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**COMPENSATION IN HAZARDOUS FACILITY SITING:
AN ANALYSIS OF COMPENSATORY AGREEMENTS**

By

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ABSTRACT

Compensation in Hazardous Facility Siting: An Analysis of Compensatory Agreements

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Environmental Applied Science and Management
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Although theoretically the voluntary site strategy has been commended for its success at solving local community problems, there has been a small number of siting successes actually achieved. This study investigates the approach of negotiated compensation and reward in the collaborative process under which willing individuals can come to an agreement concerning the siting of a noxious facility. Elaborating upon Kuhn and Ballard's (1998) optimistic conclusions regarding the progress of facility siting approaches in North America, the study investigated the true nature of collaborative theory in a case analysis of environmentally hazardous facility projects.

The results suggest that compensation is an effective tool in the siting process. The analysis indicates that there has been an evolution in the nature of the community agreements over the last ten years into more sophisticated allocations of benefits and burdens. The study also concludes that direct costs allocated by proponents for the purpose of compensation remain low and are relatively small when compared to the estimated initial capital cost of the projects.

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Any intelligent fool can make things bigger, more complex, and more violent. It takes a touch of genius -- and a lot of courage -- to move in the opposite direction. ~Albert Einstein

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DEDICATION

Only when the last tree has died, the last river has been poisoned, and the last fish been caught will we realize we cannot eat money. ~Cree Indian Proverb

To my parents Grazyna and Wlodzimerz Wrzal. In their selflessness, patience and understanding they have taught me to face life's challenges with confidence and pride, and in times of weakness and self doubt they provided a solid foundation to refocus and press on. Thank you for taking the time to support my passions and encourage my dreams.

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LIST OF ABBREVIATIONS

| | | |
|----------------|---|---|
| AACI | : | Accredited Appraiser Canadian Institute |
| AECL | : | Atomic Energy of Canada Ltd. |
| AEDTC | : | Athabasca Economic Development and Training Corporation |
| AENV | : | Alberta Environment |
| AEUB | : | Alberta Energy and Utilities Board |
| AFN | : | Assembly of First Nations |
| ALUP | : | Applied Land Use Planning |
| ALUPIAC | : | Athabasca Land Use Planning Interim Advisory Committee |
| ARD | : | Acid rock drainage |
| AWA | : | Alberta Wilderness Association |
| CEAA | : | Canadian Environmental Assessment Act |
| CMEI | : | Canadian Mountain Enhancement Inc. |
| CNRL | : | Canadian Natural Resources Ltd. |
| CNSC | : | Canadian Nuclear Safety Commission |
| CNSOPB | : | Canadian Nova-Scotia Offshore Petroleum Board |
| CPI | : | Consumer Price Index |
| CRC | : | Cardinal River Coal Ltd. |
| DBCMI | : | De Beers Canada Mining Inc. |
| DDMI | : | Diavik Diamonds Mine Inc. |
| DFO | : | Department of Fisheries and Oceans |
| DMS | : | Dense media separation |
| EA | : | Environmental Assessment |
| EAO | : | Environmental Assessment Office |
| EAP | : | Employees Assessment Plan |
| EBPC | : | Emera Brunswick Pipeline Company Ltd. |
| EIS | : | Environmental Impact Statement |
| EUB | : | Energy and Utilities Board |
| ESRF | : | Environmental Studies Research Fund |
| ESWE | : | Empire State Wind Energy |
| FARE | : | Families Against Radiation Exposure |
| FHELP | : | Fort Hills Energy L.P. |
| FHOSP | : | Fort Hills oil sands project |
| FOMB | : | Friends of the Mer Bleue |
| FORP | : | Friends of Rockwood Park |
| FRSWC | : | Fundy Region Solid Waste Commission |
| GHG | : | Greenhouse gases |
| GSA | : | Georgia Strait Alliance |
| GSX | : | Georgia Strait Crossing |

| | | |
|-----------------------|---|--|
| GSX PL | : | Georgia Strait Crossing Pipeline |
| HDCC | : | Hinton and District Chamber of Commerce |
| HDD | : | Horizontal directional drill |
| HCl | : | Hydrogen chloride |
| H₂S | : | Hydrogen sulphide |
| LD | : | Lisbon Development |
| LIA | : | Labrador Inuit Association |
| LIHS | : | Labrador Inuit Health Commission |
| LKDFN | : | Lutsel K'e Dene First Nation |
| LLRW | : | Low level radioactive waste |
| LLRWMO | : | Low Level Radioactive Waste Management Office |
| LLC | : | Limited Liability Company |
| LNG | : | Liquefied natural gas |
| LTWMF | : | Long-term waste management facility |
| LULU | : | Local Unwanted Land Uses |
| M&NP | : | Maritimes and Northeast Pipeline |
| MNR | : | Ministry of Natural Resources |
| MOE | : | Ministry of the Environment |
| MOPU | : | Mobile Offshore Production Unit |
| MPTP | : | Multi-Party Training Plan |
| MVEIRB | : | Mackenzie Valley Environmental Impact Review Board |
| MWLAP | : | Ministry of Water, Land and Air Protection |
| NCC | : | National Capital Commission |
| NEB | : | National Energy Board |
| NIMBY | : | Not In My Back Yard |
| NRC | : | Natural Resources Canada |
| NSMA | : | North Slave Métis Alliance |
| NWT | : | North West Territories |
| NO_x | : | Nitrogen Oxides |
| OEB | : | Ontario Energy Board |
| OFA | : | Ontario Federation of Agriculture |
| OPA | : | Ontario Power Authority |
| OSEA | : | Offshore Strategic Energy Agreement |
| PAC | : | Public Advisory Committee |
| PILOTS | : | Payments in lieu of taxes |
| PRAC | : | Petroleum Research Atlantic Canada |
| PVPP | : | Property value protection program |
| ROW | : | Right of way |
| RRCCC | : | River Road Concerned Citizens Committee |
| RRAT | : | River Road Action Team |

| | | |
|-----------------------|---|-------------------------------------|
| SFN | : | Snuneymuxw First Nation |
| SLDP | : | Snap Lake Diamond Project |
| SO₂ | : | Sulphur dioxide |
| TAGS | : | The Atlantic Ground fish Strategy |
| UTS | : | UTS Energy Corporation |
| UNBI | : | Union of New Brunswick Indians |
| UMWA | : | United Mine Workers of America |
| VBNC | : | Voisey's Bay Nickel Company |
| VIEC | : | Vancouver Island Energy Corporation |
| VIGP | : | Vancouver Island Gas Project |
| WTP | : | Water treatment plant |
| WSI | : | Waste Services Inc. |
| YKDFN | : | Yellowknife's Dene First Nation |

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1. INTRODUCTION

1.1 Background

Today more than ever, the conflicts over hazardous facilities have become more vocal. Local opposition and conflicts have been raised from siting remedial facilities such as in the case of Low Level Radioactive Waste Management (LLRWM) projects in Port Hope and Port Granby (Ontario), to large scale mining projects as in the cases of Horizon or Fort Hills (Alberta). Even small scale wind projects such as the Town of Benton wind energy facility (NY) have all received an unprecedented amount of resistance from local communities during the siting process.

This is a critical time in energy supply, where new facilities are being proposed more readily. There are several North American jurisdictions in the midst of proposing needed energy facilities, some of which are resorting to extending those sites that already exist. LaGrega *et al.* (1994), best describe the layperson's perspective of a facility in their community as "imposed upon, having no real benefit, and representing an unknown but substantial risk" (p.434). The failure to approve new facilities has been blamed on "NIMBY activists, political interference, false or overestimated perceptions of risk, inadequate public participation and overly rigorous environmental impact assessment regulation" (Hostovsky, 2006, p.382). The abundant research in the area of planning theory and facility siting processes has come to several conclusions about the effective results of collaborative approaches (Armour, 1992; Kasperson *et al.*, 1988; Zeiss and Lefsrud, 1995). Over the next several years it is likely that the theoretical collaborative model of facility siting will be put to the test.

