoration actions can take an ecological approach. This is more extensive than the compensation provided for restoration under the international regimes.

The amount of money available to compensate resource damage and restorative actions will increase so that the SOPF has the same limit as the international scheme. Until the 1992 protocols come into force, negligent or innocent ship owners can be held responsible under section 679 for up to 4.4 million dollars if their ship weighs less than 5,000 tons and for ships exceeding this weight the lesser of 4.4 million dollars for the first 5,000 tons and 517 dollars per ton after that or 87.7 million dollars[18]. If the costs of responding prove to be more than this amount, the SOPF provides a supplement amount as per section 677. If the oil pollution was caused deliberately or recklessly by the ship owner, she or he is not entitled to a limited liability and is therefore responsible for all reasonable costs and losses. In order to fall into the less severe category, the owner must show that the spill and damage was not his or her fault.

Beyond these changes, the SOPF decision making framework remains unaltered. The administrator will investigate the claim and make an offer on the basis of the information provided upon the nature of the incident, damage to the environment and the nature of the

16 The changes to CSA will come into effect six months after a date set by the Cabinet.
17 Owner includes other states, people who have contracted the use of the ship or who possess it.
18 The dollar amounts are based upon the International Monetary Fund's exchange rates for units of account on June 24, 1998.

activities. Again, the costs associated with the incident will have to be capable of economic valuation and be meticulously documented.

5.3 Advantages and Disadvantages

Even when the Department is not successful in pursuing its case in the legal system or is unable to lay charges due to the lack of evidence, the CLC/IOPC Fund and SOPF mechanisms provide opportunities to recover the costs and expenses associated with pollution damage. The theoretical scope of compensation is quite broad as it extends beyond cleanup costs to consider reasonable restoration and preventative expenses and the value of the injured resources.

It must be kept in mind, however, that there are several limitations with the funding schemes. Applying to funds for compensation can be a lengthy and complicated process as the amount of compensation provided by the funds is contingent upon the allowable limits on restitution as established by other funding mechanisms. For example, the IOPC Fund will only provide compensation in amounts that exceed the ceiling of the CLC. Similarly, SOPF funding is based upon the ship owner's liability limitations and, if a convention ship is implicated, that of the international funds as well. Accordingly, it is often necessary to pursue all funding options and potentially civil claims in court, in order to gain full restitution for environmental damages and restoration activities[19].

As the funds operate in a manner similar to insurance schemes, their standards for compensation are quite stringent; as previously mentioned, arguing compensation for certain activities and resource damage may be problematic. Even if these standards are met, compensation in full is not guaranteed. It is possible that the costs of addressing a large scale spill will surpass the limit on compensation under the international régime. If this excess amount cannot be recovered from the SOPF, a possibility because of the reasonableness standard, the Department and ultimately Canadian society will have to assume part of the restoration costs.

The funding approach merits consideration when the source of the spill is unknown but when damage is capable of quantification. Attempts at recovery, either through litigation, prosecution or settlement must still be undertaken if the source of the spill is known to be a ship, however, in order to ensure that full compensation is gained.

6.0 American Legislation

6.1 Oil Pollution Act, 1990 (OPA)

The OPA allows the Department to recover the cost of removing the pollutant and to be compensated for any loss of or injury to a resource or its services if they are under the

[19] For a recommended approach to international/Canadian fund claims, please refer to Appendix B.

Department's management. For the Act to apply, the pollution damage or substantial threat of a discharge must occur as a result of a spill emanating from a continental shelf facility, a deepwater port, a vessel in American navigable waters or from a vessel transporting oil between two American ports. It should be noted that proceeding under the OPA is an alternative to rather than a supplement to filing claims in the Canadian system; the OPA also requires that foreign claimants demonstrate that they have not been previously compensated for their losses. The same doctrine is applied in Canadian Law in order to avoid double recovery; accordingly the Department cannot seek compensation from both the OPA and from Canada's legislative or court systems.

6.2 Oil Spill Liability Trust Fund

As with the Canadian approach the primary focus under American legislation is for polluters to assume financial responsibility for their oil spills. However, if the polluter is not known, refuses to pay or is unable to do so, claimants are able to apply to the trust fund. The trust fund compensates claimants for removal costs and/or the damages resulting from the oil discharge. The upper limit on compensation, one billion dollars per incident, is significantly more generous than the international or Canadian funds. Up to half of this amount may be allotted to expenses incurred in assessing the damage to the resource.

6.3 State Legislation

State governments have jurisdiction over the coastal waters within twelve miles of their territory. Given this limitation, it is likely that only incidents in Maine would have an appreciable impact on Atlantic Canadian resources. Maine's primary response to oil pollution, Oil Discharge Prevention and Pollution Control, Chapter 38, subchapter 2, offers little recourse for the department. Although the legislation does establish a fund for third party damages[20], compensation is intended for citizens who have suffered property damage and actual economic damage including loss of income and medical expenses.

6.4 Advantages and Disadvantages

The clear advantage to pursuing litigation in the American system is the size of potential awards. The costs recovered and damage compensated under the OPA or the trust fund may more accurately reflect the value of the lost or injured resources. This would accordingly allow the department to undertake more elaborate restoration activities and to use such extensive resource valuation methods as contingent valuation. Such methodology has been endorsed by American courts despite the continuing controversy over contingent valuation's reliability and validity.

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20 Maine Coastal and Inland Surface Oil Clean Up Fund http: //janus.state.me.us/legis/statutes/38/title443.htm

The opportunity to use the American legal system, however, is limited as its availability is tied to jurisdictional questions. The situations that must exist in order for the act to apply are quite limited; the only legislated conditions that are likely to arise in Atlantic Canada are discharges originating from ships in navigable waters or in route between two American ports. Another disadvantage that must be kept in mind are the high costs of litigation in the American court system. Environmental and jurisdictional questions are highly contentious and can take several years to be resolved.

Consequently, use of the American system is most appropriate when the pollution was clearly instigated by an actor or source under American jurisdiction. In situations where this precondition can be met, application to the OPA and the trust fund should only be considered if extensive and severe environmental damage and high recovery costs are anticipated. For relatively smaller incidences, the department should favour its options under the Canadian legal system as the costs of litigation may otherwise surpass the costs and damages associated with the pollution.

7.0 Other International Regimes

7.1 French Legislation

As there is a slight possibility that an incident may occur in the territorial waters surrounding Saint-Pierre and Miquelon, it is necessary to consider avenues under French Law as well. The Civil Liability and Insurance Requirements of Vessel Owners (Oil Pollution) holds ship owners responsible for damages resulting from oil spills originating from one of their vessels. Other laws of interest include the Law Relating to the Compensation of Victims of Natural Disasters, the Law Denouncing Marine Pollution Caused by Hydrocarbons, the Law Relating to the Protection, Management and Valuation of Scenery, and the Law Relating to the Protection and the Valuation of the Countryside.

7.2 Danish Legislation

Danish environmental laws are relevant to Canadian legal options as Denmark administers the territory and waters of Greenland. The Marine Environmental Protection Act pertains to ship-based pollution; ships are strictly liable for any damage resulting from the dumping of prohibited substances at sea. While the Environmental Protection Act also forbids any discharges at sea, section 118 says that the act does not apply to Greenland. Other statutes that may apply to a Canadian-Danish incident include the Liability for Environmental Damages Act and the Contaminated Sites Act.[21]

[21] Mogens Moe, "Environmental Administration in Denmark", Environmental News 17, 1995. <http://www.mst.dk/books/moe/litera10.htm>

8.0 Conclusion

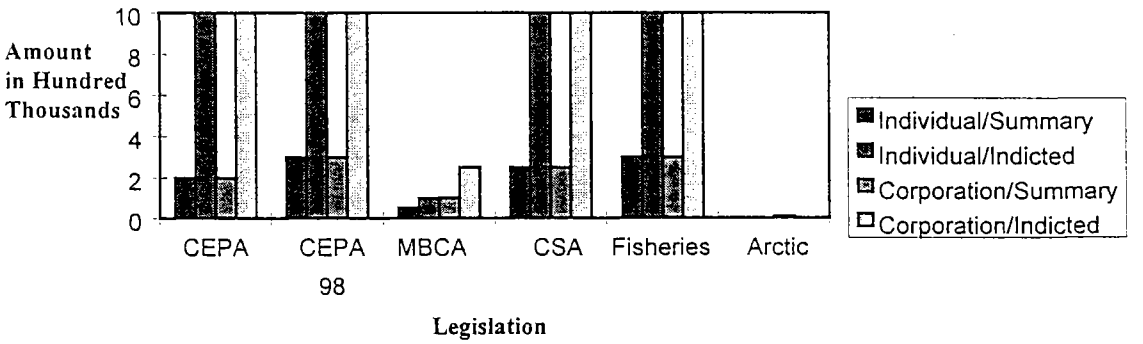
There are a number of legal and compensatory resources available both internationally and domestically to Environment Canada. In order to gain the full benefit of these options there are several strategies and approaches that the Department should consider.

The Department should actively pursue prosecutions under environmental legislation. This provides an opportunity to determine the strengths and weaknesses of legislation and of the Department's approach to prosecutions, investigations and to the collection of evidence. This information can be used to amend the statutes and to refine methods and tactics in order to achieve positive prosecutorial outcomes. As the probability of conviction consequentially increases, alleged polluters will be more willing to participate in alternative means of settling disputes. In the long run, the Department will be in the position to tailor legal options in order to meet its preventative and restorative goals.

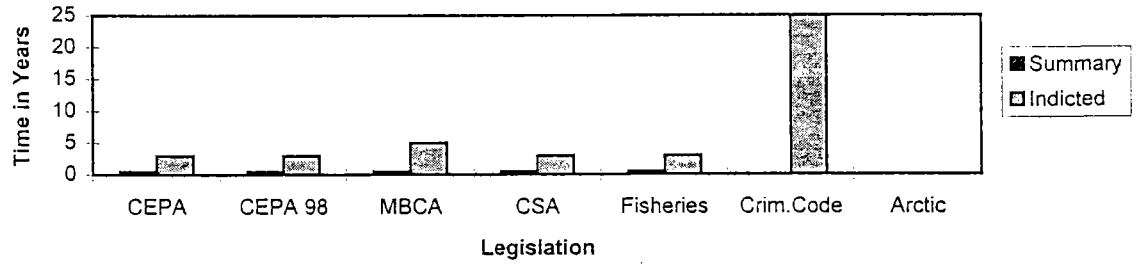
When applying to funding schemes, the Department should carefully consider the jurisdiction of the spill. The American concept of environmental damages is considerably more liberal than that of either Canada or the international regime; as a result, a wider range of values can be used to calculate damages under the OPA Fund. As the Canadian and international funds employ a rigid definition of damage according to actual use, compensation claims will be limited and difficult to substantiate. Accordingly, the Department must provide carefully documented costs associated with actual use and response to the incident in question.

Appendix A:
Available Compensation and Sanctions

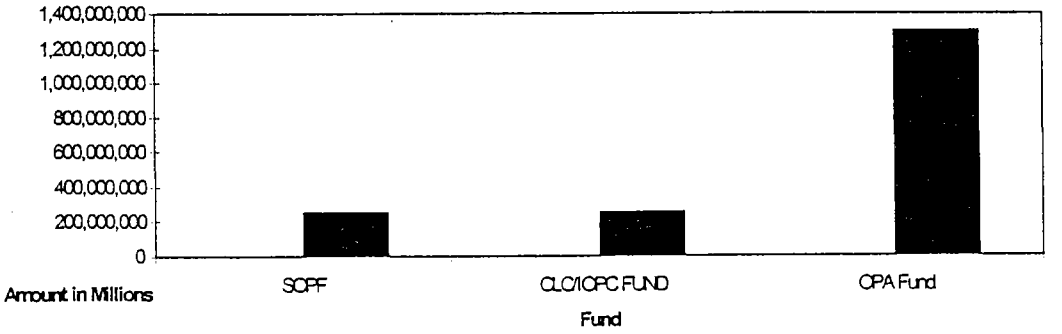
Maximum Fines Under Canadian Legislation



Maximum Sentences Under Canadian Legislation

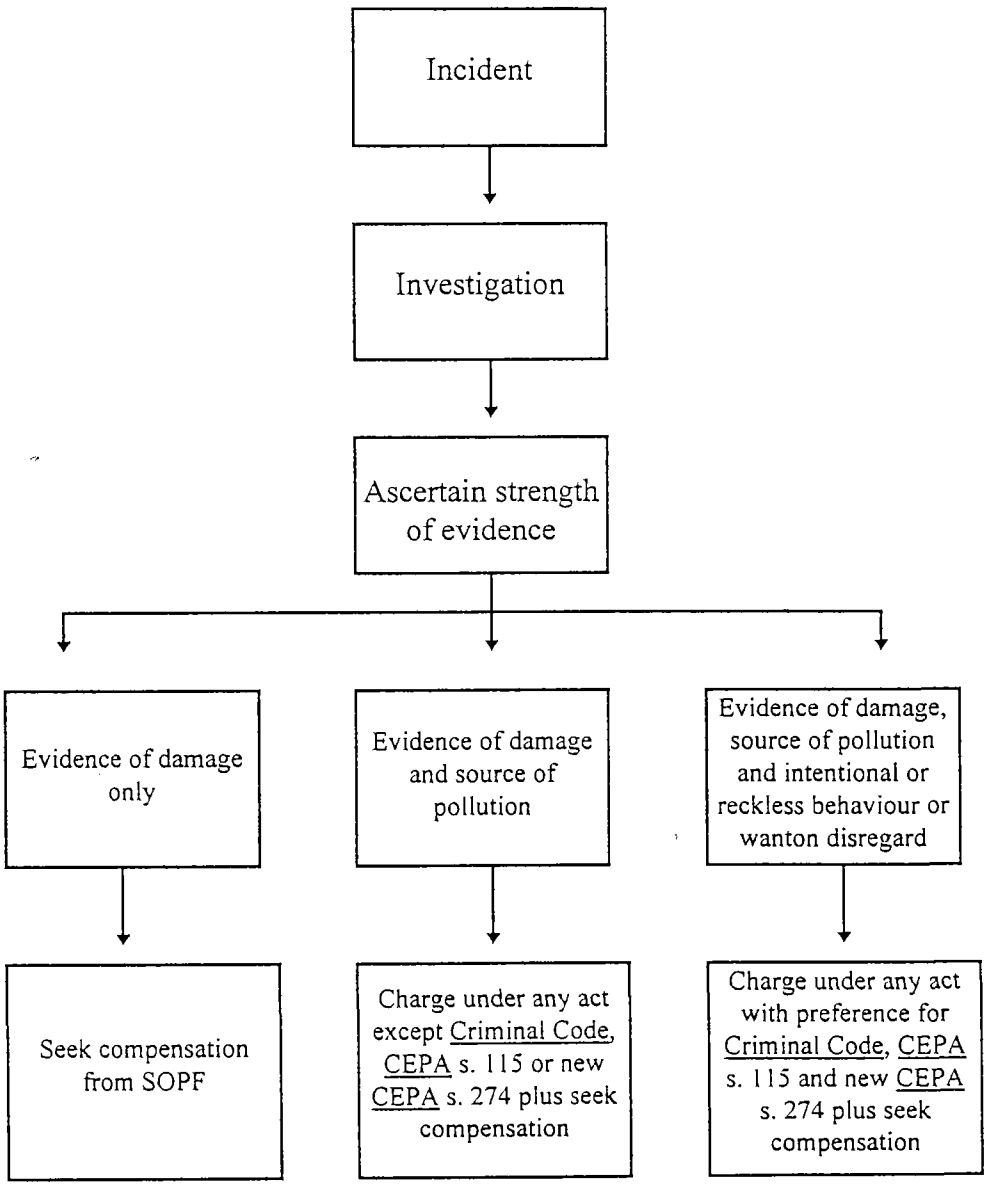


Maximum Funding Under Compensatory Schemes

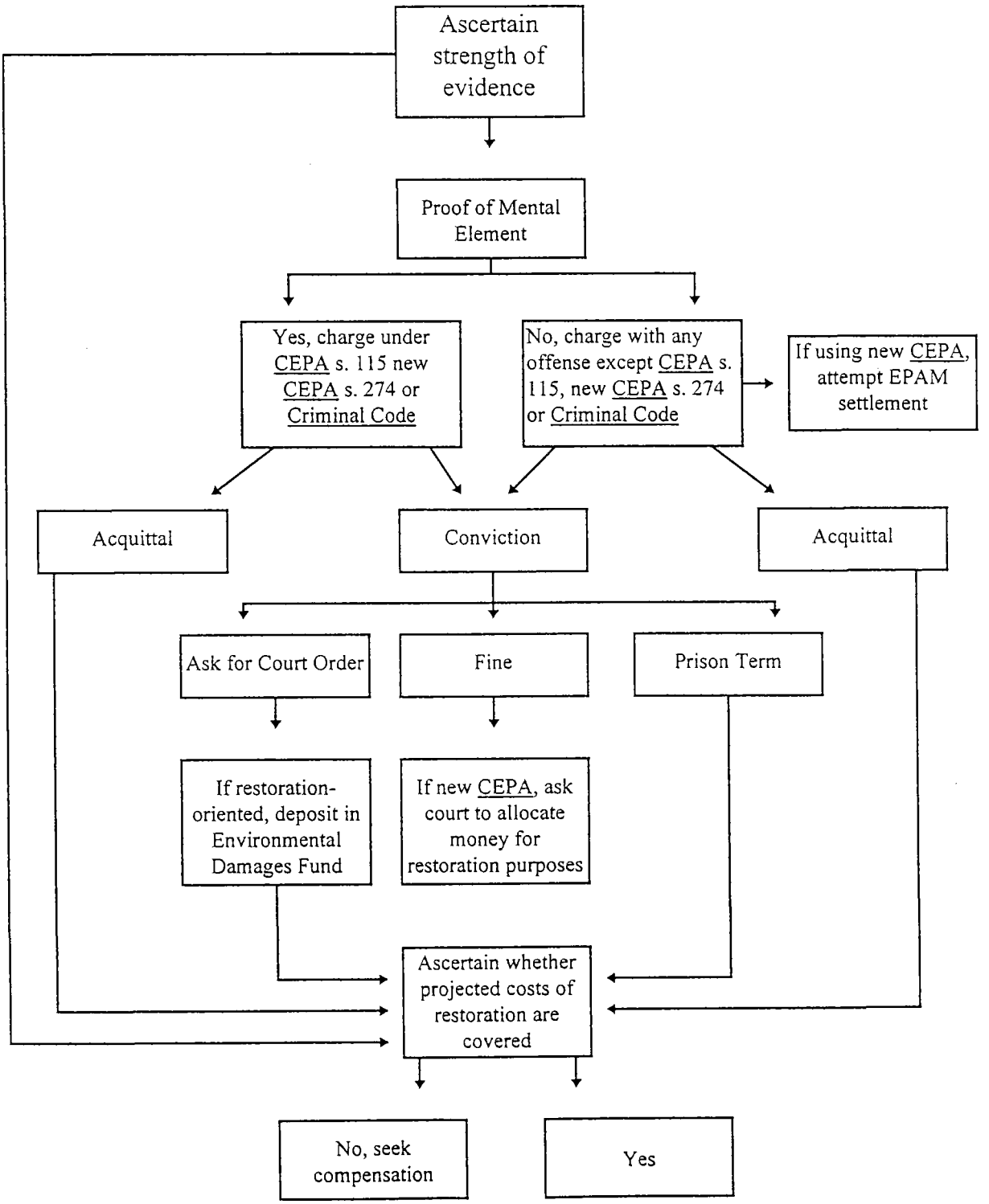


Note: American dollar values for the OPA Fund have been converted into Canadian dollars using a 30% exchange rate

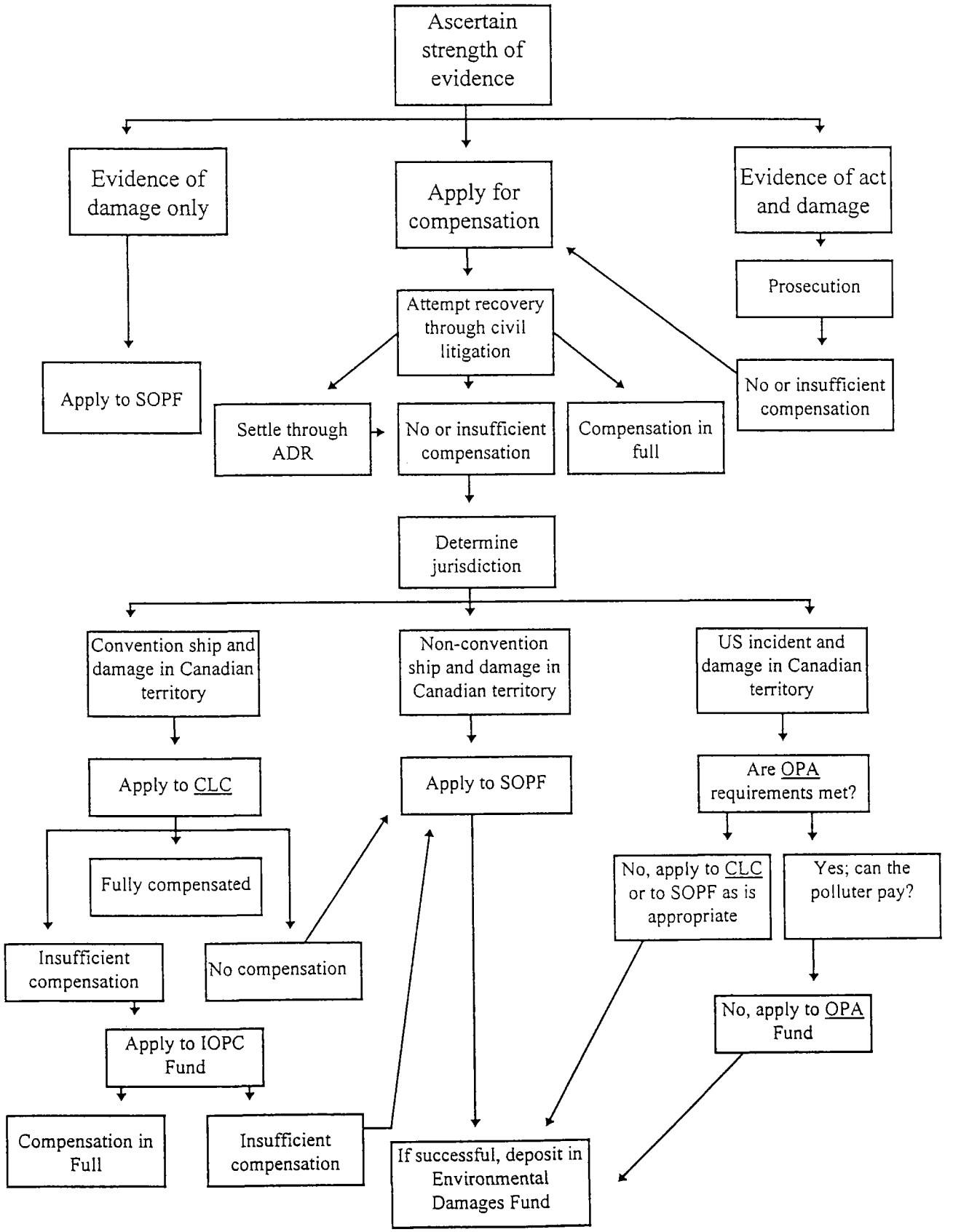
Appendix B: Options for Legal Action Framework



Prosecutorial Actions



Compensatory Actions



Appendix C:
Analysis of Claims Made to the Ship-source Oil Pollution Fund 1989-1997

Introduction

The Ship-source Oil Pollution Fund ("SOPF") is designed to provide compensation for the damages resulting from oil spills in Canadian waters and for the actions undertaken to prevent or correct them. The SOPF Administrator receives approximately eight claims each year from the Canadian Coast Guard due to its oil spill recovery actions and from citizens and corporations who have suffered economic loss or who have taken it upon themselves to clean up after oil spills. This report analyses the results and circumstances of these claims so that the possibilities and scenarios for a claim for damage restoration costs may be assessed.