Community opposition to environmentally hazardous facilities, such as power plants, landfills, prisons and even airports, is not a new phenomenon. It has been documented for years

throughout the planning literature that the well-known ‘Not In My Back Yard’ (NIMBY) syndrome within communities has been the cause of siting failure. According to Inhaber (1998), the underlying mechanism driving individuals to NIMBY behavior is explained by Maslow’s hierarchy. In this hierarchy, human needs are placed in an ascending order, where basic needs such as shelter and security are at the bottom and less tangible needs such as self-esteem are at the top. Inhaber (1998) explains that when confronted with a hazardous facility of any sort, human instinct is to feel threatened and fear for safety, unconsciously directing those affected to the bottom of Maslow’s hierarchy. Individuals who are categorized as ‘NIMBYists’ are acting in a logical manner with respect to their interests, protecting and fighting for their lives (Inhaber, 1998). It is when the interests of those affected contradict the interests of the proponents that conflict results.

What is most interesting about facility siting is that it has become a paradox in planning theory. It is difficult to find a ‘right place’ for these sites despite the fact that everyone needs them (O’Hare, 1983); as remarked by Inhaber (1998) “an energy system does not exist of and for itself, but for all of society” (p.14). This makes the siting process that much more multidimensional than the traditional siting approach suggests, in that the solution to the NIMBY problem is only partly technical. Community opposition is more than just a concern about the potential risk. It is about the rationales given for the technology and site choice, the fairness of the decision making process, and the equity outcomes. This also includes the benefits that communities derive from the siting decision.

1.2 Focus and Context

The designed research is intended to contribute to a clear and comprehensive understanding of the role of compensation in the facility siting process. Resolving the siting dilemma involves a critical analysis of why the existing measures and mechanisms of the collaborative approach

have not yet been more widely used in resolving siting conflicts. Although this is not the focus of the study, focusing on compensation, one principle of the co-operative approach reveals some conclusions regarding the impact it has on what is a serious and complex political and environmental dilemma.

For the sake of clarity, the overall definition of compensation in this study is as follows;

Compensation aim[s] to recreate the status quo and to make communities whole by paying for actual damages. [It as well includes the action of] mitigation [which] prevents, reduces, or eliminates adverse impacts before they occur. [Also it constitutes the use of] incentives or rewards [as] positive inducements, beyond any actual or predicted damages, to reward communities for accepting risk (Gerrard, 1994, p.125).

This definition incorporates three separate concepts all of which relate to negotiated compensatory agreements; direct compensation, mitigation, and incentives or rewards.

Throughout the facility siting literature, there has been an emphasis on the importance of focusing on compensation as one of Armour's (1992) five cooperative siting principles (Kunreuther, 1995). Compensation, in the context of this study, will be discussed together with other aspects of the collaborative siting approach as a fundamental component which "induces localities to accept facilities; makes victims whole; and by internalizing the external costs of these facilities, increases economic efficiency" (Gerrard, 1994, p.125). In doing so, it rearranges the distribution of costs and benefits associated with risk borne by host communities.

In order for potential candidate sites to feel a part of a fair and equitable process, some form of 'compensatory package', or set of incentives and rewards may be necessary. In North America, this has been argued as a cost effective means of making decisions in risk acceptance (Armour, 1992; Renn *et al.*, 1995; Kunreuther 1996; Galbraith *et al.*, 2007). It is only 'fair' to compensate those who bear the risk, whether real or perceived, with benefits that offset the inequitable distribution (Burton and Pushchak, 1984).

The context for this research arises from a study by Kuhn and Ballard (1998) which more recently has been repeated by Huitema (2006) both depict the most recent successes in Canadian facility siting. Enthusiastic about their belief that there is an evolution from the traditional siting framework to Armour's (1992) co-operative siting approach, their conclusions suggest that facility siting successes are on-going in Canada and that the successes of voluntary, co-operative approaches are assured. According to Kuhn and Ballard (1998), and challenged by this study, the new wave of facility siting successes lies in implementing the collaborative approach as a result of past successes in North America, exemplified by the 1987s Swan Hills (Alberta) and Montcalm (Manitoba) cases (Kuhn and Ballard, 1998). However, given the dated nature of those successes most occurring in the 1970s and 1980s, it is questionable whether such a successful outcome can be observed in the current era. There is a lack of studies of current siting cases and the implication is that siting successes will continue as suggested in Kuhn and Ballard (1998), despite anecdotal evidence to the contrary.

This study focuses narrowly on the suggested theoretical role of compensatory agreements that result in successful siting of environmentally hazardous facilities. The comparison of siting successes under the use of a siting process versus a non-siting process is not part of this study. The study is intended to discriminate between compensation and reward, but not to distinguish between the successes and failures connected to the siting process when compensation is used as compared to when it is not. The study also evaluates whether North America, in what is thought of as the heart of forward thinking facility siting approaches, has truly embraced collaborative siting measures when it comes to siting environmentally 'risky' facilities such as nuclear plants, landfills, mines and other energy- supplying structures.

It is hoped that the research will critically advance what Kuhn and Ballard (1998) have investigated, as it is not clear that facility siting successes are independent of compensation. The

examination of the cases in this study will examine how compensation fits into the solution of the facility siting dilemma, while also proving the importance of compensation as a tool in creating conditions for successful siting agreements in the facility siting process.

1.3 Statement of Problem

Hazardous facilities have been viewed publicly as burdens and locally unwanted land uses (LULU). Perceptions of the risks versus the reality of the risks affiliated with the facilities have played a large part in engaging individuals in opposition. The dangers and impacts associated with such sites create threatening conditions for local communities directly affected by the facility and even those surrounding it. The perceptions of risk associated with the siting attempts are half the battle when it comes to addressing the facility siting dilemma. This is the case due to complex psychological conditions which individuals undergo as a result of fears and uncertainties regarding the outcomes and impacts of the environmentally hazardous facilities (Wakefield and Elliott, 2000; Slovic *et al.*, 1991; Slovic and Weber, 2002).

A majority of the literature in facility siting has focused on the aspect of public involvement in facility siting issues. Providing understandable technical information to the public has been encouraged for proponents to minimize conflict situations. The rationale is that participation in the facility siting process enables individuals to feel a part of a transparent and fair approach. It also allows the public to be involved in the decision making and siting outcomes. Overall the hope is that this proactive involvement helps the public become more accepting of the facilities; therefore, the earlier and more frequently the public get's involved, the better.

Prior strategies for siting involved expert decision makers and the exercise of governmental power to site facilities. However, local opposition has proved unexpectedly successful. It has only been in the last three decades or so that proponents have considered less conventional strategies, such as offering compensation and other incentives, and even negotiating siting

agreements to gain local acceptance. It appears insufficient to just involve a community in a siting process, as the community is taking on risks associated with health impacts, changes in their environment, and even economical losses. Some form of compensation or incentive/reward needs to be presented during the negotiation process of the public's involvement so as to balance the losses and gains associated with the facility (Armour, 1992).

The literature suggests negotiated compensation is fundamental in the collaborative process as it allows for a common ground under which willing individuals can come to an agreement depending on the degree to which benefit distribution, perceived risk, and objective risks are adjusted. Communities, given the 'love it or leave it' ultimatum, are stripped of any control they have over their destiny. Negotiated compensation and reward is used to increase involvement and give those affected by the changes a chance to influence the goals and design of an equitable approach. The following study addresses this problem by examining how effective current compensatory agreements, awards, and incentives provided by the proponents are in resolving the conflicts brought forward in public oppositions; providing insight into the importance of compensatory offers.