The following factors were considered:

- types of spills addressed by the SOPF;
- subject of SOPF claims;
- Success of SOPF claims;
- Duration of claim[22]

Types of Spills

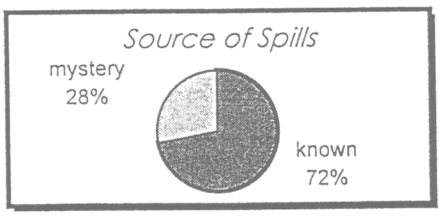
Unlike the international funds and the court system, the SOPF is able to provide compensation for expenses and damages arising from mystery spills as well as for the costs of incidents caused by an identified polluter. Mystery spill claims are easier to establish as the claimant is entitled to a presumption that the spill was caused by a ship; in order to deny such a claim, the SOPF administrator must prove that the oil discharge did not originate from a ship or that it is possible to identify which ship caused the spill. Claimants seeking compensation for pollution attributed to a ship, on the other hand, must first attempt to gain restitution through the court system or through the international scheme. While this is not specifically stated in the SOPF legislation, it is a necessary course of action in order to gain full compensation.

The SOPF is only liable for compensation when resort to the court system has been exhausted, when the international funds are not liable for the damage or costs, when the maximum liability of the ship owner has been exceeded and when the ship owner refuses or is not able to pay. Therefore, the claimant could be asked to prove the existence of these conditions in order to gain compensation. In addition, compensation under the

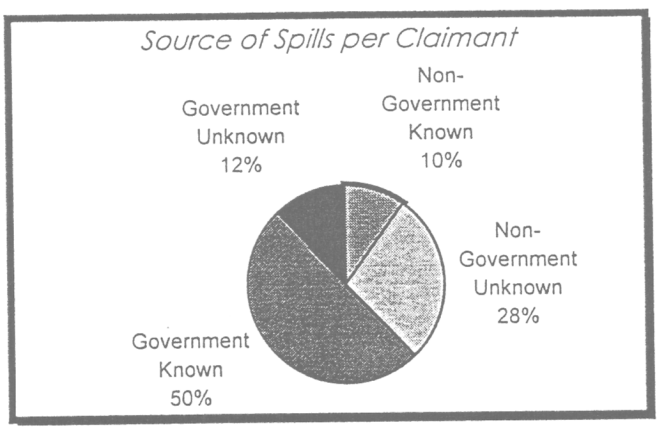
[22] Information for this analysis was taken from the claims reports included in the SOPF's Annual Reports for the period of 1988-1989 to 1996-1997.

SOPF is subject to limitations; if the claim exceeds the compensation ceiling of the SOPF, the claimant will have to turn to other sources in order to gain full restitution.

Despite the ease of proof and procedure, only 28% of claims made to the domestic compensation system[23] are based on mystery spills. The small number of such claims could be attributed to the fact that it is often possible to determine which ship may be at fault when a spill occurs. Mystery spills, for the purposes of SOPF compensation, only occur when it is likely that the spill originated from one of the ships present in the incident area. Given these conditions, many mystery spill claims are based on incidents that occurred in harbours or heavily trafficked shipping lanes.



When the claims of government agencies and non-government organisations are examined separately, however, certain distinctions emerge. As seen in the accompanying chart, claims made by government agencies account for 62% of all applications made to the domestic compensatory system; 50% of all claims are made by government agencies for costs associated with known source spills. The fact that the overwhelming majority of government claims are based on known source spills (81%) may be due to the government's investigatory responsibilities. In gathering data and evidence for criminal or regulatory prosecution, agencies are in the position to determine against which ship a compensatory claim may be made. Accordingly, the labeling of incidents as mystery spills will be reduced.

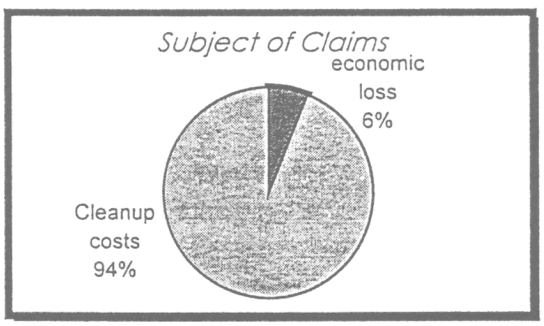


For the 38% of total claims made by non-government applicants, the overwhelming majority (74%) are based on mystery spills. This trend may be due to the advantages of establishing such claims; it is equally possible that the interests of non-government claimants are susceptible to the damages caused by mystery spills as defined by the SOPF. Property damage and the consequential economic loss are more likely to occur in ports where any number of ships could be responsible for oiling events.

[23] The domestic compensatory system, for the purposes of this report, consists of Canadian court action and application to the SOPF. There is no indication that the administrators for either of the international funds were involved in the resolution of any of the claims.

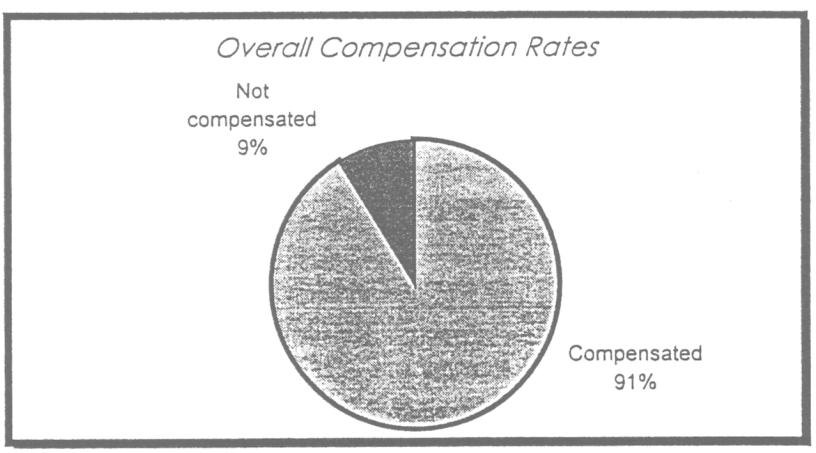
Types of Claims Made

Under the Canada Shipping Act, claims can be made for oil pollution or environmental damage[24], expenses incurred for preventing, minimizing or remedying damage, the costs of monitoring[25] and loss of income from fisheries, aquaculture or processing employment so long as the loss, damage or expense is deemed reasonable by the SOPF administrator. Despite this range, the types of claim submitted to the compensatory system have been limited. The claims are universally based on expenses that are easily and recognizably quantified in monetary terms. For example, it is simple to attach a cost to the use of equipment or to lost wages. Nearly all claims (94%) are made in order to recover the costs of cleaning resources or property after an oil spill. The remaining claims have been made in order to be compensated for lost income either in the form of employment or marketable goods such as lobster. To date, no claims have been made for recovering environmental damages.



Success of Claims

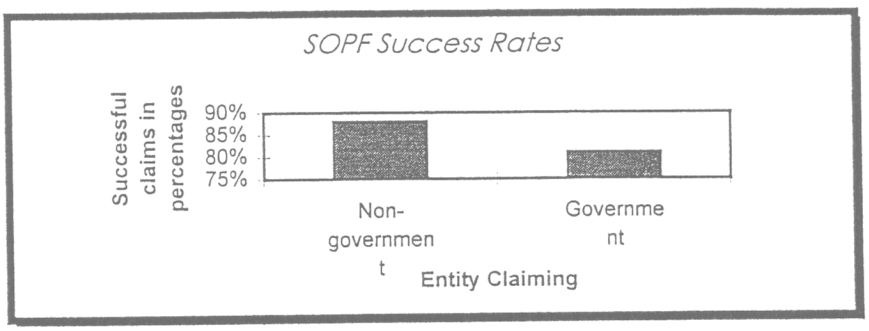
Claims made to the compensation system or to any of its components appear to have an excellent chance of succeeding. As seen in the chart below, 91% of claims made



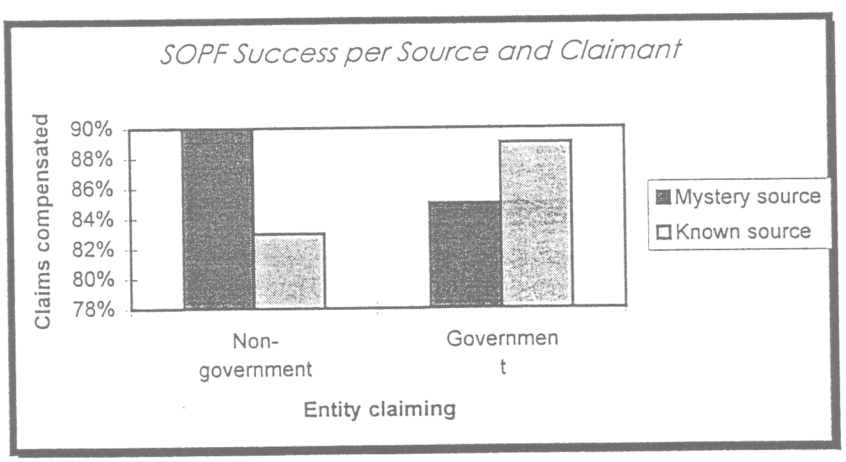
[24] Compensation for environmental damage has been specifically made possible by recent amendments to the Canadian Shipping Act that have yet to come into force.

[25] Monitoring expenses can only be claimed by Department of Fisheries and Oceans Agencies such as the Coast Guard and by their contractors. For the purposes of the SOPF, contractors includes other government agencies who provide support during the cleanup and monitoring stages; for example, Environment Canada would be a "contractor" when it acts in an advisory capacity. In this situation, the DFO Agency presents the claim on behalf of all contractors.

to the SOPF, to courts or that are settled between the parties gain some level of compensation for the claimant. These rates drop, although not by a significant amount, for both government and non-government claimants when applying to the SOPF alone, as indicated in the following graph:



This can be compared to the 100% success rate that government claimants enjoy when pursuing claims in the courts and reaching settlements with the polluters[26]. The claims made solely to the SOPF can be furthered delineated:



While there is an appreciable difference in the success rates of both types of claimants, each has above an 80% chance of succeeding when presenting a claim to the SOPF alone. The high success rates for claims involving known sources are interesting as they appear to contradict the SOPF's limited compensatory range; while a number of these claims could easily be resolved through other means, the SOPF administrator has regardless offered compensation to the claimants. In this situation, the administrator assumes the claim and may pursue reimbursement from the polluter or from the international funds.

It should be noted however, that the compensation awarded by the SOPF rarely represents compensation in full. For spills involving known sources, the SOPF is only responsible for compensating costs that exceed the polluter's liability limitation and that do not

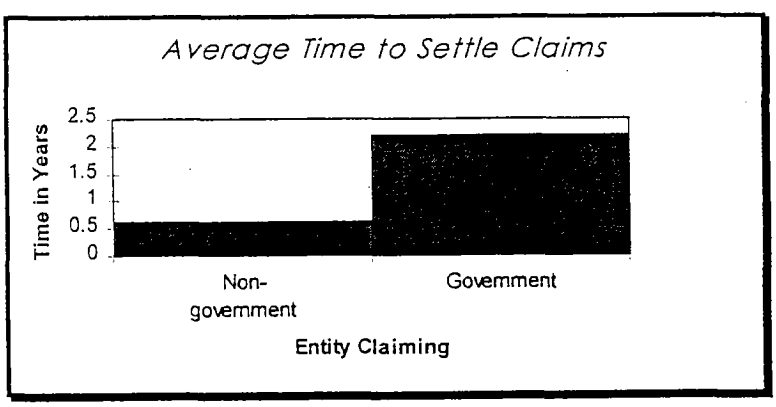
[26] There was no indication that non-government claimants had pursued their cases in the courts.

surpass its own ceiling. Even when there is no question of limits, the SOPF award may not cover the costs and damages as submitted by the claimant; like an insurance company, the SOPF administrator will evaluate the claim account and determine what level of expense was reasonable or actually incurred as a result of spill response. Accordingly, it is often necessary, despite success at the SOPF level, to continue pursuit of a claim through other means. This is reflected in the average award gained from the various sources. When pursuing claims in court as well as through the SOPF, the average government award is approximately $68,000; this amount drops to $37,484 when claims are forwarded to the SOPF alone.[27]

Finally, a difference in the success rates between mystery and known source claims for both non-government and government claimants can be noted. Non-government claimants enjoy a 90% success rate when pursuing mystery spill costs as opposed to a 83% rate for known source incidents. The opposite is true for governments where there is greater success for known source costs (89%) than for mystery spills (85%). It is possible to attribute these differences to the level of information and of capacity of each type of claimant but examination of the failed claims indicate that compensation was disallowed for procedural rather than evidentiary reasons. A number of claims failed as they did not have the proper or reliable documentation of costs and damages.

Duration of Claim

As seen in the graph below, there is a substantial difference between the amount of time it takes to resolve non-government and government claims:



For non-government claimants, it takes approximately six months from the initiation of claim to resolve it while government claims have a duration of slightly over two years. This difference can be attributed to the high number of known source spill claims pursued by the government; as these claims are often first addressed through the court system it would take longer to settle them. Analysis of claim duration for mystery and known source spills addressed in the compensation system affirms this conclusion; mystery spill

[27] Data for some claims settled outside the SOPF or in conjunction with other compensatory schemes was not available.

claims have an average duration of eleven months while the costs of known source spills take on average two years to settle.

The difference could also be due to the level of activity expended by either type of claimant in response to an oil spill. Government responses to a spill typically involve a number of different agencies and require several activities such as clean-up, assessment and monitoring. Accordingly, there are a number of costs that must be submitted by each agency, each of which must be evaluated by the administrator or by the courts. Even the administrative function of documenting and submitting the various expenses incurred by each actor could increase the duration of a government claim. Non-government claims, on the other hand, usually involve at most a clean-up of the property or an accounting of lost wages or produce. As this tabulation generally requires little effort and time, the claim can be quickly file and then investigated by compensation decision makers.

Conclusion

The Ship-source Oil Pollution Fund represents a positive opportunity to Environment Canada for the purposes of recovering the costs associated with damage assessment and restoration. A high rate of success can be anticipated so long as a detailed documentation of costs and damages meets the requirements of compensation decision-makers. As the process of damage assessment and restoration is likely to be quite costly, the Department should anticipate pursuing claims in court and in settlement conferences as well as through the SOPF in order to gain full compensation. Use of the full spectrum of the compensation system, however, will increase the time needed to resolve the claim. Accordingly, the Department should anticipate that it may be several years before compensation is awarded.

Applying Environmental Damage Assessment and Restoration Tools to Oil Pollution Incidents in the Marine Environment (Atlantic Region):
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Applying Environmental Damage Assessment and Restoration Tools in the Atlantic Region

Damage Assessment and Restoration Framework

1.0 Introduction

Correcting existing pollution damage to the environment is crucial for maintaining a healthy environment and for ensuring that people and industries assume responsibility for their actions. In order for an environmental restoration plan to succeed, the extent of the injury to resources, services and ecosystem links must first be determined, quantified and evaluated. As an ecosystem approach to damage assessment will require the participation of several government agencies, community groups and corporations, a framework outlining scientific procedures and co-ordinating roles and activities is necessary. The purpose of this report is to develop a scientifically and legally defensible damage assessment and restoration methodology appropriate for the Atlantic region and to determine the roles and responsibilities of participants at the various stages of the process.

2.0 Damage Assessment Methods

Damage assessment involves the evaluation, quantification and monetization of injuries to or loss of a natural resource due to a pollution incident[28]. The information derived from this process fulfils several environmental protection goals. Assessment data can be used to determine what restoration actions should be taken, to recover the costs of projects and to decide whether legal action can or should be pursued against the polluter in question.

2.1 Definition of Environmental Damages

It is necessary to consider the legal definition of environmental damages in order to determine the appropriate scope for damage assessment methods. Canadian Courts may not be willing to order restitution for restoration activities or to accept the assessment's evidence if they are considering a more narrow definition than that used by the Department. Basing assessment and restoration on legal definitions is also necessitated by the Environmental Damages Fund ("Fund") criteria. Projects whose financing is drawn from particular court orders must adhere to the conditions associated with that award; therefore, the project can only address the environmental damages as envisioned by the court in question.

[28] Environment Canada, REET Contingency Plan, 1998 (Draft)

Unfortunately, there has been very little direct consideration of the nature of environmental damages in Canadian legislation. Section 2 of the Canadian Environmental Protection Act (CEPA) defines the environment as the components of the Earth including the air, land, water, inorganic and organic matter, living organisms and the links between them. Bill C-32, which is designed to replace CEPA[29], introduces an ecosystem approach to the definition of the environment. For instance, the definition of marine pollution in section 5 includes hazards to human health and harm to living resources or to marine ecosystems. According to section 2, an ecosystem is a "dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit". Theoretically, environmental damage would constitute an injury to any element or organism in an ecosystem or to the ties between the injured resource and its ecosystem.

The Canada Shipping Act's[30] provisions on the Ship-source Oil Pollution Fund have recently been amended in light of developments in the international compensation schemes. The amendments include a clarification on what constitutes environmental damage for the purpose of establishing a ship owner's liability for pollution incidents under section 677. Under the revised section 677(3) environmental damage is defined as any impairment to the environment; this would imply an ecosystem approach as damage to ecological links or to individual resources could result in an impairment to the environment.

Canadian courts have also had little opportunity to address the question of environmental damages. In Friends of the Oldman River Society v. Canada, a case concerning the scope of environmental impact assessment, the Supreme Court of Canada declared that definitions of environmental quality could not be confined to the biophysical sphere but should include consideration of socio-economic factors. Following this logic, detrimental changes in environmental quality would include:

- injury to plants, animals and property;
- adverse effects to human health and safety;
- impairment of any economic and non-economic use that can be made of resources;
- interference with a person's business[31]

While it appears that the legal definition of environmental damage would include such diverse interests as recreational use and cultural/historical significance, it is less clear whether concerns of a non-economic and non-use nature would be accepted at law. For instance, individuals may place value on the knowledge that a resource exists and that it

[29] The new version of CEPA is currently being considered by Parliament as part of the legislation's mandatory five year review and is anticipated to be in force by late 1998.
[30] The new provisions of the Canada Shipping Act have been ratified but are not yet in force.
[31] Harry J. Wruck, "Recovery of Environmental Damages: a Matter of Survival", Journal of Environmental Law and Practice 3: 143-193, 152.

will be available for the use and enjoyment of future generations even though they themselves may never need its services. Values of this nature have been rejected as non-compensible losses by international regimes[32] as they cannot be quantified without the use of theoretical models. As the Canadian compensation scheme incorporates the international approach, it is likely that courts and administrators will focus on the effects of the incident on the actual use of injured or lost natural resources:

	Economic	Non-economic
Use	Recoverable	Recoverable if can be equated in economic terms
Non-use	Not recoverable unless a use can be shown	Not recoverable

Based on these considerations, a definition of environmental damages in a Canadian setting could include the physical and biological damage to a resource and its ecosystem and an the consequences of the damage on the various biophysical and socio-economic services provided by the resource and ecosystem. While there is consensus that it is possible to quantify such uses for the purposes of initiating restoration projects, there are a number of methodological difficulties associated with damage assessment that must be considered.

2.2 Methodological Problems in Damage Assessment

2.21 Biophysical Evaluation

In order to determine the impact of pollution incidents on an ecosystem it is necessary to compare the post-incident state of impacted resources to their pre-incident or baseline conditions[33]. The difference between the post-incident state and the baseline condition of a resource is deemed to be the damage that must be remedied in order to restore it. However, there is rarely sufficient information available upon which an investigator can base conclusions about a resource's pre-incident situation, much less its baseline

[32] Compensation for actual oil spill damage, for instance, can be sought from the International Convention on Civil Liability for Oil Pollution Damage, 1969 and the International Oil Pollution Convention Fund.

[33] A baseline condition occurs when the environment has suffered no pollution originating impairment while the pre-incident condition is the state of the environment immediately preceding the pollution incident. The pre-incident condition can include the baseline state or may have incurred damage from past incidents. While restoration to baseline conditions is the most desirable outcome, pre-incident remediation is more legally realistic as it focuses on the consequences of the particular polluter's actions or omissions.

condition. Consequently, it is difficult to ascertain the extent and/or cause of damage to a resource as there may be unacknowledged factors contributing to its decline[34].

It has been suggested that these problems can be corrected by comparing the damaged resource to a comparable resource from a non-impacted area[35]; again, the difference between the state of the resources studied is the damage that must be mitigated. This method of evaluation encounters the same problems as it requires an assumption that all other factors influencing the resources are equal. In reality, this situation rarely occurs as each resource has unique environmental pressures and assets.

In addition to the challenges facing a study of an individual resource there are difficulties associated with assessing the ramifications of the damage incurred by ecosystems. Very little is understood about the ecological links between resources or about the impact of pollution upon them; this again raises concerns about causation as effects on resources links may be caused by a particular incident or by some extraneous factor. There has also been considerable debate concerning the consequences of an injury sustained by an individual to its population; in other words, can a population's ability or inability to compensate for the loss of an individual be ascertained? The difficulty of obtaining such data has lead to a concentration on studying injuries to individual resources in hopes that collectively the studies will represent an assessment of an entire population's damage[36].

2.22 Socio-economic Evaluation

Even if the biophysical damage can be satisfactorily quantified, there remains the issue of monetizing the value placed on affected resources and their uses. Economic evaluation is an important element of damage assessment as the information helps to establish the parameters of the restoration project and the foundation for any compensatory actions. For certain resource uses, an economic perspective is the only means by which their value may be weighed for the purposes of prioritising restoration activities.

For a number of resources and their uses, economic evaluation is a simple exercise. Their value may be seen as the fair market price a consumer would have to pay in order to obtain the resources or their services. For example, the value of a lost salmon is its price to consumers; the loss of its use may be measured by the reduction in income to fisherpeople and outfitters or by the amount recreational anglers would pay for the right to fish salmon. However, there are several environmental resources and uses that cannot

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[34] For example, a decrease in a migratory bird population after an oil spill could also be explained, in the absence of baseline data, by a recent reduction in food sources or the introduction of a disease in the colony. The significance of the injury would also be difficult to determine if there was no population information available; the death of twenty birds would clearly be more adverse in a colony of twenty-five than in a population of twenty-five thousand.

[35] John A. Wiens and Keith R. Parker, "Analysing the Effects of Accidental Environmental Impacts: Approaches and Assumptions" Ecological Applications 5(4): 1069 - 1083, 1073.

[36] Rebecca Renner, "Calculating the Cost of Natural Resource Damage" Environmental Science and Technology Spring 1998, 89.

be sold and bought in a traditional marketplace. For example, the absence of supply and demand makes it difficult to establish the "price" of a migratory bird or of its ecosystem role.

The need to monetize non-marketable elements of the environment has lead to the introduction of studies focusing on the amount of money consumers would pay to preserve the perceived value of such resources and uses. The values people place on services and resources is determined through the combined use of surveys and economic valuation. The travel cost method values resources and services by estimating people's willingness to pay (WTP) for increased travel time and expenses in order to see the resource or to receive the service in question. The hedonic pricing method considers people's WTP to live in areas with conserved or enhanced resources and to enjoy the associated services.

The most commonly used method, contingent valuation (CV), directly determines the WTP for the protection, conservation or remediation of resources and services. To conduct a CV survey, researchers must query a representative selection of the affected population in order to determine what value the entire population would place on an injured resource and its services. The survey must provide a reasonably detailed environmental injury scenario, a plausible restoration method and a realistic means of financing the project.