1.4 Research Objectives

This research is based on a case analysis of the compensatory aspect of the co-operative siting approach to environmentally hazardous facilities in North America. The study examines compensatory impact agreements and the role they play in facility siting in the early 21st century. This study will examine selected cases where facilities have been sited using compensatory agreements. It is centered on the following four objectives:

1. To articulate, in depth and detail, the factors that help to explain whether compensation has or has not been applied in recent and current negotiated agreements.

2. To identify whether negotiations about compensation and reward are offered at a meaningful time and in any meaningful way. Where meaningful is defined by criteria which include sincerity, honesty, and security, and which are direct in nature.
3. To specify the role compensatory agreements have played amongst other fundamental principles and more importantly if they are effectively used in resolving the conflict.
4. To compare current cases to Armour's ideal model of facility siting.

1.5 Organization of Thesis

This thesis is organized into five chapters. Chapter 1 provides an introduction to the study, including the research context, problem and objectives. The literature review is provided in Chapter 2 as in-depth background information, where topics such as the siting dilemma, roots of public opposition, Armour's (1992) collaborative approach and risk perception are addressed. In Chapter 3 methods employed by the study are outlined. The design of this research includes a systematic search used to identify case studies which fall under certain criteria set for the examination of compensatory agreements. In Chapter 4 the results of the analysis conducted for the study are presented. The final chapter discusses the results of the analyses and presents the conclusions of this research.

2. LITERATURE REVIEW

2.1 Facility Siting and Public Opposition

Siting a hazardous facility is an inherently difficult task. The siting dilemma in hazardous facility siting is created when an “authority deems it in the best interest of society to build an [environmentally hazardous] facility, such as an incinerator [or power plant], but opponents living near the proposed site thwart the plan” (Easterling and Kunreuther, 1995, p.vii). Such is the case with the majority of proposed noxious facilities, leading proponents to exhaust existing available areas as opposed to finding new sites for the projects. This is the case for many new nuclear power generating facilities in Ontario, such as those in Darlington, Pickering and Bruce County.

In this overall conceptualization of the siting dilemma in North America it is important to note the role the siting process and approach play. The issues that the public deals with are a result of a lack of trust, fairness and equity established by the proponent. The majority of concerns which create siting dilemmas, deal with the siting process and stem primarily from perceptions of trust and control (Wakefield and Elliott, 2000). This is why theoretical interest and focus on innovative, co-operative measures have included the consideration and effectiveness of volunteer or host communities, negotiated siting agreements, compensation strategies and co-operative decision making as a means of addressing siting issues.

The facility siting literature over the last ten years has focused less on voluntary siting and compensation, and more on risk perception, public involvement, and the siting dilemma. Historically, major advances in the field of facility siting were made in the 1990s. Conflicts regarding the siting of hazardous facilities continue, yet the facility siting literature on solving siting conflicts has not advanced since. The primary focus for the siting of hazardous facilities has been the initiation and approval of Environmental Assessments (EA). The EA process

focuses primarily on the step by step analysis of environmental impacts and follow-up measures. Although mitigation measures are outlined in the EAs themselves, compensation and an overall voluntary approach are not the main focus. Although some form of initiative or reward is documented, the majority of the siting processes associated with the EAs focus on impacts and effects of the facility on the surrounding environment and communities.

Public opposition to environmentally hazardous facilities has been identified by many as the NIMBY syndrome, an “intense and often adamant resistance by the local population” (Kraft and Clary, 1993, p.96). It is considered one of the most significant obstacles in the facility siting process (Rabe, 1994; Inhaber, 1998). Although commonly believed to be a relatively recent phenomenon, the NIMBY response has in fact been documented as early as the mid-1950s (Inhaber, 1991).

‘NIMBYism’ is often considered an irrational response by a poorly informed public (Kraft and Clary, 1993). It is argued by many that ‘NIMBYism’ is a rational response (Rabe, 1994; Bingham, 1984, Lake, 1993). Rabe (1994), for example, argues that NIMBY is simply a realistic local response to poorly designed national and sub-national policies. Bingham (1984) also poses the same argument in that the response of NIMBY is rational in local communities where proposed facilities would make them worse off. Others, such as Lake (1993), have also argued against the suggestion that local community selfishness is preventing the siting of facilities and poses a threat to the progression of societal goals, and in turn limits social benefit.

Opposition to siting noxious or unwanted facilities generally results from five principal concerns of the potentially affected public, originally investigated by Armour (1992):

1. Inequities in the distribution of costs and benefits;
2. The stigma of an unwanted facility;
3. Perceived risks;

4. Feelings of loss of control over forces affecting the quality of one's life and community; and
5. Loss of trust in proponents and regulators.

It is important to note that it is not just the existence of undesirable “costs” to a community that characterizes opposition to facility siting but also the fact that these costs would not be offset by corresponding benefits from hosting the facility.

2.1.1 Roots of Public Opposition

Risk Perception

Opposition to waste facilities has largely been attributed to the public's perceptions of the risks posed by the facilities themselves (Kuhn, 1998; Slovic *et al.*, 1991). According to Kuhn and Ballard (1998), the public perceives that the risks associated with hazardous waste facilities are “unacceptably high and threatening” (p.2) and result in an inequitable burden on the host community. Current literature by Eiser (2004) suggests that public perception of risk involves “implicit or explicit judgments of the likelihood or uncertainty and the desirability and undesirability” (p.2) of such effects. Judgments and decisions are therefore based on expected outcomes derived from experience and from information communicated by others.

Certain perceptions of risk (e.g. associated threats to core values) and its characterization with the siting process (e.g. the perceived lack of meaningful participation) can influence the amplification of opposition created by the community (Wakefield and Elliott, 2000). There are social processes within communities which amplify and increase risk perception, through media, authoritative figures and social conformity. The ripple effects arising from the social amplification of risk pose other challenges (Slovic and Weber, 2002). These factors influence feelings of loss of control, trust, and power by communities.

Lack of Trust and Loss of Control

The public's perception of risk is said to be shaped by the amount of trust placed in those responsible for managing the risk (Sjöberg and Drottz-Sjöberg, 1997). It has been proven that the level of trust the public has in hazardous waste proponents and government authorities has diminished considerably over the past few decades (Easterling and Kunreuther, 1995; Gerrard, 1994; Slovic *et al.*, 1991; Laird, 1989; Morell, 1981). Lack of trust and community empowerment both have implications for, not only the well being of the community, but for the acceptance and degree of opposition. It is thought that the principal reason for a lack of trust in science and government is the growing public concern that the risks of new technologies are poorly understood (Kunreuther *et al.*, 1993; Baxter *et al.*, 1999). According to Eiser (2004), trust can involve reliance on others, "both as controllers of risks and as informants about the extent of risk" (p.2). In both cases, trust depends on competence, values, or partiality and honesty.

Once distrust develops, trust is very difficult to regain without extensive changes to the siting process and/or the stakeholders involvement. Trust is a principle of effective siting, and is directly related to public participation. Much has been written on the benefits of community participation for increasing public acceptance of facilities and thus the probability of facility siting success (O'Faircheallaigh, 2007; Mumpower, 2001; Ishizaka and Tanaka, 2003). Public participation is linked to trust and equity as it allows for the development of trust if public interests are of importance; this then gives the community members more procedural control over how siting decisions are made. The inability of a public to feel in control of choices made about the future of their environment, home, family, and overall mental, emotional, and physical health creates an atmosphere of hesitance, distrust and results in opposition. Baxter *et al.* (1999) assert that practices such as admitting past mistakes, avoiding exaggerated claims/promises and

highlighting past successes can help to re-establish trust between siting proponents and the public (p.504).

Distribution of Risks and Benefits

Local concerns about risks are matched by local concerns about perceived inequities. In the siting of a hazardous facility site, a community is being asked to bear the burden of the facility's impacts and risks on behalf of the greater public. This community has to accept the disruptions caused by the facility as well as the possibility that people may regard the community as a less desirable place to live. Such costs to the community are not only hard to determine, but are not usually offset by the benefits of the facility that are distributed amongst the broader public.

2.1.2 Overcoming Public Opposition

It is important to point out that not all siting efforts have resulted in failure. Although far from being common, examples of successfully sited facilities can be found where public opposition was overcome (Gerrard, 1994; Rabe, 1994). The most cited case of hazardous waste facility siting success is the Swan Hills Special Waste Treatment Centre in Swan Hills, Alberta (Gerrard, 1994; Rabe, 1994). Following two failed attempts to locate a hazardous waste facility in the late 1970s, Alberta's provincial government decided to take over the siting process and in 1984, selected Swan Hills with the support of 79% of local voters (Gerrard, 1994). One of the factors contributing to the success in Swan Hills is the Alberta government's decision to make the siting process voluntary (Gerrard, 1994). In 1984, all the municipalities in Alberta were asked if they wished to be considered for a hazardous waste facility. Communities had to volunteer before any site investigations were to be conducted (Gerrard, 1994; Rabe, 1994). Perhaps the most important factor in the success at Swan Hills is the province's use of various mechanisms to involve the public in the siting process (Rabe, 1994). These included the creation

of liaison committees, and providing such information as the types of siting criteria that may be used in the construction, operation, and maintenance of the facility.

Examples, such as Swan Hills, highlight the effective outcomes of embracing public participation during the siting process. One of the explanations for this is that “broad-based public participation offers a measure of control over the process of risk characterization” (Short and Rosa, 2004, p.148). This sense of control leads to decreased fear about accidents and greater willingness to accept risks and uncertainties (Short and Rosa, 2004). It is also report that success is more likely when a proponent accommodates local community concerns in an honest and meaningful way (Short and Rosa, 2004).

It is widely agreed upon in current literature that the public needs to be involved at all steps of the siting process, including the definition and identification of the problem, as well as in the decision making regarding any proposed solutions (Baxter and Elliott, 1999; Short and Rosa, 2004; Galbraith *et al.*, 2007). It is particularly important to involve the public early in the process and extensively throughout. For the public to even consider accepting a waste facility, they must first agree that the facility is both necessary and appropriate (Treichel, 2000).

Overcoming public opposition has been mainly attributed to the voluntary nature of the siting process. A voluntary and co-operative process is more likely to gain local support than the traditional processes which almost always forces its choices onto a community without negotiation (Armour, 1992). Although most communities will not accept a facility when faced with the choice, the voluntary approach allows “more communities that are considered, [therefore creating a] higher overall likelihood of siting success” (Castle and Munton, 1996, p.74). Gerrard (1994) stated that using a voluntary approach “elicits a far different psychological response” (p.109) in local communities.

According to Gerrard (1994), there are three specific advantages to the voluntary approach (p.132):

1. It decreases intrusion-by making the risk voluntary, it reduces the perception of risk.
2. It draws out those communities with cultures that will accept facilities.
3. It tends to lead to payment of the full social costs of a facility, since the hidden subsidies of preemption are eliminated.

Compensation has also been used to overcome public opposition of siting hazardous facilities. According to Kunreuther (1996), compensation ensures that the benefits associated with hosting a facility are greater than maintaining the status quo. There is the danger of compensation being perceived as a bribe (Gerrard, 1994; Inhaber, 1991), but it has been established in the literature that incentives differ from bribes in that bribes are given and accepted in secret (Kunreuther, 1996). Thus, the success of incentives depends on how they are offered or presented (Inhaber, 1991).

2.2 Compensation

Compensation can correct the imbalance between the beneficial economic gains produced by the facility and the negative physical or psychological impacts. Compensation also “serves as an important symbolic function, by providing a signal to the local community of the intentions and expectations of a potential developer” (Gregory *et al.*, 1991, p.673). O’Hare (1977) suggested that in order to solve the problem of inefficiency and to locate a noxious facility, those that receive the benefits must compensate the neighborhood around the site for bearing the external cost of the facility. Many have found that compensation is unusually ineffective in and of itself, especially it is not offered in an appropriate manner (Armour, 1992; Kunreuther *et al.*, 1993), and only “after residents are convinced that adequate prevention and mitigation measures are in place should issues of compensation be raised” (Baxter *et al.*, 1999, p.505).

In more and more cases over the last decade a greater amount of attention has been drawn to the idea and use of compensation, emphasizing its importance in the facility siting process. Kunreuther (1995), for example, acknowledges compensation as a means of solving the paradox of facility siting as his observations suggest “[the] voluntary approach [to siting hazardous facilities] places [a] burden on the developer to convince one or more communities that they should want to host the facility” (p.284). It is as a result of the inequities in the distribution of risk, which if uncorrected leads to higher levels of decision making conflicts (Burton and Pushchak, 1984). It is therefore only ‘fair’ to compensate those who bear the risk, whether real or perceived, with benefits that offset the inequitable distribution (Burton and Pushchak, 1984). As suggested in the literature, originally by Peelle (1980) and later by Kunreuther (1996), the North American practice of compensation in the risk acceptance process is a cost effective means of making decisions. Pushchak and Burton (1982), for example, indicate in an early paper that as a result of a ‘spatially’ inequitable distribution of risk, NIMBY problems arise within hazardous facility siting, and “it is not likely to be opposed less vigorously until the conventional siting process includes measures to redress the inequitable distribution of perceived risks” (p.68). One such measure is compensation, drawing on incentives to illustrate and negotiate equitable circumstances under which a facility such as a power plant can be accepted. McAllister (1976) argues that the principal source of this inequity is distance, represented by the size and spacing of facilities, where “the local community assumes spatially distributed risks, actual or perceived, while others else where derive benefits” (p.51). O’Hare (1977) incorporates this into a concept based on per capita risk for members of the host community, where the per capita risk is larger because the risk is distributed among a small number of residents; therefore individuals have a large amount at stake in the siting decision. Such inequity is assumed to be the outcome of a

‘poor’ conventional siting process, which lacks the appropriate mechanisms to distribute equal benefits and costs (Peelle, 1980).

There are several kinds of compensation available, some of which are more appropriate than others depending on the situation encountered. Although covered in our definition of compensation, a more detailed breakdown is as follows. Kunreuther (1995) best defines categories under which compensatory agreements can be made; some consist of a combination between the following:

- Direct monetary payments;
- In-kind awards, such as grants for “improving health care facilities, housing, education or other services that enhance the citizens well being and reduces risks that they face” (p.287);
- Contingency funds, such as trust funds, which are used to cover losses from any adverse effects caused by a facility;
- Property value guarantees, which protect individuals in the communities and those of surrounding areas against any decline in the “resale value of their home that would be due to the location of the facility” (p.287);
- Benefit assurances, which guarantee some form of employment for the host community members, “either during construction of the facility or during its operation phase” (p.288); and
- Economic goodwill, referring to any type of contributions to local organizations and/or “expenditures for projects that are important to the community” (p.288).

O’Hare (1983) concludes that any such compensatory actions reduce the net costs of siting a facility while at the same time making the host community feel better off with the facility than without it. According to O’Hare (1983), the action of performing a compensatory agreement “becomes a vehicle for recording the conditions and the compensation expected by the community from the developer, promises and commitments from the developer, and any

promises and commitments the community government may make to the developer as well” (p.169).