After conveying this information, researchers ask the respondents how much money they would be willing to pay in the manner specified in order to prevent or restore the damage sustained by the resource. This can be an open question allowing the respondent to suggest any amount of money, a conditional question wherein the respondent is reminded of his or her budgetary constraints or a referendum style question that asks the respondent to choose between a limited number of options. The averaged WTP elicited from the survey is deemed to be the value of the damage inflicted as it represents the amount of money people feel would be needed to restore or protect the resource.[37]

Despite the theoretical possibilities of this methodology, the use of economic valuation is highly controversial. The most common criticism is that economic value judgements cannot be directly observed or verified. This is especially true for the more esoteric non-use aspects of a resource as it is difficult to assign a monetary value to the simple

[37] For example, the following structure could be used: "In November, 19xx an oil tanker spilled 10,000 gallons of oil while docked in Saint John's, Newfoundland. An investigation revealed that 500 birds were killed because of oil contamination; it is estimated that another 3,000 have died as a result of the spill. The birds come from a colony with an approximate population of 10,000. Analysts have concluded that without human assistance it will take 10 years for the colony to recover. If new birds are successfully introduced, however, the population could recover in three years. In order to finance this project how much of an increase in taxes would you be willing to pay: less than $500, $500, $750, $1,000 or more than $1,000? When giving your answer, please keep in mind that you have estimated your annual income to be $35,000."

awareness of a resource's existence[38]. Valuation results are rarely repeated in subsequent surveys as the responses of consumers are highly sensitive to the circumstances in which the question of valuation is posed. Values tend to be higher if opinions are sought immediately following an incident as the scope and nature of the damage is fresh in the consumer's minds. Conversely, values tend to decrease as awareness of the incident fades.[39]

Respondents' value estimates may be inaccurate for other reasons. It has been contended that consumers suggest higher amounts than they would be willing to pay if actually required to contribute to the restoration project. The resulting inflated values may be due to intrinsic motivations or to the hypothetical nature of the question. Conversely, it has been suggested that respondents will undervalue resources because they may not understand the information presented to them. It is often difficult to convey scientific scenarios to respondents and to explain the required or possible protection and restoration efforts.

In addition to the difficulties in assigning and verifying economic values, the practical factors of designing and conducting of a CV study can cause problems. Few studies are attempted as comprehensive surveys can cost between five and seven million dollars[40]. A considerable amount of time is expended in drafting and testing the survey, training people in investigative and analytical techniques, gathering and examining the information, and in making conclusions. Because of this cost and duration, CV studies may not be suited to restoration projects that need to be immediately implemented or to situations where the costs and delay in proceeding with the restoration may be perceived as unreasonable. The costs of CV analysis may be considered excessive and unfair to those responsible for the costs of the survey if the resource damage was limited or inconsequential to the ecosystem's health.

Despite these drawbacks, the CV approach to economic valuation must be seriously considered as there are few viable alternatives. It is possible to take precautions that will minimise the weaknesses of CV studies so that they will produce reliable and valid results. A sound economic analysis can be achieved if the scenarios, hypothetical payment schemes and budgetary limitations are carefully and fully explained. Researchers using CV methodology suggest giving respondents choices for how much they would hypothetically pay that are within their income range rather than allowing them to establish a payment level themselves.

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[38] Renner, 90; Wruck, 173; Desvousges, 2.

[39] See Kristin M. Jakobsson and Andrew K. Dragun, Contingent Valuation and Endangered Species: Methodological Issues and Applications (Cheltenham, United Kingdom: Edward Elgar, 1996); Lewis Amack, "Contingent Valuation of Natural Resource Damages" <http://lawinfo.com/forum/conval.html>; William H. Desvousges, "The Role of Contingent Valuation in Natural Resource Damage Assessment" <http://www.ter.com> among others.

[40] Steve Pond, "Environmental Damages and Restoration", Assessment and Restoration of Environmental Damages in The Atlantic Region (Workshop Report, 1997): 52-83, 62.

2.3 Natural Resource Damage Assessment (NRDA)

NRDA is a damage assessment method used in the United States for incidents covered by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the Oil Pollution Act (OPA). The goal of this approach is the restoration of affected coastal resources and their uses and the provision of interim compensation for their loss. The method incorporates both scientific analysis and economic evaluation in order to measure the extent of resource injury, to quantify lost services and to determine which method and scope of restoration is appropriate.

This process entails three phases:

1. The *preassessment phase* wherein designated trustees collect information pertinent for further restoration decisions;
2. The *restoration planning phase* wherein injuries are assessed and restoration methods are selected and scaled;
3. The *implementation phase* wherein the selected project is initiated, monitored and evaluated[41].

2.31 Preassessment Phase

This is a screening process that allows trustees to determine whether it is appropriate to pursue restoration efforts. Once trustees have determined that they have jurisdiction over the incident and the affected resources, they collect information documenting the nature of the incident, the injury sustained by the resource and/or its uses and any resource and service that may be affected in the future. This information as well as data on baseline conditions, relevant case studies, pollutant characteristics, and potential comparative sites and resources will allow the trustees to design and implement the pertinent assessment procedures. Possible assessment study structures include:

- comparison with baseline conditions;
- comparison with non-impacted areas and resources;
- comparison with resources with varying degrees of exposure to the pollutant;
- examination of the effects of exposure over time.

Once the trustees have completed the assessment and they have sufficient information to estimate the scope and extent of the injury, they should apply the following criteria to the incident:

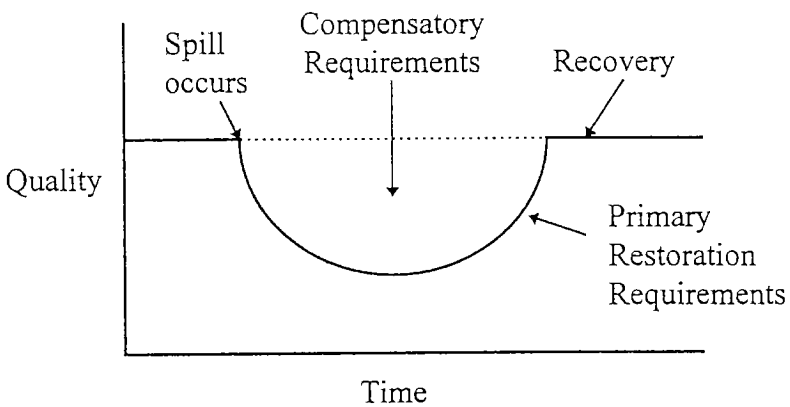
- injury has occurred as a result of the incident or is likely to occur;
- cleanup actions have not or are not expected to adequately address the injury;
- do feasible primary and compensatory restoration actions exist to address the injury.

[41] Please refer to Appendix A for the organisation of the NRDA process.

If these conditions are satisfied, the trustees can proceed with planning the restoration efforts.

2.32 Restoration Planning Phase

In the planning stage, trustees build upon the information gathered in the preassessment stage in order to ascertain the type and scale of restoration required. This necessitates a consideration of both primary and compensatory restoration of the resource and/or service. Primary restoration concerns activities undertaken to return the resource or its use to its baseline or pre-incident condition. Compensatory restoration is temporary actions designed to alleviate the loss of the resource or service until primary restoration is completed:



There are three stages to restoration planning:

1. Injury assessment
2. Restoration selection
3. Restoration scaling

2.321 Injury Assessment

At this point the trustees expand upon the injury estimates used during the preassessment phase in order to provide a more exact calculation of the effects of the incident. This more precise quantification of resource and service injury is used to identify specific forms and levels of restoration activities and allows for a cost-effective use of equipment, materials and labour. There are a number of considerations the trustees should make in refining the information and in engaging in more extensive investigations.

What are the resources and services of concern?

Trustees should not only list resources at the appropriate level of classification but include the specific ecological and human services they provide. Trustees should also

consider the resources' likely or observed exposure, the level of contact with the pollutant, and the geographic and temporal extent of the investigation. This analysis will help the trustees to determine which resources and services are most at risk and to consequently prioritise their restoration efforts.

What procedures are available to evaluate the injury and the associated cost and time requirements?

At this stage the trustees must make a preliminary assessment of the available restoration options. For example, if the injury was preassessed to be the destruction of a migratory bird habitat, possible restoration scenarios could include replacing vegetation and constructing new nesting sites. The trustees must then decide what further studies must be initiated in order to acquire the additional information needed to effectively plan their restoration strategies. Possible study methods include literature reviews, field work, laboratory studies and modelling techniques.

The cost and time needed to complete the studies must be considered in conjunction with their ability to provide information. In order to gain compensation from legal or funding venues, restoration studies must be viewed as reasonable in terms of expense and duration. Accordingly, lengthy and costly evaluations of seemingly minimally impacted minor resources may be ill-advised.

What is the evidence indicating exposure? What is the pathway from the incident to the natural resource and/or service of concern and the mechanism causing the injury?

Beyond knowing the occurrence and extent of the injury, the trustees must be in the position to rate the strength of the evidence linking the damage to its cause. This requires an examination of the pathway or manner in which the exposure occurred and of the mechanism that caused the injury. For instance an injury to migratory birds in the form of mortality could have a pathway of oil washing ashore from a spill and a mechanism of direct contact with the oil.

The relationship between the means, manner and results of exposure must be significant and timely. Trustees must question if the injury was either already present or if it was detected a significant amount of time after the incident. For instance, if a population was declining prior to the incident or began to decline several months afterwards, a strong causal relationship cannot be established as there may be intervening factors. Any association between the incident and the injury must be repeatedly observed and scientifically acceptable.

Such evidentiary evaluations are essential for two of the trustees' functions. In terms of legal action against the polluter there must be a strongly established causal link between the injury and incident in order to gain a conviction or compensation. In pursuing restoration activities, the trustees' efforts should be directed to the remediation of resources proven to be affected by the incident and not to injuries that may either be

naturally occurring or caused by another event. This is an important consideration in the Canadian context as the Environmental Damages Fund guidelines dictate that restoration efforts be directed to resources affected by the incident in question or by conditions similar to an incident contemplated in a court award.

What is the adverse change or impairment that constitutes injury?

Once an injury and its cause have been established, trustees must evaluate the magnitude of the damage sustained by the resource in order to adequately plan for restoration. In determining the cause or impairment to the resource or service trustees should consider any adverse changes in survival, growth, reproduction, health, physiological and biological condition, behaviour, community composition, ecological processes and functions, physical and chemical habitat quality and structure and public services. Without this consideration, restoration efforts may be inadequate or excessive and may not be conducted at the appropriate time.

What is the potential degree and spatial and temporal extent of the injury?

Information gathered for this consideration will allow trustees to prioritise and scale their restoration actions. At this point the trustees rank the documented injuries in terms of their severity or magnitude, geographic location and duration. For example, an endangered bird population whose only habitat was in close proximity to an oil spill might be a primary candidate for restoration activities instead of a widespread colony whose only established injury was a few oiled members.

What is the period for potential natural recovery?

It is not always necessary to engage in restoration activities even when a substantial injury is clearly documented. Keeping in mind the information concerning the nature and extent of the injury previously collected, the trustees must determine the rate of natural recovery as they should consider it to be a possible alternative to active restoration. If a quick unassisted recovery is anticipated, it may be appropriate to allocate restoration resources to another injury that is not expected to recover as effectively on its own.

What are the kinds of primary and compensatory restoration actions that are feasible?

The preceding evaluation should give the trustees the information necessary to determine which activities should best achieve the restoration and compensation of the lost resource or service. Public consultations can be held in order to determine what level of services must be re-established and replaced during recovery. Restoration and compensatory actions should ideally provide resources and services that are of the same quantity, quality and type as those that have been injured.

The National Oceanic and Atmospheric Administration agency (NOAA) suggests using the following matrix to effectively assess actual, suspected and anticipated injuries:

Resource	*Service*	*Injury*	*Evidence*	*Mechanism*	*Pathway*	*Natural Recovery*	*Primary Restoration*	*Compensatory Restoration*
Birds	Bird-watching	mortality reduced breeding	dead birds	direct contact with oil	oil washed ashore	unknown	breed & replace birds[42]	create new sanctuary
Beaches	human use, bird habitat	oiled beaches, no access	oiled sand, seaweed	direct contact with oil	oil washed ashore	one year	more cleanup, new sand	provide more beach access

Source: NOAA, Injury Assessment
<http://www.darcw.noaa.gov/opa.html#download>

After all of these questions have been addressed, the trustees can establish an order in which injuries should be restored and suggest possible actions that will meet the objective of resource and service restoration. The next step is to prioritise the methods of restoration so that the most effective are pursued.

2.322 Restoration Selection

The ranking of the possible restoration activities associated with the observed and anticipated injuries is achieved by considering their ability to return the resource or service to its baseline or pre-incident condition and to compensate for the interim loss. In addition, the trustees should evaluate the activities' ability to avoid or minimise any future harm that may be caused by the restoration efforts themselves. The alternatives' ability to restore more than one resource or service and their impact on public health and safety should also be weighed. The most relevant factor, however, may be the cost of the proposed actions, depending on the trustees' current resources and expectations for compensation.

2.323 Restoration Scaling

Once a hierarchy of restoration activities has been established, the trustees should next consider how to implement those projects which best meet restoration and cost objectives. Effective execution of a restoration project and efficient use of associated resources requires that the scale or size of the project be considered. The scope of the activities undertaken should be sufficient to return the affected resource or service to its baseline or pre-incident levels and to provide complementary resources and services in the interim.

Adjusting the scale of the project to meet these expectations fulfils two of the goals associated with restoration. First, the scaled project is capable of restoring the environment with a minimal amount of resource use. Second, this efficient use of resources will be cost-effective and therein the activity will be considered as reasonable along legal and funding criteria.

[42] For additional restoration actions for migratory birds, please refer to Appendix B.

Scaling approaches used by American trustees are based on defining the trade-offs between the services lost due to the injury and those provided by replacement resources by focusing on comparative costs, values or services provided. The resource-to-resource or service-to-service approach ascertains whether the proposed replacement service or resource is comparable in quantity and type to the injured resource or service. The replacement is then adjusted so that the quantity it provides to users or to the ecosystem is equal to the quantity of services or resources lost. For instance, if five birds have been lost due to oil-related deaths, the trustees could introduce five more birds of the same species into the colony.

The manner in which this service or resource comparison is made is dependent upon the injured resource or service in question. The most commonly used and most scientifically accepted method, habitat equivalency analysis (HEA), assumes that the public will accept a straight exchange of resources or services provided by habitat replacement projects. HEA uses a formula representing several different types of services provided in a habitat; this metric is compared to other habitats in order to determine if they can provide adequate services in the same type and quality. This method is appropriate as it is based on an ecosystem approach rather than on replacing each individual resource or service.

Resource-to-resource or service-to-service methods are only useful if it is possible to quantify and to compare the injured items and their replacements. For instance, trustees may decide that allowing access to a bird sanctuary will replace the lost services of a popular bird watching habitat as it allows for the same number of viewing opportunities. However, the birds in the sanctuary may not be as rare or as interesting as those that inhabiting the former site; accordingly, the replacement bird watching may not have the same value as the injured opportunities. Clearly, a straight quantity based exchange is insufficient to compensate for the lost services and instead a method incorporating a value approach must be used.

The valuation method is used when the service-to-service or resource-to-resource method is ineffective because the resources or services cannot be quantified. This qualitative approach compares the value provided by the replacement services against the value of the interim losses by using economic methods such as CV studies. The scale of the replacement service is then adjusted so that the gains are equal to the losses. For instance, the value gained by opening the bird sanctuary to excursions would be weighed against the lost bird watching opportunities caused by the damage to the formerly accessible bird habitat. If the bird watchers value their former viewing opportunities more highly than they do the chance to visit the sanctuary, authorities could provide more access time to the sanctuary to offset the disparity in value.

As previously stated, the valuation method can provide inaccurate and unreliable results. Over exaggerated or underestimated values have serious consequences for the scaling and the implementation of restoration projects. If the values assessed are incorrect, the wrong level of resources will be allocated to the resource project. As a consequence, the

Department will not be able meet all of its restoration goals as some projects will be accorded an insufficient level of resources.

Because of the uncertainty associated with the valuation method, the service-to-service approach should be used whenever possible. The service-to-service approach is also more suited to restoration projects as it provides direct information on ecosystem needs while the valuation method focuses on human expectations from a particular resource or service. Increased awareness of a resource's or service's quantity and the role they play in an ecosystem will make the service-to-service approach more available and reliable.

2.33 Implementation Phase

Once the appropriate projects and level of resource allocation have been identified for the purposes of restoration the trustees should consider how the plan will be implemented. The development of implementation strategies can involve public consultation sessions and co-ordination with other environmental authorities and the potentially responsible parties (PRPs). The final work plan should not only include what steps must be taken to initiate the restoration projects selected but also the means by which results can be monitored and need for corrective action evaluated.

2.34 NRDA Criticisms

The most significant problem associated with the NRDA method is the quality of the information upon which its analysis is based. As previously stated, data on the baseline conditions of resources and ecosystems is rarely available or is quickly obsolete. Even data on pre-incident conditions is often inexistent as the availability of this information requires continuous study. This deficiency brings the assessment process and results into question as it is often impossible to ascertain what damage was caused by the incident under investigation or even if a discrepancy between the post-event and baseline conditions exists.

Results of NRDA applications have also been criticised because of the use of CV studies to determine what level of effort is required for restoration. The main objection to the use of economic studies is that they produce unreliable and unverifiable conclusions. Ultimately, the polluter may be held responsible for a restoration effort that was more expensive and extensive than was necessary. It is also likely in this situation that government may be forced to assume expenses that exceed the projected costs.

In order to avoid these situations, it is necessary to continuously engage in studies of areas, resources or services that are either sensitive to exposure or that are often at risk of being injured. Even if it is no longer possible to gauge baseline conditions, continuous research will in the very least provide information on the pre-incident state of resources and services at risk. Extensive and detailed studies may also provide researchers with the information needed to consider effective resource-to-resource and service-to-service exchanges.

2.35 NRDA Applications

As NRDA studies can be very expensive, this method of damage assessment may be most appropriate for unique or extensive damages that cannot be accurately measured by standardised approaches. Such circumstances could include injuries to endangered or threatened species, injuries requiring lengthy recovery and incidents on a scale comparable to that of the *Exxon Valdez* or *Nestucca*. Because of the nature or scope of these events, the costs and expenses associated with the assessment are more likely to be viewed as reasonable by courts and fund authorities.

2.4 Modelling Approaches to Damage Assessment

Modelling systems combine mathematical analysis, scientific data and economic valuation in order to determine how oil spills are impacting on the surrounding environment. Computer-generated models are most commonly used in impact assessments of proposed projects or to gain information during environmental emergencies. The system has also been used, although in a limited sense and chiefly in the United States, to assess injuries to resources and services that are either common or minor in nature.

2.41 Natural Resource Damage Assessment Model (NRDAM)

NRDAM is a modelling system adapted specifically for American coastal regions. Its use is permitted under both CERCLA and OPA for the evaluation of the physical and biological consequences of an incident, for suggesting restoration options and for assigning economic values to the damage. CERCLA utilises a two-tiered approach to damage assessment; the more complex Type B incidents are individually assessed under the NDRA guidelines while more 'routine' Type A events -- in terms of either small pollutant volumes or minimal environmental affects -- are analysed by NRDAM calculation. NRDAM is also used to calculate compensation formulas for simple oil spills falling under OPA jurisdiction. Classification of incidents as being minor or complex is determined by the estimated amount of on-site field evaluation that would be required in order to assess the injuries.

There are three components to NRDAM:

1. The *physical fates* model calculates how a given substance will react in a specific coastal environment by determining its trajectory and its rate of evaporation, dissipation and emulsification.
2. The *biological effects* model uses the information provided in the first step in order to determine the effect of the substance on animals, plants and food web productivity from the moment of exposure to the expected point of recovery.
3. The *economic valuation* model determines values for both economic and non-economic uses.

Based on the physical fate and biological effects conclusions, the model determines which restoration efforts are appropriate in terms of their technical feasibility and the ability of the resource to recover. The scale of the recommended restoration projects is then determined by the economic valuations produced by the model; the economic information is also used as the damages claim for legal action. As with NRDA, economic evaluation of non-marketable resources and services in NRDAM calculation requires the use of survey methodology such as contingent valuation.

2.43 NRDAM Criticisms

As modelling systems rely upon the prior preparation and study of baseline conditions and upon economic valuation, NRDAM evaluation is only as valid as the information upon which it is based. In the absence of scientific information, assessment findings can either be exaggerated or underestimated. There have also been claims on the part of oil-related industries that NRDAM is based on antiquated data that fails to account for accumulating damage and that as a result polluters are being held accountable for previously existing injuries. There have also been concerns that the use of contingent valuation produces dollar amounts that do not accurately reflect the damages' true value.

The use of standardised methodology and surveys may not be feasible for the study of certain incidents or forms of damage. Unique or complex situations are not appropriate for NRDAM calculation as the variables involved do not conform to the model's parameters or are, for the purposes of valuation surveys, difficult to communicate and to understand.

2.44 NRDAM Applications

As unique and complex pollution damages are rare, there are advantages to the implementation of NRDAM. NRDAM has been used satisfactorily in the United States for the assessment of small and routine spills[43]. Spills of this nature often affect few resources and therefore inflict either slight or few injuries to the ecosystem; as such, damages resulting from routine spills are relatively easy to predict. NRDAM application also saves the expense and time needed to conduct a usually unnecessary individualised damage assessment study. By using the more expedient and cost-effective modelling technique, restoration can begin once plans for the recommended restoration strategies are developed; resources that would have been allocated to the assessment study can instead be allotted the recovery efforts instead.

2.5 Damage Assessment in Canada

Currently there is no established national standard for damage assessment in Canada. However, there are existing practices that would make an adaptation of the American damage assessment approach feasible.

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[43] NOAA considers spills under 50,000 gallons to fall under this category. See Pond, 61.

2.51 Legal Requirements

The Canadian Environmental Assessment Act (CEAA) requires all federal undertakings or projects affecting federal responsibilities to undergo an environmental impact assessment (EIA) in order to determine what their environmental effect may be. Section 2(1) defines an environmental effect as any change that the proposed project might cause in the environment, including its socio-economic condition and its importance for health, cultural, historical and traditional usages. Restoration projects fall under the definition of project in section 2(1) as they can involve construction and modification of the environment. For example, the relocation of twenty birds requires an EIA as the movement may affect their present habitat in addition to the damaged ecosystem.

There are a number of exceptions to the EIA requirement for federal undertakings. The most pertinent exemptions for the purposes of restoring environmental damages are listed in section 5 which states that an EIA is not required for projects that respond to a national emergency or that are initiated in emergency situations in the interest of preventing damage to property, the environment, and public health or safety. Unfortunately, neither CEAA not its regulations define the parameters of what constitutes an environmental emergency; it is therefore unclear if damage occurring over a long period of time or if incidents affecting less crucial resources would be included under CEAA.

Bill C-32, the revised version of CEPA, does include a definition of environmental emergencies that could be used as a guideline. According to the proposed section 193, an environmental emergency is an "uncontrolled, unplanned or accidental release, a release in contravention of regulations [...] of a substance into the environment or the reasonable likelihood of such a release into the environment". As this definition focuses on the occurrence or possibility of an incident rather than the circumstances of its impact, it can be assumed that the duration or ramifications of the incident are not relevant for designation as an environmental emergency. Should such an approach be used to determine the applicability of CEAA it is likely that the vast majority of restoration projects would be exempted from the EIA requirement.

There is a possibility that the definition of environmental emergency used in Bill C-32 will be seen as too broad for the purposes of CEAA. Adopting such an expansive and all-encompassing approach would allow all projects classified as restoration efforts to avoid undergoing an EIA. In order to ensure some level of oversight, projects that do not demand immediate response or that are targeted at resources that are either plentiful or capable of some level of natural recovery may be required to provide an EIA analysis. If this approach is used, projects will have to undergo, according to section 14 of CEAA, a screening or comprehensive study, a mediation or assessment by a review panel, and the creation and implementation of a follow-up program. Section 16 requires that initial studies and review panel consider:

- the environmental effects of the project and their significance;

- any public comments;
- any technical and economical measures that would mitigate these effects;
- the purpose of the project;
- alternative technically and economically feasible means of achieving this purpose;
- need and requirements for a follow-up program;
- capacity of renewable resources that are likely to be significantly affected by the project to meet the present and future needs of society.