2.3 Traditional Siting Approach

When it comes to hazardous facility siting, the process itself historically has created conflict between the community and the proponent. Before there was any talk of co-operative voluntary processes, a traditional approach to siting was taken. Such an approach was thought to be in the “public’s best interest”, as the process was performed in a rational manner, where the goals were set and outlined. The approach was formulated to comprehensively identify site characteristics and comparatively evaluate all alternatives based on technical analysis to “legitimize the siting decisions” (Armour, 1992, p.30). As rational and legitimate as the approach was at the time, according to scholars (Armour 1992; O’Hare 1983; Kuhn and Ballard 1998; Kunreuther 1995) the process was known as a top-down approach, “treating people as means to other ends” (Armour, 1992, p.29). The imposition of a decision regarding hazardous facilities became the primary cause of conflict within communities.

According to several papers outlining the traditional approach, the public was given primarily two assurances, “that detailed site specific environmental impacts and risk assessments [would] be undertaken and [that] the siting [would] only be approved if the environmental impacts and risks [were] acceptable” (Armour, 1992, p.30). The process generally overlooked two factors: the legitimacy of the decision making process and the public’s acceptance of the decision. It is a mistake to separate the two as they are intrinsically linked. Bingham (1986) saw that the traditional decision making process discouraged any efforts made to creatively solve siting problems. It is evident that in such a process, parties are almost forced to use any information obtained as a ‘tool of combat’ (Bingham, 1986, p.69). It is no surprise that such an approach causes communities to feel powerless. It is a form of injustice, due to the fact that the

benefits of the facility sited end up being widely shared amongst society, while the risks are concentrated in the local area (Armour, 1992). Armour (1992) calls the approach “an exercise in frustration” and a “no win situation”. The fundamental issue is “not how to persuade the public to accept an unwanted facility, but how to structure the process in order to acquire a public acceptable decision” (Armour, 1992, p.32).

2.4 Voluntary Siting Process

According to Pushchak and Rocha (1998) voluntary siting methods are thought to work because of several factors. First in a voluntary siting process, communities are free to withdraw their acceptance of a hazardous facility if the risks are perceived to be excessive or the benefits are too low. Second, a voluntary and co-operative process with open public deliberation of the risks and benefits can foster trust in public siting authorities by allowing communities to retain control over the siting decision (Armour, 1992). Third, such a process can produce a more equitable sharing of risk burdens by specifying whose wastes will be accepted. Communities no longer feel they have to be unfairly or arbitrarily burdened with wastes generated by others (Castle, 1993; Rabe, 1994). Finally, communities are thought to be sufficiently compensated for risks and other costs of the facility because they have willingly agreed to accept the benefits associated with it (Pushchak & Burton, 1982; Kunreuther, 1996).

The collaborative approach was first initiated and theoretically outlined in Armour’s (1992) paper. In the paper, Armour (1992) explains that the approach is based on the idea that the process creates conditions under which a “collaborative relationship with [a] community” can be established without conflict. It proclaims to be a process that not only creates the conditions for successful siting, but builds trust and relationships amongst the proponents and individuals. Armour (1992) like other authors (Kasperson *et al.* 1988; Zeiss and Lefsrud 1995) realized that ‘voluntary’ siting arose out of three theoretical traditions: siting failure, negotiation theory, and

strong individual rights perspectives. The entitlement of individuals to participate in the siting process facilitated a 'fairness' component that needed to be incorporated into the traditional approach. Co-operative and negotiable conditions, according to Armour (1992), can be attained under five principles:

1. The community should volunteer and have the right to opt out at anytime;
2. The community should be a partner in the problem solving and decision making process;
3. The community should receive compensation for taking on the risks;
4. The community should have the right to select technology or management measures; and
5. All siting must be located in a community that is safe and environmentally sound.

At the time Armour was writing, the conventional siting approach lacked negotiation and usually resulted in conflict. The approach was formulated comprehensively and identified site characteristics and comparatively evaluated all alternatives in a technical analysis to "legitimize the siting decisions" (Armour, 1992, p.30). The process generally overlooked two factors: legitimacy of the decision making process and the public's acceptance of the decision. Socially amplified and publicized experience of 'victim communities' resulted in the stigmatization of facilities as, threatening, dangerous, invasive, and destructive (Kasperson *et al.*, 1988; Armour, 1992). The cause of public unease with science and technology, when it came to facility proposals, was and still is a direct result of a lack of trust in the proponents and the government.

The facility siting process, as human and complex as it is, must be analyzed through all of its dimensions, for a full understanding of how it approaches conflicts and creates conditions under which the possibility of negotiation and successful agreements can be made. Communities become less reluctant to negotiate and accept hazardous facilities provided that resources allow

them to participate “effectively” in risk communication, risk reduction, and contingency measures, where control is shared and equity is established through compensation. Fairness and legitimacy of the process is critical along side the quality of the relationship between stakeholder and proponent and the extent to which participants are able to influence the decision (Bingham, 1986).

Rather than looking for a “perfect site”, the process focuses on finding an “acceptable site” under ‘voluntary’ participation and collaborative problem solving and decision making. According to the Siting Task Force for Low Level Radioactive Waste in Ontario (1987), the process itself differs from all previous methods in that “socio-economic issues are addressed from the beginning, before expensive site characterization begins” (p.3). The method also is beneficial in alleviating individual concerns through negotiation, allowing for a zone of mutual agreement to be identified, where both the interests of the host community and the interests of the developer can be attained.

2.4.1 Sub-Optimal Distribution

It is in the distribution of power and the distribution of benefits that we really see compensation theoretically defined. It is a fact that a social surplus exists to produce better outcomes, but in traditional siting approached there never was a focus on the mechanisms to transfer the benefits. Compensation is supported by the social welfare theory. Although Pareto-optimal conditions are impossible to obtain, a sub-optimal distribution on the other hand is rather attainable. To shift to a Pareto sub-optimal distribution of benefits, compensation helps by changing three factors; it alters benefit distribution, through changes in perceived and objective risk (O’Hare, 1983). Through such alterations, one creates circumstances under which benefits are greater than risks, such that risks can be compensated and the benefits remain high. As noted by Pushchak and Burton (1982), welfare economics theory “rests on the basic assumption that

each individual, and by extension each community, is the best judge of their own welfare with regard to risk” (p.71). It is essential that in the compensation programs investigated, all communities are found to be better off if not in the same position than before the changes occurred (Kemp and Pezanis-Christou, 1999). A sub-optimal distribution is attained “if the benefits to the broader regional population exceed the costs of risk to the host community such that compensation can be paid, and a social profit still remains then the siting decision is socially efficient” (Pushchak and Burton, 1982, p.71-72). In this way, the majority which does not bear its share of the risk of the facilities compensates those who bear a ‘disproportional’ burden, increasing the perceived local benefits over local risks, making the facility favorable to the community (Peelle, 1980).

Distributive equity, justice and fairness, which are imbedded in the fundamentals of collaborative methods and negotiated compensation, insure that some zone of agreement is reached where the interests of both parties are addressed, and in part fulfilled. Social welfare theory, with the support of Rawls’ ‘Difference Principle’, where “social and economic inequalities are [to be] arranged so that they are both (a) to the greatest benefit of the least advantaged and (b) attached to offices and positions open to all under conditions of fair equality of opportunity” (Scanlon, 1973, p.1024), embodies an idea of fraternity amongst members of society in difficult times.

The whole notion of compensation deals greatly with what Rawls distinguished as his principles of justice. According to Rawls, these are principles which "provide a way of assigning rights and duties in the basic institutions of society and . . . define the appropriate distribution of the benefits and burdens of social cooperation (Scanlon, 1973, p.1021).

Rawls presents the following two principles as the principles of justice:

The first principle is that “each person is to have an equal right to the most extensive total system of basic liberties compatible with a similar system of liberty for all”; the second principle is that “social and economic inequalities are to be arranged so that they are both (a) to the greatest benefit of the least advantaged and (b) attached to offices and positions open to all under conditions of fair equality of opportunity” (Rawls cited in Scanlon, 1973, p.1024).

Therefore, we see here that Pareto’s notion of optimal distribution is not far fetched both ethically and socially. Such principles of justice, which are imbedded in the fundamentals of collaborative methods and negotiated compensation, insure that some zone of agreement is reached where the interests of both parties are addressed, and in part fulfilled. Pareto optimality with the support of Rawls’ principles embodies an idea of fraternity in society at difficult times. The second principle is what Rawls refers to as the ‘Difference Principle’, it suggests that “all social primary goods [such as] liberty and opportunity, income and wealth, and the bases of self-respect-are to be distributed equally unless an unequal distribution of any or all of these goods is to the advantage of the least favored” (Scanlon, 1973, p.1034). Scanlon’s (1973) paper argues, in the context of Rawls’ difference principle, that the “basic institutions of society [must] work as a cooperative enterprise in [so that] the citizens stand as equal partners” (p.1068).

The purpose of the collaborative approach is to overcome regressive outcomes that produce conflict. In the use of such a co-operative approach, and utilizing the principle of negotiated compensation to its full potential, communities and proponents can avoid conflict and civil disorder. Since theoretically it has been established that planning theory suggests this age to be on the forefront of collaborative planning (Healey, 1998), there is no actual evidence that this has been established. Although the inevitable outcome of siting hazardous facilities is that there will be an inequitable distribution of costs and benefits, compensation redistributes that balance in a cost effective manner. Earlier studies by Pushchak and Burton (1982) and Peelle

(1979), analyzed the cost of compensation of social impacts relative to the total costs of the project. Peelle (1979) suggests that the costs “are moderate, ranging from 0.29% to 0.31% of total costs” (p.72); therefore, suggesting that it is beneficial to the proponents, in saving time and conflict costs, to consider compensatory plans as an effective means of reducing the uncertainties and delays associated with community opposition.

2.5 Kuhn and Ballard’s Investigations

The central paper depicting the most recent successes in Canadian facility siting, was done by Kuhn and Ballard (1998). In their paper they focused on evaluating the Canadian process from a public participation perspective, “focusing on social and political concerns of potentially affected communities and on the process of decision making itself as fundamental to achieving siting success” (p.533). Agreeing with both Bingham (1986) and Armour (1992), Kuhn and Ballard (1998) enthusiastically believe that there is an evolution of the siting approach from top-down decision making to an “increasing decentralized and pluristic approach” (p.535). Through their analysis they conclude that the problem in facility siting is, rooted in notions of power, where community residents and local governments have been demanding increased control and influence over the selection of appropriate technology and the process used to decide if and where a facility should be sited (Kuhn and Ballard, 1998, p.535) .

As a result of traditional views and choices, in the eyes of Kuhn and Ballard (1998) the causes of community hostility are:

1. Inequitable distribution of risk.
2. Perception of risk.
3. Amplification of risk, impacts and stigmatization.

All of which combine to create the NIMBY reactions amongst host communities. They suggested that the main reasons for siting failures are a lack of community involvement due to the distaste people bear toward political components associated with decision making in the

facility siting process. It is their impression that NIMBY situations are a form of voiced opposition to the fundamentals of the siting process; they are an outcry against unfair decision making and ineffective public involvement. The questions to ask here is what is 'fair' and how do we distinguish if there is a 'fair and just' distribution of benefits amongst host communities? According to Rawls general conception of justice as fairness, no one is formally excluded from positions to which special benefits are attached and all individuals with similar inclination should have similar prospects of attaining benefits. To be more precise, for the purpose of our proposed thesis, fairness is in the eye of the individual(s) who bear the risk; it is fair if the community gets what they ask for.

Through public participation, Kuhn and Ballard (1998) believed that the collaborative approach eliminates the traditional "criteria based requirements for a hazardous facility to operate safely within strictly defined geological and biophysical constraints" (p.536), which leads to imposed decisions. It is suggested that the new wave of facility siting lies in the implementation of the open approach as a result of successes in North America, which are exemplified in Swan Hills and Montcalm. Kuhn and Ballard (1998) are critical in emphasizing that there is a need for comprehensive public involvement programs. Also the importance of power being granted to the community citizens is important in rebuilding trust and commitment with the proponents and the government. Kuhn and Ballard (1998), like Armour (1992) make certain it is understood that the collaborative approach does not ensure siting, but rather "it guards against foisting of a facility on a community that does not want it and that is able to mobilize and successfully ward off the siting attempt" (p.543).

When analyzed, the paper lacks an important distinction as to when the collaborative approach starts and when it is that the moral community participates. In such an enthusiastic perspective of the current successful state of the collaborative process in practice, the

fundamental principles lack the specificity under which they are interdependent on one another. Since Kuhn and Ballard's (1998) paper focuses on the aspect of public participation in decision making for successful siting, the undeniably important notion of negotiation has been foregone. Therefore, when asking whether such enthusiasms are truly justified, theoretical conclusions suggest they are not. It is a tendency amongst proponents to neglect the need for negotiation, and in particular more relevant to the purposes of this study, the negotiations of compensation. Public participation is not the only principle outlined by Armour's (1992) co-operative process; along with others, compensation can influence the benefit distribution, optimal and perceived risks associated with host communities.

The analysis of the Kuhn and Ballard (1998) paper reveals that in most recent cases, there is a lack of focus on the importance and need of compensation in making a voluntary siting process successful.

2.5.1 Failures and Successes in Facility Siting

Failure drives the search for alternatives. It is commonly cited throughout literature that the two main reasons for failure of siting facilities are either: the abandonment of proposals, or the opposition that does not get resolved in time. According to O'Hare (1983), there are "three ways the siting process can fail... (1) if any feature of the siting process decreases the efficiency of the process itself; (2) if it decreases the efficiency of the outcomes; and (3) if it decreases fairness or equity" (p.37). Kuhn and Ballard (1998) suggest that the main causes of failure in their investigations of the Cache Creek/Ashcroft waste management system (British Columbia) and the West Lincoln Ontario Waste Management Corporation (OWMC) (Ontario) cases was the use of technical rationality to justify and implement decisions, which eliminated the inclusion of public participation throughout the process. As a result of the technical rationality inherent in the top-down approach, sites compete, in a sense, as to which one is a loser and which one is a

winner. The negative incentives presented through such siting approaches create conflict, as no one wants to be deemed a loser in any way. When a process sites a facility in a community, based only on ensuring human safety through environmental safety and by attempting to find the best environmental site, according to Kuhn and Ballard (1998), the siting attempt leads to inevitable failure. O'Hare's (1983) paper further specifies that siting problems stem from several shortcomings associated with the process used:

The interests of certain people have been ignored; participants were ill informed; the wrong decision making criteria were employed; and previous efforts to improve the process have created unpredicted inefficiencies in the process (p.40).

O'Hare (1983) goes as far as to say that the existing defects in the facility siting process are a result of misunderstandings or oversimplifications of the interests of the parties involved.