It is likely that a restoration project will meet the standards set out by CEAA. The need to meet these requirements and to adjust plans as mandated by the study or by the review, however, could cause a substantial delay in initiating projects. Such an obstacle could be minimised by incorporating the screening requirements into the injury assessment and restoration planning stages of a NRDA-styled approach. For instance, an integral part of NRDA analysis is the consideration of alternate restoration actions in terms of their ability to mitigate existing damage and to prevent further injury in a cost-effective and technologically feasible manner.

2.52 Existing Assessment Practices

The Shoreline Cleanup and Assessment Technique (SCAT) process currently used for emergency response is similar to the foundation of the NRDA approach. SCAT consists of conducting shoreline and oiling condition surveys in order to determine the level of cleanup required and to ascertain whether further action is needed. Additional activities are initiated if they are considered to enhance the process of natural recovery.
This procedure of collecting data and evaluating courses of action could be expanded to fulfil a damage assessment function. So that reliable results are provided, SCAT will have to develop a standardised approach to damage assessment and use more quantified forms of analysis.

2.6 Adapting Approaches for the Canadian Context

There are clearly some similarities between Canadian methodology and the American system that encourage the introduction of an NRDA/NRDAM approach. Like the injury assessment procedures, SCAT is initiated to determine the scope of damage in order to decide what level of response will be required. The NRDA restoration planning phase and CEAA both require that all restoration alternatives be considered in light of their costs, their technical feasibility and ability to achieve project objectives.

The use of a NRDA/NRDAM system is also compatible with the introduction of a tiered approach to damage assessment. At the 1997 workshop convened to discuss damage assessment and environmental restoration the following model was proposed:

Tier	Spill Volume	Required Response	Assumptions
One	1 - 1,000 volumes*	• cleanup only • no damage assessment and/or restoration	• Spill does not occur in a "sensitive" area
Two	1,000 - 10,000 volumes*	• Cleanup • Payment of a "flat fee" to be used for damage assessment/ restoration	• Spill does not occur in a "sensitive" area • Damage assessment/ restoration efforts would be conducted according to a mutual plan
Three	10,000 volumes and above*	• Cleanup • Site specific damage assessment and restoration as co-ordinated by REET	

Source: Assessment and Restoration of Environmental Damages in the Atlantic Region, Report of a Workshop Held March 4-5, 1997, 26.

*amounts comprising each tier were chosen arbitrarily for the purposes of discussion

NRDA analysis would be appropriate for tier three spills as volumes of this level may cause extensive injuries to several resources and their ecosystems. This process could also be used if the assumptions do not hold true and sensitive areas or resources are injured. Barring any impacts on sensitive areas, NRDAM could be used either to calculate rates for each tier two event or to determine what the universal fee would be for any incident falling within this range. Any restoration plans suggested by the model would be subject to the approval of all participants in the restoration effort. Should consensus be lacking, it may be necessary to conduct a more elaborate NRDA examination unless the parties involved can negotiate a more equitable arrangement.

While there may be some compatibility between the American system and existing Canadian tools there are a number of obstacles in gaining industrial and legal acceptance for a Canadian NRDA approach. One of the main difficulties in establishing a Canadian NRDA system is the lack of accurate and valid baseline information. Past studies regarding the use of modelling in Atlantic Canada have indicated that the assimilation of GIS data into NRDAM components is problematic because of the lack of formal documentation, standardisation and quality control.[44] Without reliable and scientifically defensible information it will be difficult to determine the extent and ramifications of an injury.

[44] Sylvain de Margerie, Stephen Hurlbut, Anthony W. Isenor, Eoin Howlett and Chris Kendrick, Demonstration of OILMAP and ODIN Link for Oil Spill Modelling in the Bay of Fundy and Gulf of Main (July, 1993). The purpose of this study was to create an oil spill model for use in emergency response activities by incorporating information into OILMAP, an oil spill fate prediction system, and ODIN, which contains marine information. Both of these systems are foundations for NRDAM.

In the United States the evidence derived from damage assessment is presumed by law to be accurate unless the accused polluter can prove otherwise. Canadian legislation does not make allowance for such a presumption and therefore the evidence and the means by which it was collected and analysed will be vulnerable to scrutiny. In addition, CV methodology is likely to have the same reception in Canadian industry and legal circles as it did in the United States because of its subjective nature. Acceptance of this approach will require close attention to survey design and the use of several test cases in court.

New scientific methods always garner close scrutiny from Canadian courts. The same holds true for the use of socio-economic evidence. The current standards for testing the admissibility of scientific evidence were established by the Supreme Court in R. v. Mohan:

- relevance of the information to the case at issue;
- the information is necessary in order to assist the court;
- absence of any rule that would exclude the evidence;
- the information is provided by a properly qualified expert.

Both the scientific and economic assessments of the NRDA process would be weighed against this standard. Relevance of the damage assessment to environmental prosecution and restoration will not be difficult to establish as the results of NRDA studies provide evidence of the injury for the purposes of proving offences and of imposing sentences. The information will also assist the courts in understanding the nature and scope of environmental damage and the need to restore resources and ecological links. It is unlikely that the information generated by the studies would be subjected to any of the exclusionary rules such as hearsay.

The most likely barrier in terms of having the NRDA method accepted by Canadian courts is the credentials and qualifications of the approach. Courts will look to see if the method has been endorsed by the scientific community. Given the concerns regarding the lack of baseline information and the use of economic valuation, courts may be hesitant to accept the validity and reliability of the damage assessment process. Courts will also examine the perspective of the legal community, however; as the American judiciary has endorsed the NRDA approach, Canadian courts may be inclined to do the same if concerns over information quality and use of economic principles are met.

3.0 Roles and Responsibilities in Damage Assessment

The adoption of the NRDA/NRDAM approach discussed above requires significant levels of data and analysis and therein necessitates the co-operation of government agencies, industries, environmental groups, First Nations and coastal communities. These organisations can contribute to the various stages of injury assessment, restoration planning and implementation or to the information needed for the initiation of a

modelling process. As these groups have different concerns and priorities for damage assessment and restoration, co-ordination should be provided by the Regional Environmental Emergencies Team (REET) as a natural extension of its emergency planning and response roles.

3.1 Data Collection and Injury Assessment

The gathering of pre- and post-incident information is crucial for proper and defensible analysis from both the NRDA and NRDAM systems. There are a number of organisations that can provide both baseline information and evaluation of various environmental impacts for the purposes of restoration activities[45]:

Organisation	Data Responsibility
Environment Canada - Environment Protection Branch (EPB)	Shoreline and oiling conditions during cleanup stage
Environment Canada - Environment Conservation Branch (ECB)	Baseline information and incident effects on migratory birds, wildlife.
Department of Fisheries and Oceans (DFO)	Baseline information and incident effects on fish and fish habitats
Natural Resources Canada (NRCan)	Baseline information and incident effects on beach sediments
Health Canada	Baseline information and incident effects on human life and safety
Provincial Departments and Agencies	Baseline information and incident effects on provincial resources
First Nations & Coastal Communities	Identification of sensitive areas

Taken as a whole, the information provided by these organisations and departments can provide a comprehensive assessment of particular resources and their ecosystems both before and after an incident. The assessment of the nature of incidents and injuries can be supplemented with an analysis of the pollutant's characteristics by EPB, the Environmental Technology Centre (ETC) or by NRCan. In addition, continued surveillance of the spill or release by the Canadian Coast Guard (CCG) and the provision of atmospheric, oceanic, weather and trajectory forecasts by the Atmospheric Environment Branch (AEB) will also help to determine the magnitude and ultimate impact of the incident. These agencies are also in the position to suggest the possible means by which restoration of the affected resources relevant to their mandates can be achieved.

[45] For a more detailed list of potential roles and responsibilities during damage assessment, please refer to Appendix C.

The government agencies and departments involved in the information gathering phase could also suggest the order in which resource injuries falling under their respective mandates should be addressed. Ranking is necessary so that departmental resources can be allocated effectively. Priority should be assigned according to the extent of the injury and the importance of the resource's services to the environment and to society. Departmental rankings would then be considered at the REET level in order to plan a co-ordinated restoration effort.

The alleged polluter, if identified, and the relevant industrial representatives should also be involved in the information gathering stage. The participation of industry is desirable as the potential polluter should be called upon to assist in the planning of restoration activities and to voluntarily implement the plan. Although it is likely that they will not be in the position to provide ecological information, industrial parties to the Regional Environmental Emergencies Team (REET) may be able and willing to contribute equipment or provide information on the composition of the pollutant.

3.2 Restoration Selection and Scaling

Assessment of the resource injuries conducted by these organisations and communities and their recommendations for prioritisation should then be forwarded to REET for the purposes of organising the selection and scaling of restoration activities. As during the initial response to an incident, the composition of REET for the damage assessment stage would consist of the government agencies, organisations and industries affected by or implicated in an incident. Assigning this function to REET will allow for a greater exchange of information, communication on possible strategies, and co-ordination of responses to the various impacts on the environment.

The selection of the most appropriate restoration activity should be based on:

- the ability to return at least one, if not more, of the damaged resources to its pre-incident condition;
- the minimisation of potential further harm to the resource or to the environment;
- the cost and use of departmental resources.

Co-ordination of this process is valuable as REET members will be able to develop inter-departmental ventures aimed at achieving the restoration of more than one resource or service. After establishing such partnerships, organisations wishing to undertake similar projects can establish roles and responsibilities for the initiative. This approach eliminates the potential duplication of activities and therein creates opportunities to deploy departmental resources more efficiently.

The involvement of REET in the selection process can also help to eliminate potentially conflicting activities; it is possible that the restoration efforts of one agency could

undermine the results of another department's projects. For example, one project may determine that it is necessary to remove shoreline vegetation so that wildlife has access to water while another project may be oriented to protecting the vegetation as it provides shelter for other species. Even if the departments in question have a memorandum of understanding on the subject, this partnership may only provide bilateral information; given the range of interests effected by a pollution incident, additional information networks will have to be formed. REET participation offers a framework for information exchange among several parties; this service can ensure that the objectives of all relevant projects are discussed and that a compromise is reached so that further harm to the injured resources is avoided.

Once activities are selected and roles and partnerships are established, the organisations involved in the restoration process must determine the scale or extent of the actions needed to achieve their restoration objectives. Use of the REET mechanism can once again ensure that all the information required for environmentally appropriate scaling decisions is available. For instance, if the HEA method is used to determine what level of replacement resources will be necessary to restore the injured habitat, a considerable amount of detailed information will be required on the impact of each replacement resource on the injured habitat and on the effect of its removal from the intact habitat. Government organisations and communities can provide data on specific resources or impacts which, when taken as a whole, will provide the equivalency level needed for restoration scaling.

If valuation methods are used instead of quantity exchange method, REET could co-ordinate the survey design and administration process. The results of the survey could be used to assess the level of total response needed from all organisations; REET members would then determine what portion of the total value should represent the contributions of individual organisations. For example, if a CV study determines that the value of a lost migratory bird sanctuary is $100,000 the resources used by all participating organisations for restoration should value $100,000. As the lead agency for incidents involving migratory birds, Environment Canada's contribution of such resources as labour and laboratory work to the restoration project may be assessed at a value of $90,000 while the continued monitoring role of the CCG may be estimated at $10,000.

Industry can also play a role in the selection and scaling stage of restoration projects. If implicated companies, their contracted response organisations (ROs) or associated industry organisations intend to participate in the restoration of injured resources, they should indicate the personnel, equipment, facilities and funding that can be made available for the initiative; the value of such resources should also be provided when valuation methods of scaling are being employed. Such an inventory can be used to determine the role of the industry organisation or corporation in the restoration project as well as its expected level of contribution.

3.3 Implementation

Ideally, the party liable for the pollution should assume responsibility for implementing the activities needed for restoration. As the polluter is often unidentified, refuses to participate or is unable to complete the project independently, it will be necessary for the government organisations responsible for the injured resources or for associated activities to implement the relevant portion of the plan. Co-ordination and communication through REET will be necessary for such restoration projects as the achievement of restoration goals may depend on either collaborative or sequential efforts. For example, one department may not be able to start its section of the project until a second department has successfully completed its responsibilities or is prepared to assist the first in fulfilling its role.

In order to ensure that project stages are completed in a timely and satisfactory fashion, the restoration plan must include a timetable and performance measurements for each activity and participant. The use of scheduling will help participants to plan their activities effectively and to allocate their resources accordingly. Performance measures complement the timetable by establishing what must be done before further activities can be undertaken.

For the restoration plan to be efficiently implemented, its administration should be the responsibility of a central body such as the REET. This function could involve:

- The collection and dissemination of departmental progress reports and performance evaluations;
- Resolution of conflicts between participants;
- Assessing the need for additional information and for adjustment of the plan;
- Monitoring the results of stages.

REET administration ensures that communication and collaboration is maintained throughout the project and that participants remain focused on the overall restoration goals as opposed to the interim objectives associated with each stage of the project.

3.4 Addressing Industry Concerns

The involvement of the REET in damage assessment and restoration would place enforcement agencies in the position to gather information against participating companies. For instance, the voluntary provision of oil samples or details concerning how the pollutant was released could be seen as admissions for the purposes of prosecuting offenders. The likelihood of incriminating oneself will make polluters hesitant to participate in restoration schemes; the lack of industrial representation will in turn compel other organisations to assume the responsibility and costs of restoration activities.

Even if ship owners and companies chose to co-operate in restoration projects, the subsequent use of divulged information for the purposes of prosecuting offenders can be problematic for enforcement agencies. In the absence of clearly explained rights and potential uses of information, the use of voluntary admissions against individual offenders could represent a violation of their rights against self-incrimination. The Canadian Charter of Rights and Freedoms prohibits the use of such evidence in legal proceedings if it would undermine public confidence in the justice system.

Even though corporate offenders do not have these rights under the Charter, any information provided voluntarily by the corporation may be used against the individuals involved in the incident and may therefore infringe on their rights. Accordingly, it is possible that industry participation in restoration projects could undermine the Department's enforcement responsibilities.

The concerns of both the potentially offending company and of the enforcement agencies can be resolved by establishing the company's and individual's rights prior to its participation. This will allow the company to weigh the costs of divulging information against the benefits of potentially securing a reduced sentence or avoiding charges entirely. Once participating companies have been fully informed of the evidentiary consequences, any details about the incident that are then admitted can be used for the purposes of an investigation.

Potential industry participants may also be concerned with the costs of the restoration project as ultimately they will be called upon or ordered to assume them. Accordingly, they may object to the calculations provided through economic valuation as unsubstantiated guesswork. As the legal system is likely to agree, at least in the short-term, with this conclusion it may be advisable for REET members to concentrate efforts on establishing the resource-to-resource ratios or to base the company's liability on the actual costs of the restoration activities themselves.

4.0 Conclusion

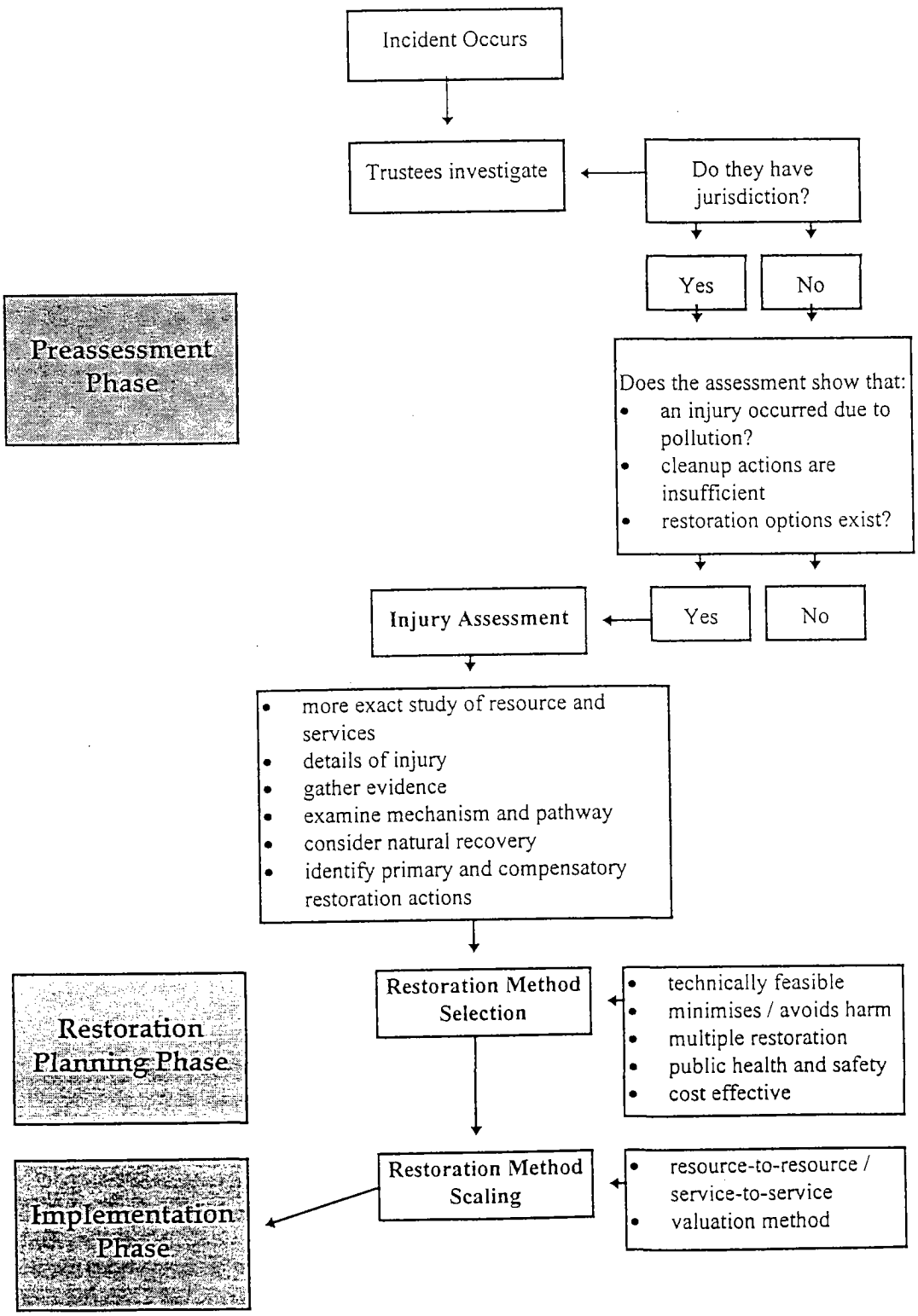
Because of the importance and complexity of oil pollution impacts on ecosystems, it is necessarily to develop a centralised framework for damage assessment, the planning of restoration strategies and for implementing joint-projects. The Natural Resource Damage Assessment approach offers a comprehensive analysis of the injuries sustained by an ecosystem and a focus on ensuring that the most cost- and technologically-effective means of restoration are employed. As this methodology shares these traits with existing legal requirements and cleanup assessment practices, adaptation of NRDA for the Canadian context is clearly possible.

There are several obstacles that must be overcome before NRDA can be successfully used in the Atlantic region. Concerns regarding information quality or discrepancies can be alleviated by engaging in studies of vulnerable environmental resources and services; the

availability of such data ensures that incident impacts will be assessed correctly and that restoration response will be planned properly. While economic valuation exercises should be used sparingly, they can provide valuable and reliable information if surveys are carefully planned and administered. The results of such studies can be used to plan the level of and responsibilities for restoration actions although legal claims should be based on the actual expenses associated with the activities.

As an ecosystem approach to damage assessment will require evaluation of various resources, their services and their links to the ecosystem, the NRDA approach will require the effort of several government, private and community organisations. Effective completion of these projects will in turn require centralised communication and co-ordination. This can be accomplished by investing the Regional Environmental Emergencies Team with the responsibility for organising and supervising multiple-party efforts. In addition to providing for information exchange and venues for partnerships, it will be necessary to ascertain the polluter's role in both the REET and assessment/restoration process; this may involve a clarification of rights and responsibilities of all the parties involved.

Appendix A: Natural Resource Damage Assessment Process



Appendix B: Restoration Options for Migratory Birds

Restoration Options	Description
Natural Recovery	• Cleanup actions are sufficient as population has the capacity to recover without human assistance
Restocking	• Relocating birds to the restoration site • Supplementing population with birds raised in captivity
Captive Breeding	• birds raised by humans and then placed in foster families
Fostering	• Pre-fledgling birds, either from population or from captivity, are placed in "chickless" nests
Hacking	• Temporary release of captively-held raptor so that it can sharpen its hunting skills
Recycling	• Eggs are removed from nest soon after they are laid in order to induce parent to lay another clutch
Habitat restoration	• Restore surrounding ecosystem • Build replacement nests
Modification of Management Practices	• Reduce disturbance to colonies (i.e. tourism, hunting, logging, air traffic) • Management of predators and prey
Enhancement	• Relief from other stresses (i.e. logging, commercial fishing)
Research	• diseases • effects of hunting and egging • pollution

Appendix C: Roles and Responsibilities During Damage Assessment

Organisation	Roles and Responsibilities
Regional Environmental Emergencies Team (REET)	• co-ordination of information gathering and exchange • co-ordination of restoration planning • co-ordination of implementation • administration of restoration plan • conflict resolution • monitoring stage completion and results
Environment Canada Atmospheric Environment Branch Environment Conservation Branch Environment Protection Branch Environment Technology Centre	• lead agency for restoration projects involving federal facilities, international resources, fish habitats and migratory birds • pursue restoration when others have failed to act • Provide atmospheric, oceanic, weather and trajectory forecasts during assessment and implementation stages • Information on migratory birds and wildlife in pre- and post-incident states • implement and monitor plans concerning migratory birds and/or federally significant endangered species • provide advice and assistance to agencies implementing plans affecting other wildlife • co-ordinate response • implement plans concerning federally-held lands • provide sensitivity maps • provide information on pollutant characteristics
Department of Fisheries and Oceans Science Branch Fisheries and Habitat Management Branch Canadian Coast Guard	• lead agency for restoration projects involving fisheries resources • provide information on the pre- and post-incident state of marine and freshwater environments • implement plans affecting fish stocks and habitats • provide monitoring assistance during assessment and implementation stages • Through CAPP initiative, relay community concerns during assessment, planning and implementation stages
Department of National Defence	• provide services or personnel during assessment and implementation
Department of Canadian Heritage Parks Canada	• assist in the assessment, planning and implementation of restoration activities affecting national parks or historic sites

Organisation	Roles and Responsibilities
Public Works and Government Services Canada	• provide equipment, construction and engineering expertise, information on federal buildings and marine structures
Department of Justice	• monitor planning and implementation if project is initiated under revised CEPA's Environment Protection Alternative Measures
Health Canada	• provide information on incident effects on human health and safety
Natural Resources Canada	• provide information on the pre- and post-incident state of beach sediments • implement plans affecting sediment restoration
Canada Ports Corporation	• assist in assessment, planning and implementation affecting ports under its jurisdiction
Provincial Environment Departments	• provide advice on provincial responsibilities • implement plans concerning provincial responsibilities
Canadian Petroleum Producers Institute	• provide advice on industrial perspectives concerning restoration projects • act as liaison between REET and industry during restoration project
Response Organisations East Coast Response Corporation Canadian Marine Response Management Corporation Atlantic Emergency Response Team Point Tupper Marine Services Ltd	• provide equipment and personnel during assessment and implementation • provide information concerning ability to participate during planning stage
Canadian Association of Petroleum Producers	• Represent industry interests during assessment, planning and implementation • co-ordinate industrial participation
Canada-Newfoundland Offshore Petroleum Board and Canada-Nova Scotia Offshore Petroleum Board	• assist in assessing planning and implementing restoration initiatives affecting oil production
Propane Gas Association	• provide advice concerning use and transportation of propane • provide services in incidents involving propane
First Nations communities	• provide information concerning sensitive areas • assist in planning and implementing restoration strategies
Marine Communities	• provide information concerning sensitive area • assist in planning and implementing restoration strategies
Polluters	• plan and implement restoration plan • provide equipment and personnel

Damage Assessment and Oiled Seabird Compensation

Dave Sawyer

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Damage Assessment and Oiled Seabird Compensation

1. Introduction

Damage assessment is a logical continuation of oil release response functions currently conducted in the Atlantic Region. Specifically, damage assessment uses risk assessment and the identification of environmental components at risk as the basis for monetizing environmental damages. Source-receptor relationships for a release are used to identify and quantify environmental injuries and to then attach monetary values to the injured resources. Compensation is then sought from the responsible party and then restorative actions are undertaken. From an operational perspective, it is attaching defensible monetary estimates of injury to existing information on seabird oiling and other ecosystem impacts that represents a new challenge for Environment Canada.

Natural Resource Damage Assessments (NRDAs) complement existing environmental management tools. They are similar to legislated regulations and standards in that they can prevent environmental degradation through the threat of liability for non-compliance. NRDAs are also similar to economic instruments in that the monetary value of the damage compensation should equal the value of the externality imposed on society by the release of a toxic substance. A notable distinction from other environmental management tools, however, is that once damages have occurred, NRDAs provide a mechanism to explicitly obtain damage compensation and to fund for restorative actions. NRDAs can therefore be regarded as a powerful tool for both preventing toxic releases and maintaining environmental quality.

This paper will provide basic information on the NRDA process with a focus on oiled seabirds. First, the literature will be reviewed with the aim of providing background information on NRDAs. Then, a discussion of the approaches used to monetize damages, as well as the categories of damages, will be presented. Finally, order-of-magnitude estimates on the value of seabirds will be provided. These estimates can be considered crude proxies that are useful for determining the value of oiled seabirds for damage compensation purposes in the Atlantic Region.

2. Types of NRDAs

When the determination to proceed with a NRDA is made, then an assessment plan is required. The main objective of the assessment plan is to identify the methodologies to be used to determine whether natural resources have been injured, to quantify losses of service, and to calculate damages (U.S. Department of Energy 1995). Depending on the extent of the injury and potential damages, the NRDA can follow one of two paths. In the United States, these paths include either a case specific damage assessment where a high level of post-release effort is required to identify, quantify and monetize natural

resource injuries. This option is selected either when damages are expected to be large, when high priority ECARs are impacted or in the absence of a standardized approach.

The Nestucca spill in 1988 is an example of a case specific NRDA conducted in Canada. During this NRDA, Environment Canada and the Department of Fisheries and Oceans made extensive studies into the effects of the spill (Pond 1997). The assessment costs to monetize the damages through the use of a contingent valuation study were also extensive and cost in the range of $400,000[46]. The court awarded damages totaled $4.4 million for cleanup, $4.3 million for restoration, and $700,000 for the Nuu-Chah-Nulth Tribal Council (Ibid.).

A second NRDA alternative is to use a standardized model (compensation formulas) to assess, quantify and monetize release injuries with a minimum of field observation. This approach is being used in the United States and is supported in law primarily with the federal Oil Pollution Act (1990) and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). One simplified procedure currently codified in the CERCLA rule is the Natural Resource Damage Assessment Model (NRDAM) for Coastal and Marine Environments (CME). This model gives an estimate of the average damages expected to result from minor discharges of oil and releases of hazardous substances occurring in the coastal and marine environment (61 Federal Register 20560, May 7, 1996 cited in French 1996). At the state level, Washington uses compensation schedules if a pre-assessment screening committee determines that:

1. restoration or enhancement of the injured resources is not technically feasible;
2. damages are not quantifiable at a reasonable cost; and,
3. the restoration and enhancement projects proposed by the liable parties are not sufficient to compensate for damages (RCW 90.28.367. State of Washington Legislation Concerning NRDA).

A major advantage of adopting a compensation formula approach is that it reduces case-by-case effort and can be applied to releases with low levels of injury. This has the potential to reduce assessment and administrative costs associated with small and chronic releases. The compensation formula approach also assumes that the injury to wildlife populations is incremental and does not significantly change population dynamics.

Establishing and testing the compensation formulas and models represents a significant effort. For example, the working models (NRDAM/CME and Great Lakes Environment (GLE)) are large and complex, and based on their size and scope, were clearly very costly to develop and codify in law. Adopting a compensation formula approach requires a decision prior to a release to develop and test compensation formulas for use in estimating monetary compensation for small spills.

[46] Another example of the costliness of contingent valuation studies is provided by the *Exxon Valdez* survey that involved 1,043 respondents and cost $50 to $600 per individual (Amack 1994). Market surveys in Canada generally cost in the order of $100/respondent plus analysis.

3. Identifying, Quantifying and Valuing Damages

The following sections will outline the damage assessment process as it relates to oiled seabirds. Given that the monetization of injury represents a new function for Environment Canada, the following sections will primarily focus on the literature and techniques for monetizing seabird injuries.

3.1 Determination of Injury

The starting point for estimating the economic damages of a seabird-oiling episode is the determination of injury. The injury determination would seek to identify that a release has occurred and that there has been a measurable adverse change in the physical quality or viability of a resource (US Department of Energy 1993). Similar to a risk assessment, the injury determination would seek to identify exposure pathways and receptors (resources at risk) and to make the link between the release and the responsible party(ies) if possible.

The determination of injury for compensation purposes does not therefore represent a new operational spill response or enforcement function for Environment Canada.

3.2 Quantification of Injury

The quantification of injury would involve quantifying the change in the wildlife population or habitat degradation, which resulted from a release. This stage of the damage assessment would seek to quantify the shift from the pre-release, baseline environmental quality, to a post-release, shift from baseline environmental quality, which can be directly linked to the release (U. S. Department of Energy 1995).

For oiled seabirds, the quantification of injury would include an assessment of the composition and number of impacted birds as well as an estimation of the impacted birds that were not recovered. Given that the number of seabirds not recovered is generally believed to be a large factor relative to the recovered birds, and can represent the greatest proportion of injury, the estimation would have to be scientifically defensible. The oiling of the wildlife individuals would also have to be directly linked to the release.

3.3 Valuation of Injury

The objective of the valuation of injury is to utilize methods that provide appropriate, valid and reliable resource values for the injuries associated with a release (Title 31, Subchapter C, § 20.32). The valuation of injury seeks to provide an estimate of the total damage of the release. In the U.S., the OPA and CERCLA recognize the total damage of an event to include three categories:

- Restoration Costs - the costs of restoring the environment to pre-release baseline;
- Lost Service Flow - the costs associated with lost service flows over time; and,

- Assessment Costs - the costs of conducting the damage assessment.

In effect, the value of the injury becomes the cost of returning the injured natural resource to baseline, plus the costs of compensatory restoration projects determined by valuing lost service flows, plus the reasonable cost of assessing those damages (Environmental Damage Valuation 1996). Other settlements for injuries have covered legal costs, response costs, and damages or monies for resource restoration, protection, and enhancement programs (RCG/Hagler Bailley).

3.3.1 Restoration Costs

Restoration costs are simply the sum of all the costs of the planned action to rehabilitate damaged ecosystem components. Therefore, one of the first steps in the damage assessment process after the injury has been assessed is the identification and selection of technically and economically feasible restoration options. Economic feasibility is generally regarded to mean that the costs of restoration are not disproportionate to the value of the natural resources and the services injured by the release[47] (Title 31, Texas General Land Office; Amack 1994; CERCLA and OPA). Restoration costs then flow from the selected restorative option.

Two types of restoration actions can be identified: *primary restoration*, which is action taken to return injured ecosystem components to the pre-release baseline; and, *compensatory restoration*, which is compensation taken to account for interim losses of ecosystem components pending recovery. Each restoration alternative considered will contain primary and/or compensatory restoration actions that address specific injuries associated with the release (French 1996). The identification of restorative options can therefore include plans to return injured resources to baseline as well as actions that address interim or on-going losses. This could include habitat and stock enhancement actions.

3.3.2 Lost Service Flow

The physical and biological impacts of an oil release result in a decrease in the flow of benefits individuals derive from the environment. The measure of lost service flow is often referred to as compensable value. According to the US Department of Interior (1991):

> Compensable value encompasses all of the public economic values associated with an injured resource, including use values and nonuse values such as option, existence and bequest values. Natural resources have public economic value because of the variety of services they provide to the public... when natural resources are injured, the flow of services

[47] i.e. more than twice the value of lost service flows

they provide is apt to be disrupted, thereby resulting in economic damages. Compensable value is the dollar measure of this damage.

Natural resource service flow reductions from releases of oil may include reductions in the beneficial service flows from resources (e.g. beach closures due to oiling), or the creation of detrimental service flows (e.g. the observation of wildlife death and impacts on threatened species) (RCG/Hagler Bailly 1995). There are five recognized service flow loss categories which encompass a spectrum from direct use losses, such as reduced fish catches, to passive use losses which are not related to an individuals use of a resource but instead to their knowledge of the integrity of the resource.[48]

The valuation of lost service flow is based on changes in individual welfare. In most cases, this involves the loss in value people experience as environmental integrity decreases. For example, people would be willing-to-pay (WTP) in order to finance a program that reduces the potential impacts of oil releases on seabirds and coastal ecosystems. Their willingness-to-pay (WTP) to avoid potential environmental impacts would be a proxy of the value they place on the target ecosystem component in a pre-release or baseline condition. This is in fact the valuation approach recommended to assess the value of environmental degradation, including seabird kills, resulting from oil releases on the Canadian Pacific Coast (HBRS 1995).

Although lost service flows are based on an individual's WTP, compensation to individuals for oil release damage is not feasible in all cases. In some instances, individuals with clear entitlements may be impacted by a release and can be identified and compensated. However, in other cases, such as beach closures, identifying and compensating large numbers of individuals who value the baseline environmental quality may have high administrative costs. For example, the Nestucca survey used all B.C. residents as the population to value the injury to impacted ecosystems and seabirds (RCG/Hagler Bailly). In this case, compensation would not be practical for all who valued the lost seabirds. In addition, responsible parties may prefer not to refer to a portion of the settlement as damages, or to minimize what is labeled as damages, because this sets a bad precedent of accepting damages as having occurred, being quantifiable, and being compensable (Ibid.).

To address this problem, compensatory restoration actions can be identified which equal the value of the lost service flow. For example, to compensate for losses to non-consumptive wildlife viewing as a result of a release, compensatory projects might include building trail systems to improve wildlife viewing opportunities in the general area of the injured resource or by improving habitat through wetland construction or enhancement.

In the *Nestucca* case, the Government of Canada and the B.C. Government sought to recover the costs of cleanup and related expenses and for damages to the environment

[48] See RCG/Hagler Bailley for an excellent overview of the taxonomy of total economic value

(Pond 1997). A contingent valuation study was conducted to monetize the lost service flow due to the degradation of habitat and seabird kill that resulted from the spill. As discussed above, a settlement was reached which covered cleanup costs and provided for restoration.

3.3.2.1 Estimating Lost Service Flow

Assessing the monetary value of environmental damages related to oil discharges at sea provides a special challenge. This challenge stems from the fact that many of the impacted ecosystem components, such as seabirds, are not traded in the market place. As a result, economic value, usually observable through the exchange price of a good or service, can not be observed. The lack of a pricing mechanism does not, of course, imply that value does not exist, but rather that the market economy fails to account for changes in societal value associated with changes in environmental integrity. In the absence of market prices, alternative methods must be adopted which can be used to value ecosystem components and functions when assessing damages from oil in the environment.

Survey methods are the most commonly used approach to create market situations that solicit the value individuals in society place on changes in environmental quality. Surveys are often used to solicit the willingness-to-pay of individuals for the maintenance of environmental quality or the avoidance of environmental damages. Surveys can be designed which obtain information on narrowly defined subject matters such as the value of certain species of seabirds and the value placed on damage prevention programs such as Clean Feather.

The primary benefit of the survey approach is its ability to solicit specific values from individuals that reveal their preferences for ecosystem components and functions. If designed and administered correctly, the results of surveys can be used in court cases. Indeed, contingent valuation has gained greater legal recognition in the United States in recent years, as courts have increasingly acknowledged the need to consider all environmental assets, including publicly owned natural resources for which market valuation is inadequate (Amack 1994).

The major limitation of survey based valuation techniques is the high cost to formulate, implement and analyze the study. Given the complexity and cost of these surveys, they are only used in damage assessments when the environmental impacts are large. For example, a contingent valuation study would be useful for an incident that threatened a major seabird colony or impacted an endangered species. In the Nestucca incident, a contingent valuation survey was used given the large quantity of oil released, the death of approximately 56,000 seabirds and the acceptance of contingent valuation by a U.S. court (Pond 1997). Therefore, in the case of chronic and small releases with minimal environmental impacts, a compensation formula approach would be preferred over conducting a contingent valuation survey.

3.4 Assessment Costs

These costs will be varied and can be defined as the reasonable costs of assessing injuries. Although the interpretation of "reasonable" could be a point of contention in compensation cases, a working definition adopted by the State of Texas provides some guidance. In Title 31 (Subchapter D, § 20.41 Recovery of Damages), the costs of the assessment include "all costs that have a rational connection to the assessment and are incurred in the performance of the assessment, and the development, implementation, and monitoring of the restoration plan". This would therefore include all costs incurred to carry out trustee functions for assessing natural resource damages such as wages and associated personnel expenses, sampling and analysis, contractors and experts required to assess injury and determine damages, and mediation costs (Ibid.).

4. Developing Compensation Formulas: Oiled Seabirds

This section we will survey the literature and provide comment on developing compensation formulas for oiled seabird damage assessments in the Atlantic Region. Preliminary estimates on the monetized economic value of oiled seabirds will be presented. The reported values can be viewed as first steps in the development of compensation formulas for small and chronic oil release incidents in the Region.

For oiled seabirds the total damage would include an estimate of the:

- replacement value of restoring the stock to pre-release levels;
- lost service flow due to a reduction in wildlife individuals; and,
- reasonable cost of identifying, quantifying and monetizing the injury.

There is a body of literature that can be called upon to provide guidance on the economic value of oiled seabirds for the use in damage claims. This literature generally focuses on the economic value of the wildlife individual and the subsequent cost related to individual deaths. The literature does not account for habitat restoration costs which could be additive to the value of oiled wildlife individuals in a damage claim.

It is important to note that the following discussion assumes that the oiling incident does not have a significant impact on seabird populations or threatened and endangered species.

The following sections will provide insight into defining values for restoration and lost service flow costs. Assessment costs will not be discussed given that they are case specific, and should therefore be determined at the time that an NRDA is conducted.

4.1 Estimating Restoration Costs

The literature uses two methods when estimating the restoration costs for oiled seabirds:

1. Value to clean oiled birds and replace birds into the environment

When seabirds are oiled from spills, efforts and expense are usually undertaken to capture, treat and return seabirds to the wild, rather than places on the birds is at least equal to, or greater than, the resources expended. To use this approach, data on historical clean-up operations are used and average values per bird returned into the environment estimated.

Data required for this approach includes:

- time spent by paid staff and volunteers to collect, clean and return birds;
- dollars spend on operation;
- number of birds collected and returned (success rate).

2. Re-stocking Program (Replacement Cost)

The replacement cost approach reasons that the value of a seabird is at least equal to the cost of replacing that bird. The value of seabirds can therefore be imputed based on the costs of stock enhancement and breeding programs in terms of dollars per bird replaced. It is important to note that the damage is still present whether or not oiled seabirds are re-stocked. If re-stocking is not feasible, the damage compensation could be used in alternative stock enhancement programs such as habitat improvement.

Data required for this approach includes:

- budgets and time spent on breeding and stocking programs;
- dollars spent on habitat enhancement;
- number of birds released.

Generally speaking, either of the two approaches is theoretically sound, however, from an operation perspective, the cost of restocking method is preferred. This is due to the fact that the cleaning of oiled birds is regarded to be inefficient, costly and has a low probability of success[49]. In addition, the restocking method has been accepted in the NRDA literature and the US Department of the Interior CERCLA compensation formulas as the preferred approach.

4.1.1 Restoration Costs Identified

Restocking costs for seabirds in Atlantic Canada are not readily available. However, the US NRDA Model for Coastal and Marine Environments, which is now codified in US law and used to estimate damages from small releases, does provide restocking costs for

[49] Hagler/Bailley (1995) report the cost of preventing seabird mortalities through cleaning to be in the range of $700 - $33,000 per bird with a figure of $1,500 per bird for the *Nestucca* case in BC. The success ratio of attempted/returned birds is reported at 42%.

seabird species found in the Region. These costs were obtained form the International Animal Exchange (IAE), a leading international animal supplier with headquarters in the United States. International Animal Exchange, Inc. is the most comprehensive supplier of the eight animal suppliers registered with American Association of Zoological Parks and Aquariums (US Department of Interior 1996).

The restocking costs reported in the NRDAM/CME and assembled by IAE capture: the purchase cost of the bird; transportation costs incurred to deliver the procured wildlife to the are of injury; and the fees of wildlife management specialists (necessary to ensure high survival rates in the habitat of the releases) (Ibid.). Restocking costs for birds used in the NRDAM/CME and which are found in the Atlantic Region are presented in Table 1.[50]

Table 1:
Wildlife Species Restocking Costs and Availability

Species	Cost/animal in 1997 Canadian dollars	Maximum number of Animals Available
Duck (all species)	$282	500
Canada Goose	$507	1,000
Great Cormorant	$999	400
Puffin	$2,956	10
Greatblue Heron	$3,097	900
Cattle Egret	$422	10
Osprey	$8,446	10
Bald Eagle	$8,446	10

In the absence of additional information, it is assumed that these values are fully transferable for use in the Atlantic Region. Indeed additional efforts to refine restocking costs would likely not be cost-effective given the source of the above information and the subsequent scrutiny that the NRDAM/CME has received. These restocking costs can therefore be used to provide order-of-magnitude injury damages for use in compensation formulas.

4.2 Estimating Lost Service Flow

Lost service flow estimates are much better defined in the literature than restocking costs. Indeed, there is a whole host of Canadian and US estimates on the value of waterfowl and seabird individuals. The value of wildlife individuals is generally divided between values for consumptive (hunting) and non-consumptive (wildlife viewing) users. Passive use values, such as the WTP of individuals to ensure the maintenance of existing environmental quality, are usually not included in the value estimates. The seabird values reported below do not reflect the same values. Some reflect use values, which include

[50] All dollar figures are in 1996 Canadian dollars unless otherwise specified.

consumptive hunting values, while others include total values, which include use values in addition to passive values. Differences between the reported values are noted below.

4.2.1 Transferring the *Nestucca* Damage Values to the Region

As discussed above, a CV study was conducted in BC for the Nestucca incident. It was estimated that 41,000 seabirds were killed as a result of the incident and that the major lost service flow was for passive users (RCG/Hagler Bailly 1995). Passive users would be people who would be willing-to-pay to avoid mass deaths of seabirds. Indeed, the CV questionnaire framed the WTP questions within the context of avoiding seabird deaths through the provision of oil release reduction programs and by increasing taxes. The CV determined that BC households would be WTP approximately $1.00 to avoid the death of 1,000 seabirds, with damages per bird for the Nestucca spill averaging $4,000 and a settlement per bird of $250 (Ibid.). The WTP values reflect a large passive use component (HBRS 1995).

Given that the CV study was used to solicit WTP values for a Canadian spill, the results are likely transferable to the Atlantic Region. Adjusting for differences in income between BC and the Atlantic Provinces[51], and using 1996 estimates of the number of households per province in the Region, we can estimate a range of WTP for avoiding seabird deaths. In Table 2, the *Nestucca* findings are adjusted and applied to the Atlantic Region. As can be seen, the WTP to avoid 1,000 seabird deaths from an oiling incident varies per province and is driven by the number of households. The WTP to avoid seabird deaths ranges between $32 and $232. These values are at the upper range of the literature (see Table 3). This is not surprising given that the CV was designed to capture the total value placed on oiled seabirds. This compares to the majority of the literature, which focuses on the value of wildlife individuals to consumptive users and generally does not capture additive values such as existence values.

Although lost service flows would likely be present for residents across Canada as a result of a spill in Canadian waters, residents in the province in which the incident occurred, or had seabird fatalities, would constitute the sample for the CV. The results in Table 2 would therefore only be used in provinces with seabird moralities. While the results in Table 2 are at best be crude approximations, they nevertheless provide insight into the order-of-magnitude of damage residents would be WTP to avoid seabird deaths in the Region.

[51] Considered a minimum when transferring WTP estimates

Table 2 WTP of All Households to Avoid 1,000 Seabird Deaths			
Province	Households in 1996[52]	WTP/1,000	WTP/Individual
Newfoundland	169,435	$106,312	$106
PEI	46,121	$32,104	$32
Nova Scotia	327,619	$237,684	$238
New Brunswick	258,779	$195,353	$195

4.2.2 The Value of Waterfowl Individuals: Literature Review

The value of seabird and waterfowl individuals has been estimated in a number of Canadian and US studies (Table 3). Most, if not all studies, calculate the value of an animal to hunters and do not capture passive use values. The incremental value of a waterfowl individual to non-consumptive users is rarely measured but can be assumed to be equal to or up to 4 times greater than the value of the same wildlife individual (Stokoe 1990; Porter and van Kooten 1995).

Table 3 Value of Waterfowl and Seabird Individuals to Hunters 1996 $		
Study	Location	$/Individual
Ducks Unlimited (Stokoe 1989)	Atlantic	$19.91
Van Kooten 1993	Canadian prairies	$13.75
(range)	Canadian prairies	$24.62
Stokoe 1989	Nova Scotia	$20.71
NRDAM/GLE and CME	Atlantic Flyway	$43.64
NRDAM/GLE and CME	US Average	$26.99

4.2.3 The Value of Waterfowl to Hunters in Atlantic Canada

Table 4 uses 1991 data to estimate the provincial value per waterfowl individual to hunters for each of the four Atlantic Provinces. To estimate the value of waterfowl to hunters, the 1991 consumer surplus for hunting waterfowl is divided by the number of waterfowl harvested. As Table 4 indicates, the value ranges between $12 for PEI and $79 for Newfoundland with an average for the Region of $39.49/waterfowl harvested. These values are reflective of the use values to hunters of a wildlife individual and do not capture the value of the animal to non-consumptive users and other passive values. As a result, they are likely an underestimation of the value of an oiled seabird.

[52] 1996 Statistics Canada Census

Table 4 Value of Waterfowl to Hunters in Atlantic Canada, 1991 1996 $			
Province	Consumer Surplus[53]	Number of Birds Harvested[54]	Value/Bird
Newfoundland	$4,862,089	61,514	$79.04
PEI	$617,904	50,308	$12.28
Nova Scotia	$2,301,511	86,353	$26.65
New Brunswick	$2,121,397	52,609	$40.32

4.2.4 Values to be Used

The above seabird valuation sections highlight the fact that there is a wealth of information available to monetize seabird injuries. The literature and methodologies easily transferable to the Atlantic Region indicate that the value of a seabird is within the range of $12 to $238/individual. The lower range would reflect seabird values to consumptive users, whereas the upper range would reflect the wider range of total economic value including use and passive values.

The average use value reported in the literature (6 values not including the transferred value calculations conducted above) is $24.61, with a median value of $22.66 (Table 3). The average use value calculated using 1991 Atlantic Canada data (Table 4) yields an average use value of $39.49/animal. From the transferred *Nestucca* findings, the weighted average[55] of the total economic value (use and passive values) for the Atlantic Provinces is in the order of $184.45/individual death avoided.

An important consideration about these values is that they do not measure the same set of values, although the majority of the reported values measure the use value of an individual to hunters. As a result, an adjustment must be made to the use values so that they better reflect the total economic value of wildlife individuals. These values (Tables 3 & 4) can then be compared with the transferred *Nestucca* values. As noted above, the literature reports that the total economic value of an animal is 1 to 4 times as great as the use value of a wildlife individual. Assuming a factor of 1 to 4, and applying this to the use value estimates (Table 3 and Table 4) yields total economic values in the range of $32 to $ 316, with an average of $126.33. When compared with the transferred Nestucca values (average of $184.45/indivdual), we can see that the factor of 4 produces a value closest to the findings of the contingent valuation study in BC.