What is most perplexing is the definition of successful facility siting. Kuhn and Ballard's (1998) study uses the examples of Swan Hills and Montcalm as successful and breakthrough applications of the innovative collaborative siting approach. They come to this conclusion because both examples include the principles of "decentralization of decision making authority" and full meaningful public involvement (Kuhn and Ballard, 1998, p.541). As noted by Bingham (1986), "the success of a dispute resolution process is measure[d] by each party according to how well its interests are achieved by the outcome" (p.66). This as well coincides with the definition of a 'fair' outcome outlined in Rawls' difference principle. It is important that the timing of not only negotiations but also public involvement, and compensatory incentives, are taken into consideration when evaluating whether a siting process is perceived as being successful. Corresponding with Armour (1992) and even earlier with Bingham's (1986) initial theoretical judgments, it is important that the individuals involved in the facility siting process, "identify their common interests and work together in solving problems [by]: clarifying values, sharing information, and building trust [to] reestablish[ing] the consensus on which public decisions can

be based” (p.67). Bingham (1986), like other scholars also suggests that the simplest measure of how successful a resolution process is depends on the time it takes to reach an agreement, and “reaching an agreement is a success when the parties themselves judge that the outcome is better than the most likely outcome when using some other strategy” (p.70).

The implementation of the agreement is therefore a test. What constitutes an agreement is still unclear, but the likelihood of success depends on whether the incentives are sufficient to create the opportunity for willing participation on both sides. This is why negotiation is so important it is an opportunity for deliberation over what will constitute an agreement between the opponents and the proponents. According to Bingham (1986), an “agreement must lead to action if the parties are to feel that the process has been completely successful” (p.120). The goal of negotiation therefore is to build social consensus, where the outcome results in the participants feeling better off with the agreement than if it did not exist. O’Hare (1983) proposes several conditions under which compensation, and overall incentives may be tried, such as (p.154-157):

- few parties to the dispute ;
- opponents must be geographically defined;
- opponents must be well organized;
- mutually acceptable outcomes must exist;
- also impacts are clearly traceable to the project;
- recreation of the status quo is possible;
- parties are capable of offering a binding commitment; and
- all in the absence of initial hostility.

It has therefore been theoretically stated that the facility siting process has evolved into a more voluntary, co-operative approach (Kuhn and Ballard, 1998; Huitema, 2006). The following research investigates and illustrates the role of compensation in facility siting. It will be clear that compensation is an integral part of resolving the facility siting dilemma. The research will also provide a clearer understanding of how compensation aids in conflict resolution when it is used in collaboration with Armour’s (1992) other principles.

3. METHODOLOGY

3.1 Research Design

The purpose of this study is to determine the use of compensation or reward as part of a co-operative approach to hazardous facility siting. The following study is based on a case analysis. The method used was partially a qualitative and quantitative examination of the cases found. A systematic search was performed which consisted of an examination of lists of environmental assessments, approval tribunals; as well as public and private sector proponents and stakeholders. The search was not a comprehensive site search and the projects found were not a definitive list for facility siting, as there may have been other collective siting agreements which have been unpublished and undiscovered that were not available for this study. The search was performed at both the Federal and Provincial level in Canada and North America, where the cases chosen required that the facility siting process involved some form of compensatory agreement.

The analysis was performed in two stages (Figure 1), case surveillance and identification and case analysis. Criteria were outlined for all stages of the study to illustrate the detailed investigations, direct setup and informed analysis of the cases found. The information on each of the cases used in the thesis was based on secondary source information.

In the first stage, lists of environmental assessments and host community agreements were found as a result of the systematic search performed. Once found they were examined according to the initial criteria where the projects were only those dealing with environmentally risky facilities which must have occurred after Kuhn and Ballard's (1998) investigations and where a documented compensatory/ reward agreement was struck after negotiations between the proponent and stakeholder. If these criteria were met then the case was eligible for further case analysis in the second stage. In the second stage, analysis of the compensatory agreements was performed to

establish the role of the agreements in each of the cases. This was done through a thorough investigation of each of the analysis criteria which targeted specific aspects of the facility siting process such as project type, scale of project, proponent type, length of time and degree of conflict.

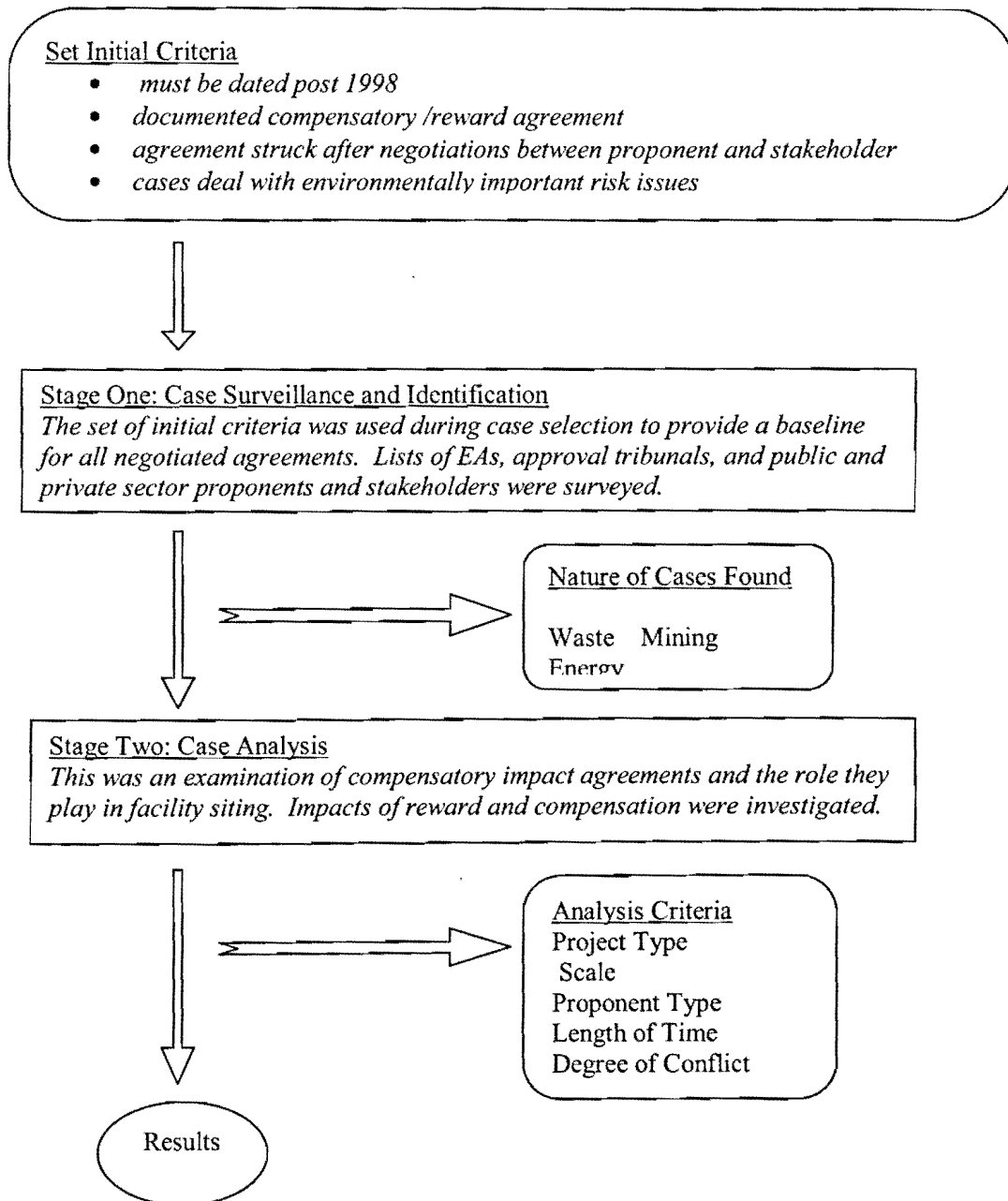


Figure 1. Diagram of the case analysis process taken in the study.