[53] Source: Environment and Statistics Canada 1993

[54] Source: Canadian Wildlife Service 1991 Harvest Data, 1993.

[55] To estimate a weighted average of the total economic value for the Region, each province's share of total Regional households was multiplied by the province's WTP to avoid 1,000 seabirds' deaths and was then added to each weighted WTP was added.

Based on the adjusted total economic values, (14 of the above-mentioned values) the average total economic value is $130.74, with a median value of $106.61. As a rough proxy, therefore, the average value of $130.74/seabird individual can be assumed to be the value of an oiled seabird in the Atlantic Region.

5. A Seabird Oiling Spreadsheet Model

A spreadsheet model has been developed to estimate how total damages, excluding assessment costs, for oiled seabirds can be calculated. The spreadsheet needs the following variables to value injuries:

- number of seabirds oiled by the incident;
- number of seabirds believed to be impacted by the incident as determined ;
- length of time between the release and the commencement of restorative actions.

The model assumes unit restoration costs for ducks is $282/individual and for puffins is $2,956 with lost service flows of $130.74/seabird individual.

The model further assumes that threatened or endangered species are not impacted by the release, the impact on the population is marginal and natural recovery will occur in a short time frame.

Damages are expressed in 1996 dollar values. Injuries do not occur over time given that the reported lost service flow values are one time damages and are not reported yearly. However, the model does account for a damage annuity, which is simply the interest on the damages, which accrues between the time of the release and the payment of compensation[56]. The time frame and assumed interest rate are input variables in the model.

5.1 An Illustration

To illustrate how the model can work, and how compensation formulas are applied, a hypothetical case is presented below (Figure 1). In the case, an oiling incident results in the collection of 3,000 oiled birds. Drift block testing reveals that one in ten birds were likely to wash up on shore. It is anticipated that compensation will be paid 2 years after the release and injury and the market interest rate is 6% on short term lending.

As figure 1 illustrates, damages for this scenario would be in the order of $14 million.

[56] For a discussion of the principles of a damage annuity, see Unsworth and Bishop, 1994

Species	Number Recovered	Number Lost[57]	Restoration Cost	Lost Service Flow
Common/Thick-billed murre	1,000	10,000	$2,815,200	$1,307,423
Common Eider	500	5,000	$1,407,600	$653,711
Dovekie	500	5,000	$1,407,600	$653,711
Oldsquaw	500	5,000	$1,407,600	$653,711
Black Guillemot	500	5,000	$1,407,600	$653,711
Tern	----------	----------	----------	----------
Other	----------	----------	----------	----------
Total	3,000	30,000	$8,445,600	$3,922.268
			Total Damages: $12,367,868	
			2 Years at 6% interest:	
			Damage Annuity: $13,896,536	

6. Conclusion

Based on a review of the literature it would appear that a two tiered approach to monetizing damages is recommended. The decision trigger to conduct either type of assessment, that of a full blow damage assessment or the administrative penalty approach, should be based solely on the environmental impact of the release. Generally speaking, significant impacts to sensitive populations and large areas of shoreline should be identified before a comprehensive NRDA is considered. This is particularly important when impact to endangered or threatened species are present. To handle damages of a lesser concern, a cookbook approach would do much to reduce damage assessment costs.

Although total economic values for oiled seabirds are not currently available for the Atlantic Region, there is a host of sources from which to gauge the value of an oiled seabird in the Region. Additional efforts could be spent on refining the preliminary estimates presented above. Indeed, given the size of the potential damage awards associated with seabirds oiling, additional research that produces defensible value estimates would be prudent. This paper can therefore be viewed as an initial effort, which defines the parameters from which the valuation of injury can be determined.

It is also important to note that monetary damages are determined explicitly on the quantification of injury. In the case of oiled seabirds, this means that obtaining damage compensation requires a systematic effort to identify and document the resource injury and to present this information in a credible manner, whether to courts or during

[57] Multiplier assumption of 10.

negotiations with a responsible party. As a result, accurate estimates of seabird value are of little use if the quantification of injury is incomplete or lacking in credibility.

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Environmental Restoration and Valuation of Ecosystem Services

Peggy Cameron

Introduction

In terms of returning damaged environmental resources and services to their pre-pollution incident conditions, there are several available strategies for restoration. Despite this selection there are several scientific and conceptual problems that may interfere with the successful implementation of mitigation strategies. The lack of information on pre-spill conditions and on the association between resources and their services may undermine the ability to address restoration on an ecosystem-wide scale. The translation of the value of resources and services into economic terms is still in its infancy and therefore poses significant problems to planning and policy functions. The purpose of this report is to detail current mitigation strategies and ecosystem valuation efforts and the difficulties experienced in pursuing them.

Restoration

Environmental restoration is an attempt to return the environment to its baseline or pre-pollution condition more rapidly than it would be restored through natural processes. This recovery can be accomplished by several broad strategies or by a combination of methods:

- direct restoration by facilitating the on-site recovery of habitats or individual species;
- minimization of the impact;
- compensation for lost resources and services in the period prior to full recovery;
- rehabilitation of injured resources and services by returning them to the best possible condition;
- replacement of lost or injured resources with those that provide services of a similar type, quantity and value;
- acquisition of injured resources in order to mitigate further or additional harm.

Each of these strategies has associated methodologies:

Restoration Category	Methods
Natural Recovery	Monitoring
Direct Habitat Restoration	Contaminant removal, reconstruction, replanting, accelerated degradation, monitoring, maintenance
Direct Resource Restoration	Restocking, harvest alteration, enhancement, monitoring, maintenance
Habitat Rehabilitation	Contaminant removal, reconstruction, replanting, accelerated degradation, monitoring, maintenance
Resource Rehabilitation	Stocking, harvest alteration, enhancement, monitoring, maintenance
Habitat Replacement	Enhancement, creation, monitoring, maintenance
Resource Replacement	Reconstruction, replanting, accelerated degradation, monitoring, maintenance
Non-biological Services Replacement	Recreational, commercial, cultural
Acquisition of Equivalent Resources	Acquire property rights, protection or management

Source: NOAA, 1-14

It should be noted that although there are several overlaps between restoration and rehabilitation methodology, the two strategies have different outcomes. The goal of rehabilitation strategies is not always recovery to the baseline condition as this may no longer be possible because of the effects of the pollution incident. Instead, rehabilitation focuses on returning injured habitats or resources to the best condition possible through the use of restoration or replacement methods.

The feasibility of such actions must give consideration to technical, legal and regulatory, economic and scientific constraints, each of which vary according to the specific circumstance. Economic valuation of marine ecosystem services is only beginning to be examined. As these services begin to be understood it is likely there will be more weight given to these services in the formulation of public policy.

Mitigation Strategies

A comprehensive review of studies on mitigation strategies for a variety of habitats as well as specific information on the economic costs associated with identified restoration actions is detailed in NOAA's Primary Restoration: Guidance Document for Natural Resource Damage Assessment Under the Oil Pollution Act of 1990.
Many of these studies examine the mitigation for perturbations of coastal habitats such as saltmarsh, intertidal and subtidal zones, rocky shores, beaches or mud flats and of marine ecosystem inhabitants. In addition, several studies of marine environment restoration

look at the design, siting and construction and biological benefits of artificial reefs[58]. Much of the non-oil related literature details mechanisms for restoration actions for freshwater fish populations (restocking, fish and wildlife habitat improvement actions).

The *Exxon Valdez* Oil Spill of 1989 is a recent example of a large single event perturbation; many examples of mitigation have been drawn from this case study. The 1992 *Exxon Valdez* Oil Spill Trustees Report provides a summary of the habitats and species injured by this oil spill, descriptions of potential restoration actions for the resources and the reasons for rejecting previously considered restoration actions. Restoration options considered for the *Exxon Valdez* incident included:

- no action;
- management of human uses;
- manipulation of resources;
- habitat protection and acquisition;
- acquisition of equivalent resources;
- combination of two or more methods[59].

Despite the number of studies conducted on restoration, there remains substantial gaps in the information needed to create broad mitigation strategies. In particular, baseline conditions must have been ascertained or be capable of quantification so that the scope of the restoration project can be determined. While a number of studies have focused on specific ecosystems or on particular mitigation strategies, there has been little analysis of the cumulative effects of pollution on the marine environment. In addition, very little attention has been paid to the pollution impacts and rehabilitation of the non-coastal marine environment. The fact that legal constraints range widely depending on the nature and location of the pollution incident also frustrates the ability to create a mitigation strategy that considers impacts on a larger scale.

Habitat Restoration and Mitigation

The best mitigative measures cannot be rigidly applied but need to be adapted to suit the circumstances of the injured resources or services. Thus consideration must be given to the location and nature of the habitat, the season in which the incident took place, the effect of natural processes on the resources and services as well as the precise nature of the perturbation. For example, the physical and biological factors influencing the success of restoration in saltmarsh habitats would include: elevation, wave climate, topography including slope and drainage, the substrate, planting design and techniques, trophic web considerations, and human interference[60]. In the case of an oil spill, initial decisions for restoration alternatives for the saltmarsh would be based on whether the oil was

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[58] NOAA, Primary Restoration: Guidance Document for Natural Resource Damage Assessment Under the Oil Pollution Act of 1990 (1996), 2-135 - 2-145.
[59] NOAA, C-12
[60] NOAA, 3-34.

penetrating the substrate or adhering to the surface, if the oil was recoverable and if the vegetation was contaminated.

Based on these considerations and on technical feasibility there are a number of restoration actions available for injured saltmarshes. These include:

- replanting;
- supplementary erosion control structures;
- sediment removal or replacement;
- vegetative cropping;
- new saltmarsh creation;
- low pressure flushing;
- bioremediation.

In making decisions regarding the nature and scope of restoration, the potential for further harm to the resources and to the services they provide must also be considered. As restoration activities on saltmarshes have the potential to cause injury in addition to the harm caused by the initial oiling, allowing the marshes to recover naturally and without human assistance may be preferable.[61]

Restoration and protection of habitats may not be limited to the natural environment but may also include the human-made environment. For example, the effects of the *Exxon Valdez* oil discharge prompted the establishment of protective measures for such 'artificial' environments as archeological sites[62].

Biological Natural Resources Restoration

Fisheries

The 1992 *Exxon Valdez* Oil Spill Trustees Report includes several restoration actions for injured fisheries such as:

- intensifying or implementing recreational and commercial fishery management plans such as shifting recreational and commercial fishing efforts away from injured stocks;
- enhancing fishery habitats by improving spawning substrates, for example;
- eliminating sources of persistent contamination of spawning substrates[63].

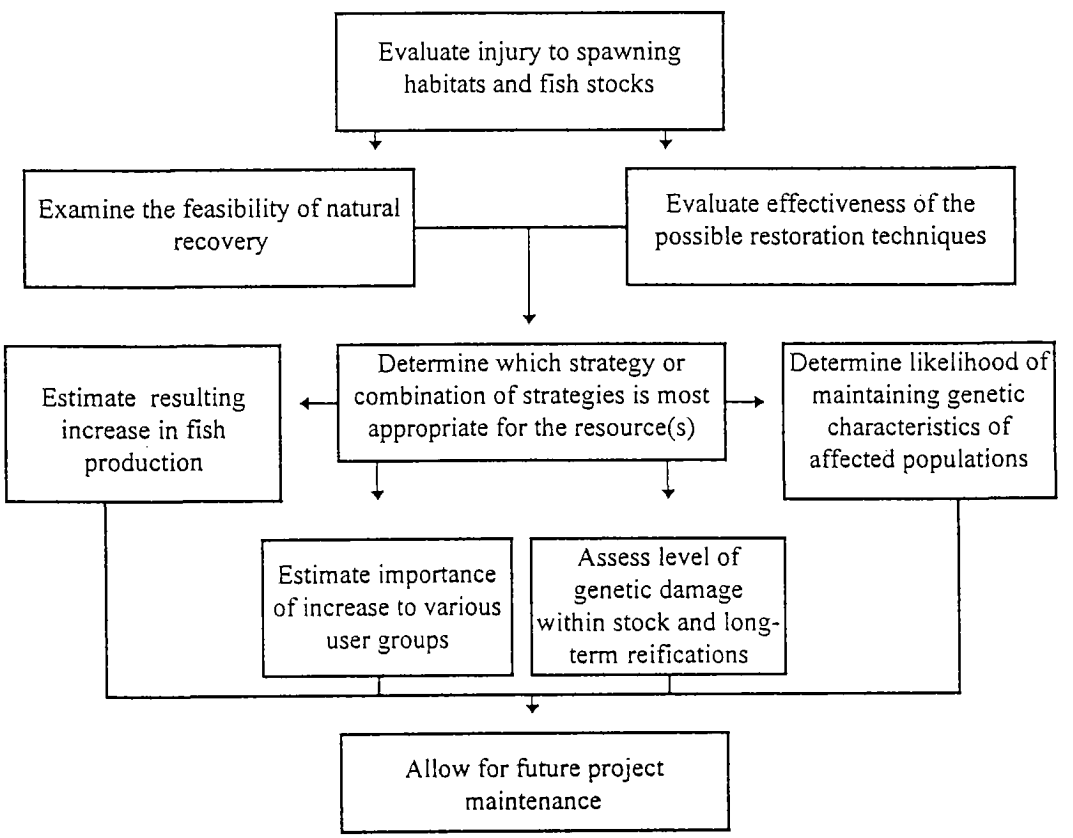
Additional measures may focus on site-specific habitat protection and acquisition strategies. This could involve the designation of specific injured regions as protected

[61] Examples of a decision diagram for restoration activities can be found in NOAA, Primary Restoration, Appendix XX.
[62] NOAA, 2-166.
[63] NOAA, 2-133.

marine habitat areas or the acquisition of private areas formerly used for recreational fishing. Either strategy could be used to alleviate pressure on recovering sport fishing stocks[64].

For offshore marine fish species affected by pollution, the most commonly used restoration technique is natural recovery. Repopulation through natural means is preferred as there is generally no detectable effect from oil spills on adult fish stocks although there may be impacts on eggs and fish larvae at the time of discharge[65]. Natural recovery could be also supplemented with such strategies as harvesting regulations, habitat improvement, pollution abatement and stocking. Stocking is a less desirable method of recovery, however, because of the potential for introducing new variables into the genetic pool of wild stocks and because it may not lead to a demonstrable improvement in the targeted species[66].

According to the 1992 *Exxon Valdez* Oil Spill Trustees Report, decision making with respect to fish-resource restoration could be based on the following guideline:



[64] NOAA, 2-146.
[65] NOAA, 3-188.
[66] NOAA, 3-188.

Birds

Even a small amount of oil can have a serious impact on seabirds by poisoning them, destroying the insulation provided by their feathers, causing psychological stress or by impacting fecundity[67]. The 1992 *Exxon Valdez* Oil Spill Trustees proposed a number of strategies to mitigate such pollution impacts on birds:

- Reducing disturbance to bird colonies by educating appropriate industries such as tourism, hunting, logging, or air traffic;
- Preserving habitats' quality by decreasing logging pressure
- Protecting diving seabirds by modifying fishing gear requirements and fishing practices;
- Restoring surrounding ecosystem and building replacement nests or nesting areas for seabirds, seaducks and bald eagles[68];
- Designating injured bird habitats as protected areas and implementing or expanding buffer zones;
- Restricting the legal harvest of sea ducks and reducing predators[69];
- Direct restoration actions such as translocation and captive breeding[70].

As with fisheries, there is uncertainty as to what the ultimate effect pollution events will have on bird species. For example, in terms of numbers killed murres were considered to have been the most impacted by the *Exxon Valdez* discharge. According to some authors, however, the long term impact on the murre population may be less than first believed[71] although post-spill monitoring studies of the murres have indicated abnormal breeding behaviour and low reproductive success[72].

Nature Services

Scientific research has determined the extent of contamination from petroleum oils for the North-west Atlantic, including the entire east Canadian coast[73]. Studies have also identified which of these shorelines are the most sensitive and vulnerable to pollution effects as well as the threshold effect concentrations for various species and life stages when exposed to different hydrocarbon types and levels. There have also been several technical advances in the field of assessing the impact of oil spills.[74]

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[67] NOAA, 3-203
[68] NOAA, 2-158
[69] NOAA, 3-209
[70] NOAA, 3-206
[71] Peter G. Wells, James Butler, and Jane Hughes, Eds. 1995: Exxon Valdez Oil Spill: Fate and Effects in Alaskan Waters, (Philadelphia, American Society for Testing and Materials).
[72] NOAA, 3-206
[73] International Maritime Organization (IMO), 1993: Impact of oil and related chemicals and wastes on the marine environment, GESAMP Reports and Studies No. 50. (London, Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP)), 30.
[74] IMO, 46.

It is thought that the ecological risk of contamination from chronic petroleum sources may be greater than previously believed; according to the National Research Council (NRC), affirming this suspicion will require long term monitoring at reliable reference sites in order to distinguish such effects from natural variability. There is evidence that chronic exposure to petroleum compounds has mutagenic and carcinogenic effects in bottom dwelling species[75]. Furthermore, NRC experiments have shown that a wide range of chronic sublethal effects occurs at numerous trophic levels while hydrocarbon exposure persists[76].

In addition to ecological harm, it is unclear what effects chronic oil pollution has on humans. There have been few studies conducted on the impacts of petroleum components on human health.[77]

Quantification

Quantification of pollution damages is difficult and uncertain. Mitigation strategies are usually directed at the restoration of individual ecosystem components such as a particular vegetation, or bird or fish population. Attention is rarely paid to restoration at an ecosystem level, however as the association between ecosystem resources and services is not always appreciated or understood.

Environmental services include both the physical and biological functions supplied by the natural resources to the ecosystem. Examples include the provision of habitat or shelter or the production of food. Environmental services can also be examined in relation to such resource exploitation by humans as recreational, commercial, cultural, historical, subsistence, ecological and passive uses.

Environmental services can also be considered in the context of their value to the global ecosystem. For example, in determining strategies for ocean restoration, decision-makers should contemplate the oceans' function in the global materials cycling that sustains climate and life support systems on land. Other global ecosystem relations include:

- the processing, transforming, detoxifying and sequestering of society's waste products;
- the support of coastal ocean-based recreation, tourism, retirement industries;
- coastal land development and valuation;
- the provision of cultural and future scientific values[78].

As many of these services are not traditionally viewed as having a price, economic valuation for the purposes of replacing the services is difficult. Even if a value can be

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[75] IMO, 48-50.
[76] IMO, 50.
[77] IMO, 54.
[78] Charles H. Peterson and Jane Lubchenco 1997: Marine Ecosystem Services in Nature's Services: Societal Dependence on Natural Ecosystems. (Washington, D.C., Island Press), 178.

ascertained, it is rarely certain how service losses can be replaced and maintained at the same level of value. A consequence of the failure to adequately value ecosystem services is that the activities that degrade or threaten the environment may not be given adequate consideration in the formulation of public policy[79].

Conclusion

Mitigation strategies should be evaluated on the results of the biotic re-establishment of the habitat and use of the area by the species of concern. This is unfortunately problematic as there is rarely sufficient or reliable pre-spill information to which post-spill and -recovery conditions may be compared. Other problems of evaluation include the lack of monitoring for the long-term effectiveness of the strategies and the inability to estimate the time needed for recovery. Studies also demonstrate an inadequate understanding of the long-term ramifications to ecosystem health and services.

The occurrence of anthropogenic change on a global scale is more rapid relative to natural change than ever before. Still, these changes may seem long compared to the span of a human life. Detailed economic valuation of ecosystem services must be undertaken so as to adequately weigh the services' value in the development of public policy and to ensure that a precautionary principle is adopted in environmental management.

[79] Peterson and Lubchenco, 177.

Rationale for Applying Fines, Penalties and Court Awards to the Environmental Damages Fund

Introduction

Courts have recognised that Canadians' health and cultural interests in the environment can be protected by discouraging pollution through the prosecution of offenders. Equal attention, however, must be paid to the possibility of restoring or returning damaged resources and ecosystems to their pre-pollution state. If damage is not corrected and the environment is left in its diminished condition, the quality of life enjoyed by Canadians will also decrease; a weakened environment can lead to property loss, loss of enjoyment, unemployment, health complications and the loss of life. Accordingly, it is essential that prosecutors of environmental offences ensure that Courts are aware of the mechanisms in place for restoration and of their ability to effect solutions to the many consequences of pollution.

The Environmental Damage Fund

By creating the Environmental Damage Fund ("the Fund"), Environment Canada has provided a means by which court awards and other monetary contributions can be directed to the restoration of resources and ecosystems. The Fund is a special holding account for the sub-accounts created by the deposit of court awards, out-of-court settlements, voluntary payments and compensation awarded by various liability funds. As the Fund is a revolving account, any money remaining at the end of the fiscal year is not absorbed by the federal government's Consolidated Revenue Fund. Therefore, money allocated by courts to the Fund will remain available in virtual perpetuity for the purpose of reimbursing restoration projects.

The use of rigourously applied criteria will also guarantee that the Fund's resources are put towards their intended uses. To gain funding, projects must have as their objective the restoration of environmental damage or such associated activities as damage assessment, research or the creation of remediation and assessment facilities. If funding is to be awarded from a particular court order, the conditions established by the relevant court in its ruling must also be satisfied. If this requirement is met, the applicant must then demonstrate that the project was both cost-effective and technically feasible and that the applicant consulted all other parties that may have had an interest in the project. In other words, the applicant must be able to show that it could not have achieved the same results in a less expensive manner and that the applicant had the technical and scientific expertise, equipment and staff to effectively complete the project.

The application of these criteria ensures that funding will be allocated efficiently, appropriately and along court guidelines. Because of the emphasis on satisfying the conditions established in court awards, the judiciary plays an important role in

determining how restoration will be promoted and accomplished. This opportunity for influence, in turn, requires that courts be educated as to the need for restoration and their capacity to affect it.

Court Involvement in the Environmental Damages Fund

There are several opportunities available to courts under environmental legislation to direct money to the Fund and to establish the conditions for its accessibility. The Canadian Environmental Protection Act (CEPA), the Migratory Birds Convention Act (MBCA) and the Fisheries Act permit courts to attach additional requirements to the fines and prison terms already handed down. The relevant court orders for the purposes of allocating money to the Fund are:

- directing the offender to take any action that would serve the purposes of restoration or avoidance of any environmental damage that resulted or could result from the offender's actions (CEPA s. 130(b), MBCA s. 16(b), Fisheries Act s. 79.2(b));
- directing the offender to pay for research initiatives (CEPA s. 130(i);
- directing the offender to finance the promotion of the conservation or protection of fish or fish habitats (Fisheries Act s. 79.2 (f))

The legislation also allows courts to make orders for any other reasonable requirement that would secure the offender's good conduct and avoid future violations of environmental legislation (CBCA s. 130(j), MBCA s. 16(g), Fisheries Act s. 79.2(i)). It may be possible under these sections to argue that ordering the offender to make a deposit to the Fund will convey the courts' disapproval of the offender's conduct and their encouragement to assume the responsibilities of a good corporate citizen. This is in keeping with Canada's commitment to the "polluter pays" principle.

Within the next year it will also be possible to ask courts to allocate fines paid by an offender to the Fund. A revised CEPA, which is anticipated to be in force by late 1998, gives courts under s. 291(1)(m) the discretion to allocate fines to directives they may have made concerning the harm or potential harm caused by the act in question, subject to the Criminal Code and any regulations made under CEPA.

In making orders for environmental offenses, courts have considered the following factors:

- nature of the environment affected;
- extent of the damage afflicted;
- deliberateness of the offense;
- attitude of the accused.

Sentencing criteria are also included in the Criminal Code and the revised CEPA.

The key factor in judicial deliberation of environmental cases is the courts' understanding of what constitutes an "environment" as their comprehension will determine the scope of

the order. Effective restoration orders can only be made if courts appreciate and apply the ecosystem approach that is the foundation of Canadian environmental legislation. Accordingly, prosecutors must educate judges about the effects of pollution on links between damaged resources and other elements of surrounding ecosystem so that any "secondarily" affected resources or the services they provide may be included in restoration initiatives.

The Content of Court Orders

While it is clearly in the interest of restoration projects that the wording of orders be expansive and general in nature, it is a well-established principle that the sentence imposed must be related to the matter before the court. This is reflected in legislation as environmental statutes affirm that court orders must be related to the offence under consideration. Consequently, orders for environmental restoration must focus on the effects of the pollution incident attributed to the offender; again, the prosecution must ensure that courts consider the remediation of any part of the ecosystem whose damage can be tied to the pollution incident.

Research orders are more forward looking as they are issued in order to assess the means by which the incident in question may be avoided in the future. However, any research that is conducted as a result of this order must still relate to the contaminant that caused the damage in question. The inclusion of the term "ecological use and disposal" requires that the effects of the incident on the ecosystem be determined. This can be accomplished by conducting a detailed assessment of the damages inflicted. As such studies are among the reasons why the Fund was created it would be appropriate for courts to allocate any money associated with research orders to the Fund's account.

The conservation order provisions of the Fisheries Act support the restoration of the fish populations and habitats affected as a result of an incident. Restoration activities can correct the weaknesses that were caused by an incident and that consequently threaten the conservation of the resource in question. As with the need to understand the scope of environment, it is also necessary that courts comprehend the connection between restoration and conservation. As with restoration orders issued under CEPA and MBCA, conservation funding should be deposited into the Fund for proper management and distribution.

Conclusion

Legal instruments and practical mechanisms now exist for addressing the need for environmental restoration. So that the remediation of damages can be effectively achieved it is necessary for the prosecutors of environmental offences to fully explain the ecological consequences of pollution, the benefits associated with the Environmental Damage Fund and the ability to support Fund restoration and research initiatives through resort to legislated court awards.

Appendix:
Analysis of Sentencing in Environmental Prosecution

Introduction

To date, there has been little debate on environmental sentencing principles in Canadian courts. Due to the emerging interest in the imposition of punishment that befits the severity and consequences of environmental offences, however, a number of legislative instruments concerning sentences, orders and associated criteria have been recently introduced. The standards produced by these sources provide courts with opportunities to address the concerns of halting future pollution and of correcting existing harm. The potential for creativity in this approach, however, could be restricted by the courts' focus on individual resources rather than on the widespread consequences of pollution on ecosystems.

Sentencing Criteria: Case Law

In 1980, the Northwest Territories Territorial court established the following as the factors to be considered when imposing sentences on environmental offenders:

- The nature of the environment affected;
- Extent of the damage afflicted;
- The deliberateness of the offence;
- The attitude of the accused.[80]

The Court also stipulated the criteria that should be considered in cases involving corporate offenders:

- Size, wealth, nature of operations and power of the corporation;
- Extent of the attempt to comply with legislation;
- Remorse;
- Profits acquired because of the offence;
- Criminal record or other evidence of good behaviour.[81]

These criteria have been adopted by courts in a number of jurisdictions[82]. The criteria allow courts to consider the consequences of an offence to the environment and people as well as the spectrum of actions, omissions and behaviours attributed to the offender.

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[80] R v. United Keno Hill Mines (Ltd.), 10 C.E.L.R., 43 at 47.

[81] Supra, note 1 at 49 to 52.

[82] See R. v. Bata Industries Ltd. (1992), 7 C.E.L.R. (N.S.) 293 (Ont.Ct.Prov.Div.) aff'd in part (1993), 11 C.E.L.R. (N.S.) 208 (Ont.Ct.Gen.Div); .R v. Leung (1997), 54 Alta. L.R. (3d) 1 (Alta. Q.B.); R. v. Fraser (1993), 139 N.B.R. (2d) 125 (N.B. Prov. Ct.); Pennecon Ltd. v. NFLD (1996), 138 N.F.L.D. & P.E.I. R. 278 (N.F.L.D. T.D.).

Use of these factors should result in a sentence that imposes an economic hardship sufficient to deter the particular offender and potential polluters. In other words, corporate offenders should not simply view the sanction as a cost of doing business but instead see it as a motivation for change. On the other hand, the fine or order imposed should not be so large as to force the offender into insolvency.[83]

Sentences should also reflect the extent and nature of the damage in question. The greater the injury that is sustained, the larger the sanction that is imposed in order to deter its future occurrence. In addition to quantitative considerations injuries can be viewed as significant because of the nature of the environment affected or because of the inability to correct the damage[84]. For example, the consequences of an oil spill are much more severe if the discharge happens in an endangered or unique ecosystem than in one with populous or widespread species. Even if the injury is sustained by a thriving environment, the long-term affects of the incident can be significant if the injury cannot be corrected. The Court in United Keno Hill Mines provided the following elaboration for the criteria of the nature of the environment affected and the extent of the damage afflicted:

- special nature of the environment affected;
- degree of damage inflicted;
- consequential or peripheral adverse impacts;
- the prospects and cost of repairing the damage;
- duration of the damage;
- potential damage that might have been caused if the actions of the offenders had been allowed to continue.[85]

These criteria support the ecosystem approach that is central to Canadian environmental protection efforts. In considering the "special nature of the environment affected" courts should examine the links and dependencies between each resource in the environment or ecosystem. The damage inflicted on one of these resources will have consequential or peripheral affects to the resources linked to it. In other words, damage to one resource can potentially affect its entire ecosystem.

A number of courts have indicated a willingness to consider potential damages if there is no concrete evidence of actual damage[86]. As the Alberta Provincial Court proclaimed in R. v. Brenner "[b]ut surely the test to apply in approaching the question of sentence should be less a concern of what the damage was but more a concern of what the damage might have been"[87]. This allows courts to focus on and attempt to correct the

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[83] Supra, note 1 at 50.
[84] Supra, note 1 at 47 - 48.
[85] Supra, note 1 at 48.
[86] See R. v. Panarctic Oils Ltd., [1983] N.W.T.R. 143; 12 C.E.L.R. 78; 44 A.R. 385; 3 F.P.R. 420, (Terr.Ct.); R. v. Brenner (1991), 83 Alta.L.R. (2d) 125 (Alta.Prov.Ct.); R. v. New Brunswick Electric Power Commission (1991), 10 C.E.L.R. (N.S.) 184, (N.B.Prov.Ct).
[87] Supra, note 7 at 128.

corporate behaviour that lead to the incident. The consideration of potential damages involves examining the conduct and actions of the offender and possibly ignoring evidence of remorse and mitigation activities. Orders for restoration are still available as environmental legislation also contemplates damages that may result as a consequence of the incident.

The capacity of a corporate offender in terms of its size, resources and wealth is not just an important consideration for determining the quantum of a sanction, but for determining what preventative methods were available to the offender. The use and availability of technology is an important consideration for determining whether the offender attempted to comply with legislated standards[88]. While a small or financially insecure company cannot be reasonably expected to purchase expensive clean technology, a corporation that is in the position to invest in environmentally friendly procedures but that fails to do so will receive a larger fine or order.

In considering the sentence to be imposed, courts will examine mitigating factors that may call for a reduced sanction. Common considerations include:

- Remorse;
- Failure on the part of government to prosecute the offender promptly and therein condoning the act;
- Excessive government standards.[89]

Remorse can be exhibited by any co-operative actions that may be taken by the offender. This would include attempting to mitigate or remedying the situation and reporting the incident to the relevant authorities. Attempts to address the problem and to participate in its solution are seen as positive conduct that must be reinforced.[90] However, Courts have occasionally disregarded the expenses involved in cleanup operations as a mitigating factor because this is a responsibility that offenders are required to assume. In The Queen (Environment Canada) v. The Queen (Commissioner of Northwest Territories) Justice Bourassa stated:

> It was the defendant's duty to provide the facility involved. To get credit for repairing what it did not build or maintain properly in the first place would be to encourage incompetence if not defeat the very purpose of the legislation.[91]

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[88] R. v. North Vancouver (1982), 11 C.E.L.R. 158 (B.C.Prov.Ct.), aff'd. (1983), 12 C.E.L.R. 67 (B.C. Co.Ct.), aff'd. (1984), 13 C.E.L.R. 60 (B.C.C.A.)

[89] Supra, note 1 at 49 - 50 and 58.

[90] R v. Bata Industries Ltd (1992), 7 C.E.L.R. (N.S.) 293 (Ont.Ct.Prov.Div.), aff'd in part (1993), 11 C.E.L.R. (N.S.) 208 (Ont.Ct.Gen.Div.). See also Stan Berger, The Prosecution and Defence of Environmental Offences (Toronto: Emond Montgomery Publications Ltd., 1994) at 7:42.

[91] (1993), 12 C.E.L.R. (N.S.) 37 and 55 at 63 (NWT.Terr.Ct.).

Sentencing Criteria: Legislation

The Federal Government has recently given consideration to the issue of sentencing and has included guidelines in the revised version of the Canadian Environmental Protection Act. The factors that courts must consider in imposing sentences are included in s. 287[92]:

a) the risk of harm or harm caused by the commission of the offence;
b) an estimate of the total costs to remedy or reduce any damages caused by the commission of the offence;
c) whether any remedial or preventative action has been taken or proposed by or on behalf of the offender, including having in place an environmental management system that meets a recognised Canadian or international standard or a pollution prevention plan;
d) whether any reporting requirements under this Act or the regulations were complied with by the offender;
e) whether the offender was found to have committed the offence intentionally, recklessly or inadvertently;
f) whether the offender was found by the court to have been negligent or incompetent or to have shown a lack of concern with respect to the commission of the offence;
g) any property, benefit or advantage received or receivable by the offender to which, but for the commission of the offence, the offender would not have been entitled;
h) any evidence form which the court may reasonably conclude that the offender has a history of non-compliance with legislation designed to prevent or minimise harm to the environment;
i) all available sanction that are reasonable in the circumstances, with particular attention to the circumstances of aboriginal offenders.

These factors endorse the case law that has been previously developed; the criteria contemplate both actual and potential harm, the ability to restore the damaged environment, any mitigation actions undertaken by the offender, the offender's attempt to comply with legislation, the conduct of the offender, the acquisition of a monetary benefit, and the offender's history of non-compliance.

Reference should also be made to the sentencing principles of ss. 718 to 718.2 of the Criminal Code[93]. Any sentence imposed under environmental legislation must also meet the conditions of the Criminal Code's guidelines:

s. 718: The fundamental purpose of sentencing is to contribute, along with crime prevention initiatives, to respect for the law and the maintenance of a just, peaceful and safe society by imposing just sanctions that have one or more of the following objectives

(a) to denounce unlawful conduct;
(b) to deter the offender and other persons from committing offences
(c) to separate offenders from society, where necessary
(d) to assist in rehabilitating offenders
(e) to provide reparations for harm done to victims or to the community; and
(f) to promote a sense of responsibility in offenders, and acknowledgement of the arm done to victims and to the community.

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[92] Bill C-32.
[93] An Act Respecting the Criminal Law R.S.C. 1985, C-46.

s. 718.1 A sentence must be proportionate to the gravity of the offence and the degree of responsibility of the offender

s. 718.2 A court that imposes a sentence shall also take into consideration the following principles:

(a) a sentence should be increased or reduced to account for any relevant aggravating or mitigating circumstances relating to the offence or the offender, and, without limiting the generality of the foregoing,

(i) evidence that the offence was motivated by bias, prejudice or rate based on race, nationality, colour, religion, sex, age, mental or physical disability or sexual orientation of the victim

(ii) evidence that the offender, in committing the offence, abused a position of trust or authority in relation to the victim shall be deemed to be aggravating circumstances;

(b) a sentence should be similar to sentences imposed on similar offenders for similar offences committed in similar circumstances

(c) where consecutive sentences are imposed, the combined sentence should not be unduly long or harsh

(d) an offender should not be deprived of liberty, if less restrictive sanctions may be appropriate in the circumstances

(e) all available sanctions other than imprisonment that are reasonable in the circumstances should be considered for all offenders, with particular attention to the circumstances of aboriginal offenders.

Sentencing Options

Consideration of the factors provided in United Keno Hill Mines and in legislation will assist courts in deciding whether a jail term or fine is most appropriate for the offence and in determining the amount of time to be served or the amount of the fine to be imposed. As they represent the most onerous sanction, jail terms are generally reserved for individual offenders whose conduct has demonstrated intent, recklessness, wilful disregard or has lead to significant environmental damage.

While corporations cannot be ordered to serve time in jail, it is possible to impose such sanctions on officers who act as the companies' directing minds. This can be a desirable option if the offending corporation is in the financial position to pay fines on its officers' behalf. If this can be done without assuming an economic hardship, the corporation will merely see the fine as a business expense and consequently the appropriate behaviour will not be reinforced[94]. Jail terms for directors and senior officers, however, will serve as a reminder that corporate decisions must take the company's environmental responsibilities into account.

[94] Thompson Newspapers Ltd. v. Canada (Director of Investigations and Research), [1990] 1 S.C.R. 425 at 481 - 482; 76 C.R. (3d) 129; 54 C.C.C. (3d) 417.

The sentencing criteria can also assist courts in deciding whether to impose sanctions in addition to fines or jail terms. For instance, courts can exact an additional fine if it is found that the offender benefited monetarily from the commission of the offence; this would include any profit acquired or any expense avoided by the offender. As the fine is equal to the amount of the monetary benefit, the prosecutor must make a reasonable estimate of the benefit or the offender must be required to release the information as only it is in the position to provide an accurate accounting[95].

All Canadian environmental legislation allows courts to order offenders to perform specified tasks in addition to fulfilling the requirements of fines and jail terms. There are a number of different court orders available:

- prohibiting the polluter form doing or continuing the act that caused the pollution;
- take any action deemed appropriate for remediation and prevention of further harm;
- publish the facts of the incident and of its prosecution;
- notify anyone who may be affected by the pollution;
- post a bond against non-compliance of the act and/or its regulations;
- inform the Department about any activities that may be of interest to it;
- compensate the Department for any expenses incurred as a result of the pollution;
- perform community service;
- finance research into the use and disposal of the pollutant in question;
- any other condition deemed reasonable by the court.[96]

New orders geared towards ameliorating an offender's environmental management techniques will also be available under the revised CEPA:

- the preparation of a pollution prevention or environmental emergency plan
- carrying out environmental management system;
- conducting an environmental audit;
- the allocation of a fine to whatever purpose the court deems to be appropriate;
- creating a scholarship fund.[97]

While these options seem expansive, there have been limitations placed on their scope by courts. In The Queen (Environment Canada) v. The Queen (Commissioner for the Northwest Territories the Court declared in imposing an order under the Fisheries Act:

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[95] Supra, note 1 at 51.
[96] See Canadian Environmental Protection Act, R.S.C. 1985, c. 16, s. 130; Migratory Birds Convention Act, S.C. 1994, c. 22, s. 16; Fisheries Act, R.S.C. 1985, c. F-14, s. 79.2.
[97] Bill C-32. s. 291(1).

> Orders [...] should be related to the delict before the court. Care must be taken not to impose requirements upon a Defendant that have little if anything to do with the events that bring it to court in the first place. The power that Parliament has given courts must be exercised judicially and carefully and not as a blank cheque for an environmental wish list.[98]

In this case a sewage lagoon flooded its banks, resulting in the contamination of a nearby river. Instead of asking the Court to direct the territorial government to remove the sewage and restore any damage, Environment Canada requested that the offender provide funding for removing barrels, construction waste, oil residue, scrap metal and other wastes from the river. The Court found that these pollutants were not related to the sewage spill and therefore refused to accede to Environment Canada's request. Instead, the offender was ordered to contribute to the preservation and maintenance of fish and fish stock in the river.[99]

In essence, the requirement that orders be related to the incident in question ensures that offenders will not be held responsible for the misconduct of other polluters. Overly broad directives or those that target other environmental concerns cause the offender to assume the costs associated with the pollution while the responsible party is essentially permitted to pollute for free. While the restoration objectives of environmental law would be fulfilled, deterrence would not be ensured if such sentencing options were pursued.

In addition to restricting the content of orders, Courts are also hesitant to direct offenders to fund or participate in tasks that coincide with governments' mandated responsibilities. In Canada (Environment Canada) v. Canada (Department of Public Works) prosecutors requested that the offender be directed to made a $40,000 contribution to a wildlife refuge. The court refused as the contribution merely represented a subsidy for expenses that the Canadian Wildlife Service would have had to incur regardless of the pollution. Instead, the offender was ordered to perform community service.[100] This appears to be a fine distinction as the community service may also overlap with departmental responsibilities.

This case is also interesting in that the prosecution asked for a monetary award under the community service order provided by CEPA[101]. Although the court did not discuss whether a monetary award in lieu of community services is appropriate under s. 130(1)(h), this suggests that it may be possible to use this section for gaining contributions to the Environmental Damages Fund. This could be done by valuing the services that the offender could be expected to provide and requiring the offender to pay this amount to the Department.

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[98] Supra, note 12 at 63.
[99] Supra, note 12 at 65.
[100] (1992), 10 C.E.L.R. (N.S.) 135 at 152 - 153 (Que.Ct.Crim.Div.).
[101] Canadian Environmental Protection Act, R.S.C. c-16, s. 130(1)(h).

Conclusion

Sentencing under environmental legislation takes into consideration a wide variety of factors including the deterrence of offenders and the restoration of the damaged environment. This in turn provides courts with the opportunity to impose creative sentences that reinforce good corporate behaviour and address ecosystem injuries simultaneously. The application of sentencing provisions has been narrowed by the courts' concern for imposing responsibilities on the appropriate party. As a consequence, requests for orders that focus on overall or unrelated environmental concerns will likely be rejected in favour of directives based on the particular incident and damage.

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Applying Environmental Damage Assessment and Restoration Tools in the Atlantic Region

Decision-making Framework for the Environmental Damages Fund

1.0 Introduction

In 1995 the Treasury Board authorised the creation of a special holding account for the purposes of allocating court and settlement awards, voluntary payments and international fund compensation towards environmental restoration projects. So that funding is allocated and used in the best possible way, a number of criteria have been developed or proposed to ensure that goals are met efficiently, co-operatively and responsibly. The mandatory and optional criteria are key components of the preliminary decision-making framework for the Environmental Damages Fund and for the drafting of a contribution agreement.

2.0 The Environmental Damages Fund

2.1 Background

The Environmental Damages Fund ("the Fund") was created with the objectives of subsidising the rehabilitation of injured or environmental resources and of ensuring that eligible projects will be cost-effective, technically feasible, and participatory. In order to achieve these goals the Fund finances remedial and restorative projects, damage assessment and associated research so long as the proposals meet the criteria established by relevant court orders and by the Treasury Board and Environment Canada.

Funding is provided by court awards, settlement payments, voluntary contributions and international fund compensation; money awarded for actual response and cleanup activities, legal costs and fines[102] are currently not available for financing projects. Each contribution is assigned an individual sub-account that, for the purposes of funding, represents the category to which a proposal must conform in order to gain financing. For example, a court award of $10,000 issued for the purposes of restoring oil

[102] Under section 291(1)(m) of the revised Canadian Environmental Protection Act a court is able to allocate fines for the purpose of addressing the harm or risk of harm caused by the offence in question. The revised act is expected to be in force by late 1998.

pollution damage of harlequin ducks can only be reallocated to projects meeting this description.
In addition to the Department, other eligible recipients for funding include provincial, territorial and municipal governments, non-government organisations, aboriginal groups and universities. While this list is not exclusive, it may be difficult for other federal organisations, communities or individuals to successfully apply to the Fund as they have access to other forms of federal funding. For example, communities and individuals can also secure funding from the Eco Action 2000 program.

Although there is no requirement for the maintenance of a minimum balance in the Fund account, a cap has been placed on the amount of funding that a single recipient can be allocated. The maximum amount of money that the Fund may grant is the lesser of five million dollars, the amount of money attributed to category in which the proposal falls or the amount of money remaining in the Fund.

2.2 Criteria

2.21 Court Award Criteria

Under CEPA, the Migratory Birds Convention Act (MBCA) and the Fisheries Act courts are able to issue orders or awards in addition to sentences and fines provided under the respective legislation. For the purposes of the Fund, the most relevant forms of awards are:

- Directing the offender to take any action deemed appropriate for remediation or avoidance of harm;
- Directing the offender to finance research into the ecological use and disposal of the offending substance or for the proper management and control of fish habitats;
- Directing the offender to perform community work[103];
- Directing the offender to comply with any other condition deemed to appropriate to secure the good conduct of the offender[104].

Each of these awards can be used to allocate monetary penalties for the purpose of correcting environmental damage. For instance, the court may consider that a payment by the offender to the Department is an action compatible with the purposes of restoration or with promoting awareness that the offending conduct was inappropriate.

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[103] In a recent case against the Department of Public Works, the Crown asked that the department be ordered to pay a sum of money in lieu of performing community work. Although the request was rejected as the nature of the work contemplated was part of the department's mandate, the Court did not rule on whether monetary compensation satisfied the community service requirement. For further information, please refer to the Appendix of the "Rationale for Applying Fines and Penalties to the Environmental Damages Fund" Report.

[104] While all three acts allow the court to compensate the Department for any remedial action already undertaken, this award would fall under the actual response and cleanup exception and would therefore be deposited in the Consolidated Revenue Fund.

A court order and its requirements must be related to the damages and incident attributed to the offender. This compels polluters to assume responsibility for the consequences of their activities and encourages them to adjust their behaviour accordingly. The range of projects that can be funded by such awards is in turn clearly contingent upon the wording used by the court in describing the scope of the award; the orders provide the guidelines for using the money awarded as courts will establish the conditions, purposes and extent of the contemplated activity. In addition to such constraints, courts can include administrative conditions in the award such as requiring the recipient of the awarded money to account for the use of money.

The availability of court award funding can also be restricted by the definition of environmental damages employed by the court. Courts often do not appreciate the consequences of the damage sustained by one resource on its ecosystem and accordingly fail to consider supposed secondary injuries for their decisions. As a consequence, the money awarded to the Department may only be sufficient to restore the damages identified as the primary consequences of the incident. This can be avoided, however, if courts are educated about the nature of environmental damages and their ecological implications.

While the content of orders is generally quite limited, the means by which the restoration or research project will be carried out are rarely defined in a specific or restrictive manner. Accordingly, the Department will be in the position to determine which methods to use for restoration projects, which damage assessment model will be used for restoration planning or for research and the means by which the results of the project will be monitored. With this discretion in mind, it is necessary to create criteria for determining the allocation of funding for proposals that meet the conditions of applicable court orders.

It should be kept in mind that these guidelines only apply when an applicant is attempting to access the funding provided by court awards. Funding derived from voluntary payments, settlements or from compensation funds can be more liberally distributed; projects will not have to conform to the specifications of the particular award but will instead have to meet the standards as established by the department. Accordingly restoration projects that do not address the damages arising from a prosecuted incident should preferably seek funding from the sources other than court awards.

2.22 Criteria Established by the Treasury Board and Environment Canada

In addition to the guidelines found in court awards, several funding requirements have resulted from the Treasury Board and Environment Canada's negotiations concerning the creation of the Fund. While there are a number of universal criteria that all applicants must satisfy, non-federal government recipients must fulfil additional conditions because of the requirements of the Treasury Board's Contribution Policy.

Objectives of the fund are reflected in the proposal

As previously stated, projects that will be funded must have as their objective the remediation and restoration of environmental damages. This can include activities that support the fulfilment of this purpose such as research into restoration methods, damage assessment or the creation of remediation or assessment facilities.

Objectives will be achieved in a cost-effective manner

To satisfy this requirement, the applicant must show that less expensive restoration activities cannot achieve the project's objectives more effectively than or as well as the proposed initiative. This comparison should include a consideration of the natural recovery option as well. The cost-effective criterion also requires the applicant to indicate that any funding received will be used exclusively to cover the costs reasonably associated with the project. This implies that the funding cannot be used for such basic operating costs that would have been occurred by the organisation regardless of its participation in the restoration project; such costs include wages, existing equipment or overhead.

The Project Must be Technically Feasible

Under this criterion, the applicant must prove that its staff possesses the knowledge, skills and abilities required for the attainment of the goals established for the project. The applicant should also be able to demonstrate that the proposed action is capable of fulfilling Fund objectives and that it is technically and scientifically sound. Although the intention of research proposals may be to investigate radical means of restoration or assessment, they must still be grounded in recognisable scientific theory.

The Project Must Build on or Create Partnerships When Possible

Stakeholders for restoration projects, damage assessment or research could include federal and provincial agencies, municipal governments, industry organisations, communities, Aboriginal groups, environmental organisations, universities, and international or foreign agencies among others. In the very least, the applicant must show that it attempted to locate other interested stakeholders for the purposes of creating partnerships. Where possible, these other parties should be involved in the planning, information gathering, implementation and monitoring stages of the project. This requirement ensures that all stakeholder needs and concerns are considered and addressed in the project and that duplication of other projects is minimised.

2.23 Contribution Policy Requirements

There are several additional questions that provinces, territories, municipalities, NGOs, universities, and aboriginal organisations must answer when applying to the Fund. This is necessary as there are several conditions attached to funding contributions as they constitute a form of transfer payment from the federal government:

- Has funding been allotted to this class of organisation before?
- Have other forms of assistance been made available to the applicant?
- What is the recipient's relationship with the Federal government?
- How will the results or effects of the project be monitored?
- How will the funding be used?
- If applicable, how will the money be repaid?

These requirements are designed to ensure that funding is allocated to the intended recipients and is concentrated on the objectives of the Fund. The second criterion listed ensures that either more appropriate financing vehicles are pursued by the applicants or that a cost-sharing program is considered.

2.25 Optional Criteria

In addition to the mandatory requirements, there are a number of considerations that could be included in deliberations in order to ensure that the Fund's objectives are met. They may also be useful if competing claims for the same Fund sub-account need to be evaluated and ranked.

The Project Conforms to the Department's Overall Goals or Contributes to a departmental strategic plan

Including this consideration would allow the Department to achieve multiple objectives simultaneously, cost-effectively and efficiently. Proposals whose results achieved restorative goals in addition to addressing pressing environmental concerns could be given priority funding over projects with more one-dimensional prospects.

The Project is Based on or Will Conduct a Scientifically Defensible Damage Assessment

Should the Natural Resource Damage Assessment (NRDA) method of damage assessment be adopted for Canadian usage, it could be required that all restoration and remediation projects be based on such an analysis or that all proposed damage assessment initiatives be based on this model. This ensures that a standardised approach to project planning is implemented; this format would in turn make the comparison of proposals less difficult. This would also be in the interest of both the cost-effective and technically feasible criteria as the selection process under NRDA compels the applicant to consider these questions and to compare, select and plan restoration methods accordingly.

There Are No Government Agencies Responsible for the Subject Matter of the Project

Examination of this factor helps to avoid duplication of services and to ensure that all alternative funding sources have been explored. Government-implemented projects should be preferred as there will be more opportunities to use standardised approaches and to integrate individual initiatives for better overall gain. Government projects should also be considered as a possible alternative means of financing the achievement of stated objectives, even though the project will not be completed by the applicant.

If the Applicant is a Non-Governmental Organisation, it Should not be Required by Law to Undertake the Project in Question

Given the broad range of possible applicants, it is possible that offenders may attempt to gain funding for actions required of them by the courts or that corporations will apply for funding for the implementation of legislated controls. For example, a corporation who is required to provide information on toxic substances under section 44 of the revised CEPA should not be eligible for research subsidies under the Fund.

There are no Commercial Benefits Created by the Project

If it is anticipated that the applicant will profit as a result of the project, funding should not be allocated because the profit represents an alternative form of funding. For example, if an organisation is proposing to research baseline conditions for the purposes of developing marketable computer modelling systems, the project should be ineligible; when the product is eventually sold, the organisation will have the chance to recoup its expenses.

A Monitoring Program is in Place

Not only must the applicant complete the project, it must also be prepared to monitor the effects of the activities. Effective results monitoring requires that the project objectives are quantifiable and therein capable of measurement. These targets will be compared to the measurements taken after completion of the project in order to evaluate whether the actions taken were appropriate and successful.

An Auditing Plan is in Place

It is at the Department's discretion whether or not to require an audit when it provides funding. It would be advisable, however, to prepare for this possibility by making it a condition that the application arrange with the Department for the possibility of an audit.

While the preparation of and the conducting of an audit is a responsibility of the departmental program manager, recipients should be aware of:

- the scope, frequency and scheduling of audits;
- which other government departments will be involved in the auditing;
- what subsequent action may be initiated as the result of the findings;
- what documentation will the recipient be required to provide;

- what weight will be given to the findings of past audits involving the recipient.

2.25 Documentation Requirements for Applicants

Given the criteria listed above, there are a number of supporting documents that applicants should be required to provide:

- Strategic plan indicating the objectives of the project, the actions that will be taken to fulfil them, the role each participant and stakeholder will play and the means by which project performance will be evaluated;
- Statement of expenses incurred in the course of implementing the project;
- Declaration of other means of financial support;
- Report on the results and method of damage assessment;
- Evaluation report.

3.0 Deciding Fund Allocation

3.1 Roles and Responsibilities

When an application is made to the fund, the program managers will be asked to recommend whether a project should receive funding and at what level of support. Recommendations should be made on the basis of the applicant's ability to meet funding criteria and considerations[105]. The recommendation is then forwarded to the Director General, National Programs Directorate (DG) or to Regional Director General (RDG) of the affected area for a final decision on the availability of funding. Again, this decision should involve an examination of the Fund guidelines and requirements. Once the funding agreement is in place, the Director, Environmental Emergencies Branch, the Director, Office of Enforcement or the Regional Directors, Environmental Protection Service, ensures that the payments meet the conditions of the agreement.

While it is not required in the Fund guideline, it is advisable that the DG/RDG provide reasons when refusing or granting a request for funding. This will ensure transparency and accountability for both Fund management and distribution. This is essential as many of the allocations will be internal; the Department will be in the position to decide whether its own initiatives have met the conditions of the Fund.

3.2 Time Frame for Decision-Making

The Fund guidelines contemplate that financing will not be granted until the project has been completed and an evaluation report and statement of expenditures has been

[105] Please refer to Appendix A.

submitted[106]. This point of payment is preferred as it avoids basing inaccurate funding on predictions concerning potential expenses and instead centers on the known costs of the project.

It is possible, however, to secure advance payments if there is an imminent financial need and if the relevant Treasury Board guidelines are met. Advances should be based on the projected costs for each period or stage of the project and should be timed to mimic the actual cash flow needs of the recipient as closely as possible. The treasury board sets out the following advances based on the total expected contribution:

Total Contribution	Initial Advance	Subsequent Advances
$25,000 - $99,999	Up to 75%	Quarterly
$100,000 - $249,999	1st Quarter	Quarterly
$250,000 to $499,999	1st Quarter	Monthly beginning in the 4th month
$500,000 and above	1st month	Monthly

Source: Treasury Board, Treasury Board Manual - Comptrollership <http://www.tbs-sct.gc.ca>

Provisions should be made in the contribution agreement for the recovery of any overpayment that may result from the advance funding. Equally, the agreement should state how the recipient can request additional funding if the advance is insufficient.

3.3 Terms of the Contribution Agreement

In addition to stipulating procedures for overpayment, the contribution agreement must also state the responsibilities and rights of both the Department and the recipient. It should be provided that the recipient must reimburse the Department if any of the conditions for eligibility have not been met or have been violated. For instance, if the auditor discovers that a recipient has used part of the funding to pay the wages of pre-existing staff, the Department could demand the repayment of the amount of money allocated to the salaries or reimbursement in full. The agreement should list the documentation that will be required before funding will be distributed as well as the categories of expenses that will be subsidised by the Fund. As previously mentioned, the agreement should also include an auditing mechanism.[107]

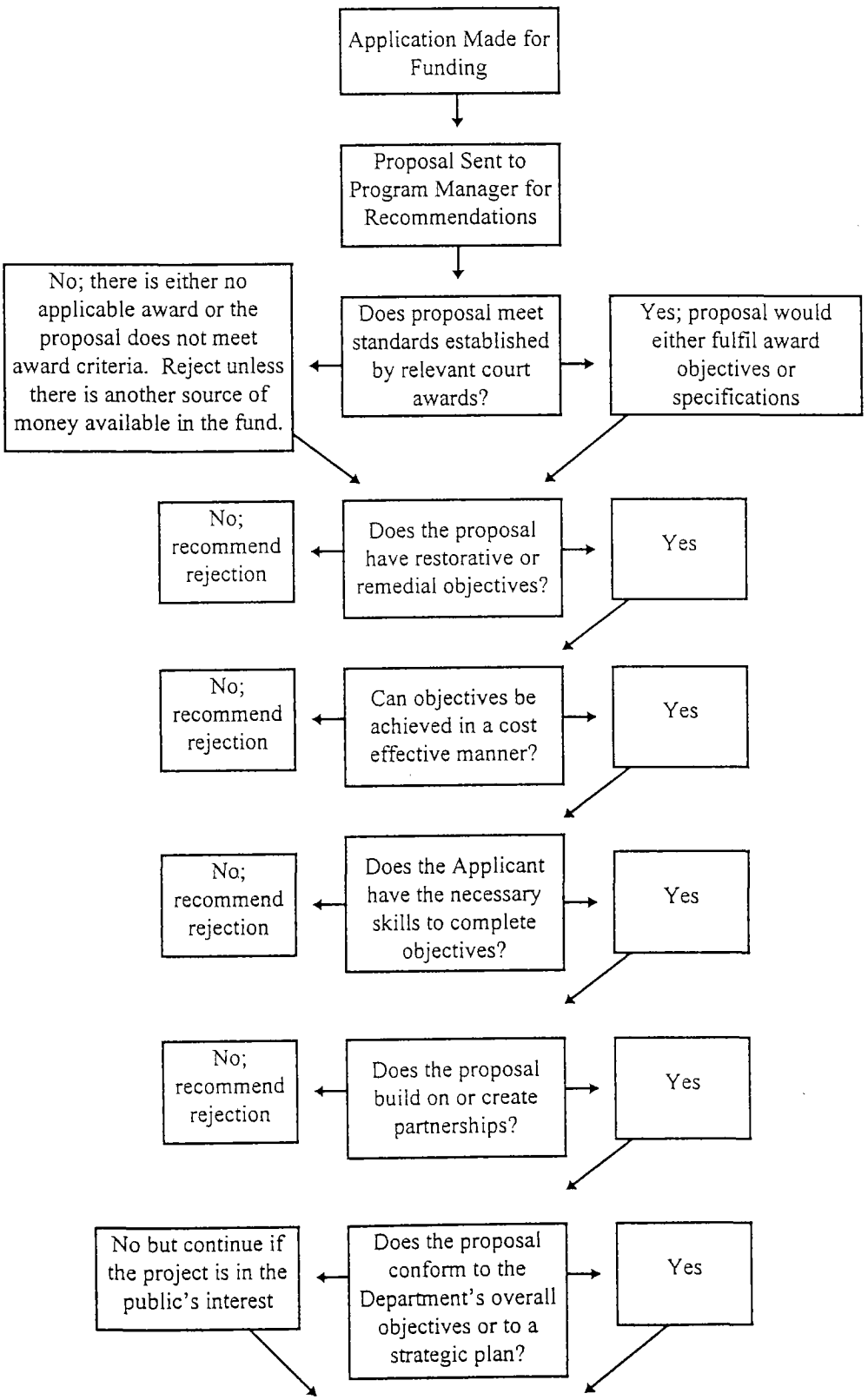
4.0 Conclusion

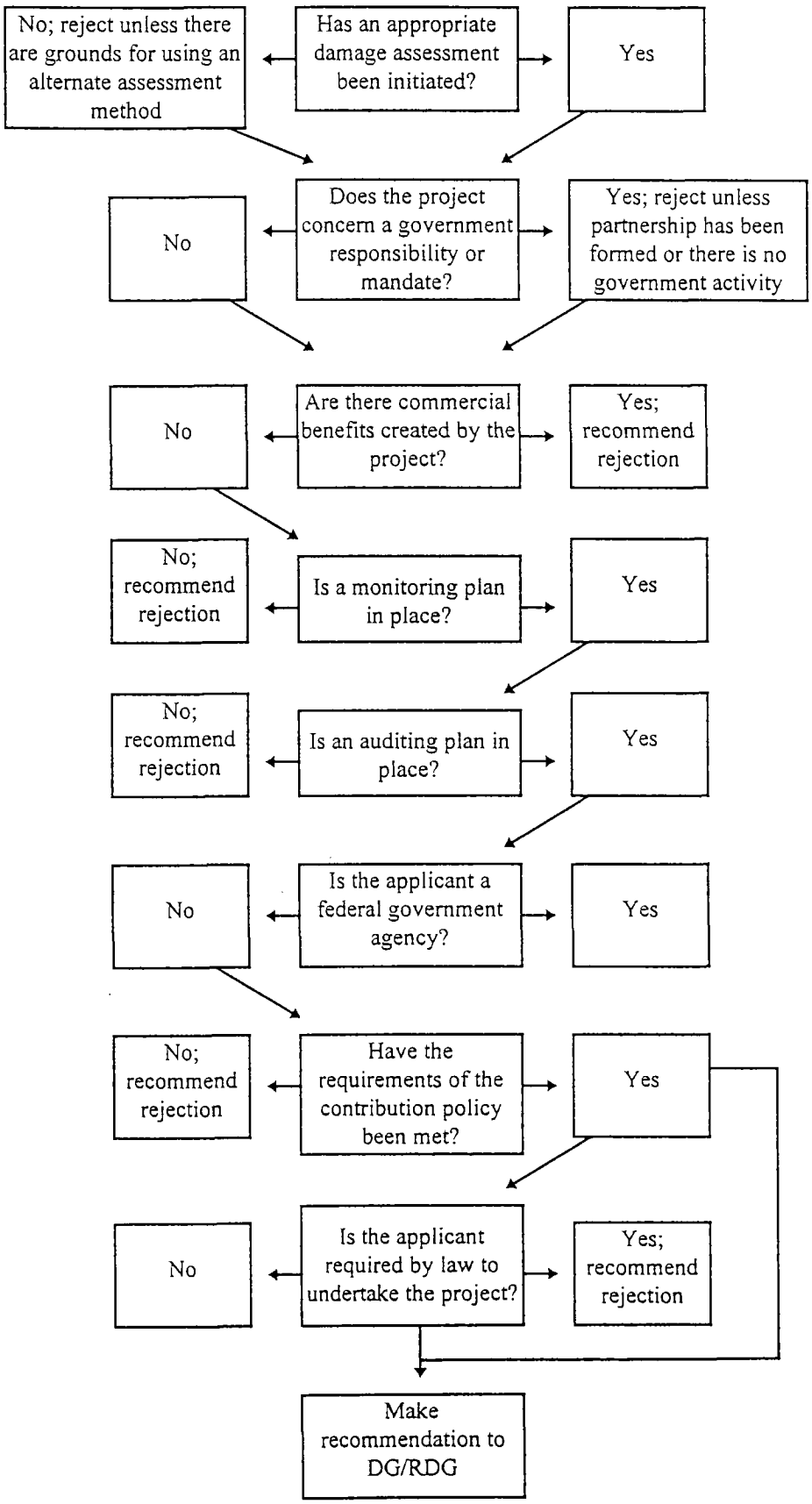
This framework and application process ensures that funds are being put towards the restorative and remediative purposes envisioned by the Fund and by the Department. The use of detailed criteria and their inclusion in the contribution agreement serve to allocate funding to specifically targeted purposes and recipients and to focus efforts on the

[106] For an elaboration of the decision-making chronology of the Fund, please refer to Appendix B.
[107] Treasury Board, Guide on Financial Arrangements and Funding Options <http://www.tbs-sct.gc.ca>

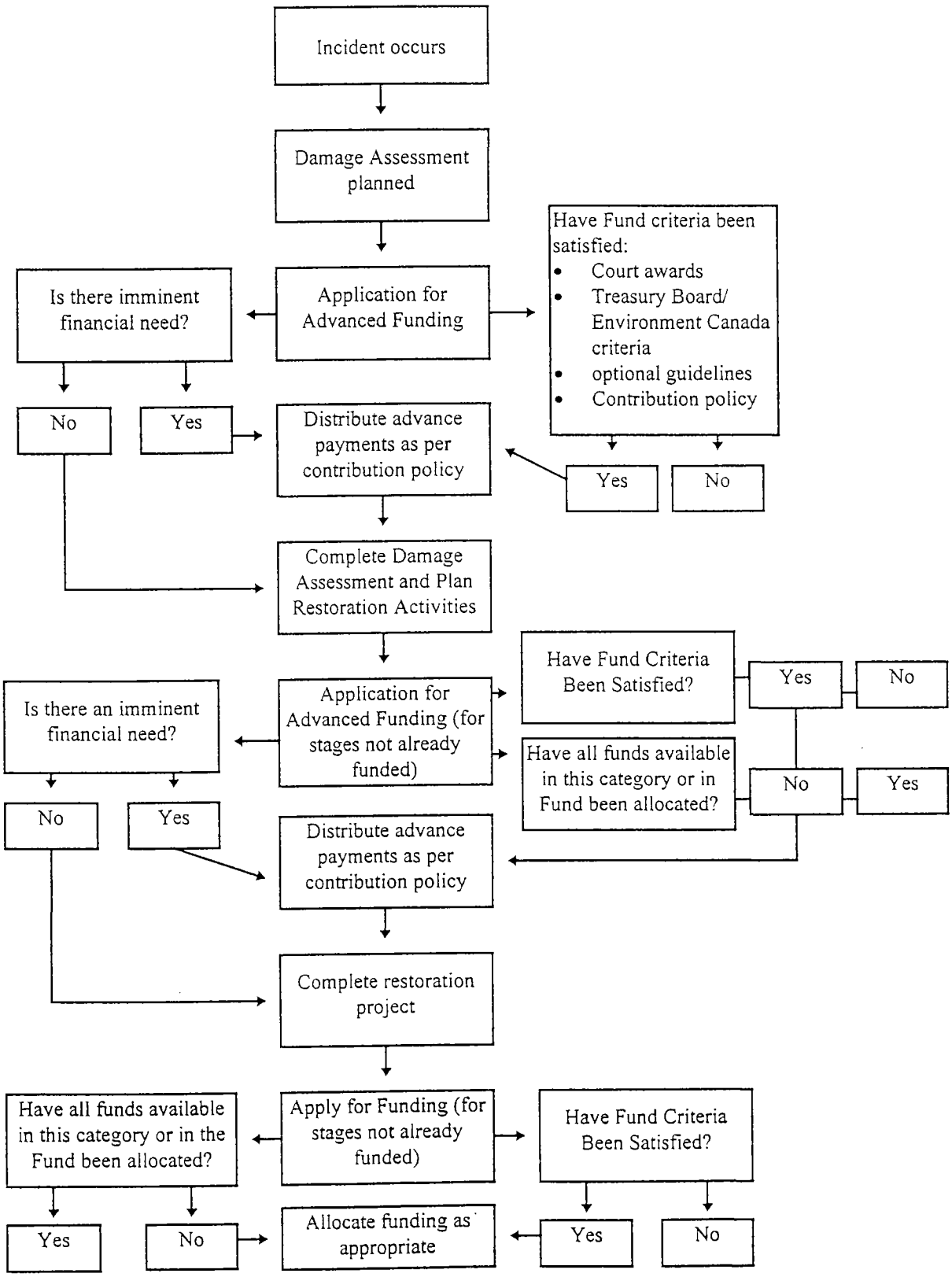
projects' declared objectives. The inclusion of monitoring and auditing programs will allow the Department to evaluate the merits of the project and the appropriate use of the contribution granted; the presence of these mechanisms also encourages recipients to meet the guidelines and to achieve objectives.

Appendix A: Environmental Damage Fund Decision-making Framework




Has an appropriate damage assessment been initiated?
Yes
No; reject unless there are grounds for using an alternate assessment method
Does the project concern a government responsibility or mandate?
Yes; reject unless partnership has been formed or there is no government activity
No
Are there commercial benefits created by the project?
Yes; recommend rejection
No
Is a monitoring plan in place?
Yes
No; recommend rejection
Is an auditing plan in place?
Yes
No; recommend rejection
Is the applicant a federal government agency?
Yes
No
Have the requirements of the contribution policy been met?
Yes
No; recommend rejection
Is the applicant required by law to undertake the project?
Yes; recommend rejection
No
Make recommendation to DG/RDG

Appendix B: Environmental Damages Fund Chronology



Recommendations

1. Prosecution of environmental offences should be pursued as a precursor to further or additional legal action with current and future offenders in order to ensure maximum flexibility and successful resolution in legal activities.

2. A protocol for the gathering of evidence should be developed in partnership with Transport Canada, the Department of Fisheries and Oceans/Canadian Coast Guard.

3. The roles and responsibilities of federal and provincial agencies, industry and polluters in the damage assessment process should be discussed and endorsed in a memorandum of understanding.

4. The Regional Environmental Emergencies Team should assume co-ordinating and dissemination functions for the damage assessment and restoration process. The organisational framework required for such a role should be further investigated.

5. The criteria for application to and decision-making for the Environmental Damages Fund developed at the regional level should be discussed at the national level. A nationally endorsed policy for Fund administration should be in place before the Fund is reviewed in 2000-2001.

Glossary

Absolute liability: A type of offence wherein the commission of an act, whether it was intentional or not, represents a violation of the law; the offender is not able to defend him or herself by claiming that he or she acted with due diligence to correct the action.

Act of God: A natural event that occurs without warning and without historical precedent.

Baseline condition: The condition the resource, service or ecosystem would be in prior to any pollution incident. This must be distinguished from the pre-incident condition.

Exclusive Economic Zone: A 200 mile zone that includes a nation's territorial sea. This extension has only recently gained international approval and usage.

Habitat Equivalency Analysis (HEA): A scaling method for planning restoration strategies that determines the level, type and value of services or resources provided by a habitat that must be replaced.

Indictable offence: An offence that carries the maximum range of fines or jail terms allowable. Indictable offences are usually reserved for offenders exhibiting some level of awareness concerning their actions or for acts with serious consequences.

Mens rea: The mental element of a criminal or quasi-criminal offence that is required in addition to the action that constitutes the infraction. Mens rea includes intent, recklessness and wilful disregard.

Modelling: Usually computerised, modelling techniques generate estimates of resource damage and value and suggest which restoration strategies would be appropriate.

Pre-incident condition: The condition the resource, service or ecosystem would have been in had the incident not occurred. This consideration focuses on the damage of a particular event while the baseline condition concerns all pollution damage.

Rehabilitation: Any restoration activity that ameiliorates the condition of the resource or service. Unlike true restoration, rehabilitation does not

necessarily return the resource or service to its baseline or pre-incident condition.

Replacement: Any restoration method that involves substituting resources or services for those that have been injured.

Resource-to-Resource method: Also known as the service-to-service method. This is a scaling technique that determines the amount of resources that need to be restored by equating the quantity of the damaged resource with that of the intended replacement.

Restoration: Also called mitigation, restoration is an activity or group of activities designed to continue from the point of clean-up with the view of rehabilitating or replacing damaged resources or services. *Primary restoration* is accomplished when damaged resources or services are returned to their baseline or pre-incident conditions. *Compensatory restoration* is an action or actions provide interim compensation for lost resources or services until primary restoration is completed.

Scaling: Methods that adjust the size and duration of a project so that the resources attached to a project are sufficient for achieving restoration.

Strict liability: Like absolute liability, the commission of a prohibited act even in the absence of intent forms the offence. The offender, however, is able to use the defence of due diligence in strict liability offences.

Summary offence: An offence that carries a smaller maximum penalty than an indictable offence. First-time offenders or those who have committed acts inadvertently or with minimal consequences are usually charged with summary offences.

Territorial seas: An internationally recognised twelve mile boundary extending from a nation's territory into open ocean.

Valuation method: A scaling method that uses economic analysis to determine what resource or service value must be replaced in order to achieve environmental restoration.