3.2 Case Surveillance and Identification

In the realm of proposals and approvals of environmental projects dealing with hazardous facilities, there is a large variation in the approaches taken to resolve siting conflicts. The parties involved range from well organized companies, government agencies, environmental groups, to local community associations. The power held by the parties varies throughout the different projects. The publicity of the dispute/conflict also varies cases by case, where in some case the parties publicly take well defined public positions on the issues, while in other cases there is only the recognition that a problem exists (Bingham, 1986). In this study a comprehensive site search was not performed in order to identify a definitive list of facility siting projects. As a result of the systematic search performed, the cases found were not representative lists of all cases as there were many siting agreements which were unpublished or undiscovered that were not included in this study.

Criteria selected for identifying cases to include in this study were based on literary findings in facility siting (Bingham, 1986; Peelle, 1979; Kuhn and Ballard, 1998, Huitema, 2006). The facility siting literature was used to investigate the theoretical conclusions as to the role of compensation. Any of the background information for the cases examined in this study was based on secondary sources which consisted of proponent project sites, government sites where applicable, and tracking all stakeholder documentation regarding the specific cases. These sites were used to identify project information pertaining to impacts, costs, benefits, conflicts, and mitigation measures for each of the cases used in this study.

3.2.1 Site Selection

From the beginning the study was intended to focus on environmentally specific issues, and therefore the search was performed to target specifically environmentally risky facility

projects. The systematic search consisted of an organized approach to finding environmentally risky facility siting cases.

This study examined lists of environmental assessments which dealt with, but were not limited to, First Nation lands/territories, navigational waters, landfill expansions, hydro power, wind energy, mining, and oil extraction. Such examinations helped in identifying some cases which involved a compensatory agreement and were further used in the cases analysis. As well these examinations helped in identifying environmental groups, stakeholders, and governmental sources involved in hazardous facility siting, which were then further investigated for information pertaining to hazardous facility siting projects.

The search then grew to consist of, but was not limited to the investigations of, approval tribunals such as The Environmental Review Tribunal, The National Energy Board, The Canadian Nuclear Safety Commission, The Canadian Environmental Assessment Agency, The Canadian Council of Ministers of the Environment, and The Canadian Energy Pipeline Association. These sources were examined for information regarding cases found and their involvement in associated hazardous facility siting projects. They were also used as sources for proponent and government specific documentation.

Public and private sector proponents and stakeholders were examined such as Atomic Energy of Canada Limited, Ontario Power Generation Inc., Low Level Radioactive Waste Management Office, AREVA Resources Canada Inc, CAMECO Corporation, New Brunswick Power, Bruce Power Inc., and Hydro Quebec. These sources were further investigated as part of the case analysis for information regarding cost, scale and length of project, as well as any information regarding the degree of conflict and conflict resolution.

Case surveillance and identification required a set of preliminary criteria, which were set out to specifically aid in case selection. This search resulted in the identification of twenty cases

that met all of the criteria below. Table 1 illustrates a general outline of these cases according to the nature of the hazardous facility projects found. The case studies revealed four different types of projects. Some cases which were involved in the extraction of non-renewable resources and the excavation of ore bodies were categorized under *Mining*. Facilities which were categorized under *Waste* pertained to the collection, treatment and disposal of different types of waste, hazardous and household. Facilities categorized under *Energy* pertained to renewable energy facilities including wind power, hydroelectricity, and even projects dealing with the pipeline transmission of energy over a selected distance. Finally, facilities categorized under *Gas* dealt with the transportation and storage of Liquefied Natural Gas (LNG) either through onshore or offshore pipelines.

The cases investigated were designed to advance the conclusions about the state of ‘voluntary’ siting made by Kuhn and Ballard (1998). Therefore, it was important that the cases for the study were post 1998. Along with this set of cases derived from the search process of environmentally hazardous facilities in this study, two major cases known to the theoretical framework of facility siting involving compensatory settlements were also included; these cases were Swan Hills and Montcalm. Not only are these cases part of the investigations made by Kuhn and Ballard (1998), but they are also both dated in nature (1987) upon which theoretical conclusions have been made.

The environmentally hazardous facility cases investigated in this study were set out to meet the following criteria:

1. Siting must have taken place after 1998.
2. The facility must have a documented compensatory/reward agreement.
3. A compensatory agreement results after negotiation was under-taken between the stakeholder and the proponent.

4. The cases were limited to those with environmental risks such as siting of power plants, municipal waste facilities and the like, which characteristically produce high levels of public opposition.

Selecting the cases by such criteria limits the scope of the investigation. The study only examined cases of compensation, focusing on the importance of proponents' understanding the gaps between risks and benefits associated with environmentally noxious facilities. The study is also limited in that it only focused on offers of compensation, and did not evaluate or discriminate between compensation and reward negotiations associated with siting processes. By examining cases with compensatory agreements, for the purpose of this study, the research omitted several facilities that have been sited successfully without documented agreements between proponents and communities. Other studies have focused on the success or failure of the siting process; however, this investigation was confined to cases where negotiations have resulted in a clear agreement.

Table 1. Cases found and the nature of each project.

| Waste | Mining | Energy | Gas |
|--|--|--|--|
| <ul style="list-style-type: none"> ▪ Crane Mountain Sanitary Landfill ▪ Port Hope, Port Granby LLRWM Longterm Project ▪ Kendall Landfill - Willowhill ▪ Navan Landfill Expansion | <ul style="list-style-type: none"> ▪ Diavik Diamond Project ▪ Caribou Project ▪ Fort Hills Oil Sands Project ▪ Snap Lake Mining Project ▪ Voisey's Bay Project ▪ Horizon Project ▪ Kemess North Copper Gold Mine Project ▪ Cheviot Coal Mine Project | <ul style="list-style-type: none"> ▪ Benton Windfarm Project ▪ Eastmain-1-A and Rupert Diversion Hydropower Project ▪ Bruce to Milton Transmission Reinforcement Project ▪ Bear Mountain Project | <ul style="list-style-type: none"> ▪ Emera Brunswick Pipeline Project ▪ Vancouver Island Generation Project ▪ GSX Canada Pipeline Project ▪ Deep Panuke Offshore Gas Project |

3.3 Case Analysis

In stage two, case analysis, compensatory impact agreements and the role they played in facility siting were examined. Consistent with the collaborative siting approach, impacts of reward and compensation were investigated. The objectives of performing this stage were as follows:

1. To articulate, in depth and detail, the factors that help to explain whether compensation has or has not been properly addressed in recent and current compensatory agreements.
2. To identify whether negotiations about compensation and reward are offered at a meaningful time and in any meaningful way, where meaningful is defined by criteria which include sincerity, honesty, and security, and which are direct in nature.
3. To specify the role compensatory agreements have played amongst other fundamental principles and, more importantly, if they are effectively used in resolving the conflict.
4. To compare current cases to Armour's (1992) model of facility siting.

In the analysis of the compensatory agreements, a set of criteria was established to help examine how practical the use of reward, in-kind, and other forms of compensation have been in these cases. The findings from such analysis provide fundamental, current, and partial examples of whether the collaborative approach to hazardous facility siting is effective. It was important that, in this stage, the agreements reached were done under conditions where the interests of the community/stakeholders were sufficient for social consensus to take place on the acceptance of the site.

The objectives of the parties involved in each of the case were identified through an examination of the host community agreements made. Also secondary sources pertaining to each of the cases was used in providing necessary information. The cases were then evaluated

on the basis of how well those objectives were met. Five criteria were used in the analysis of the cases found (Table 2).

Table 2. Definition of analytical criteria used in the examination of case studies.

| Criteria | Definition |
|--------------------|---|
| Project Type | Nature of the projects found specific to each environmental case in this study (i.e. Energy, Mining, Waste, Gas) |
| Scale | Size and proportion of facility on a geographic scale as stated by the proponent |
| Proponent Type | Differentiation between public, private, crown corporations and governmental/private bodies entered into the negotiated agreements |
| Length of Time | Time taken from the date of proponent's proposal of project to the signing date of the compensation agreement with stakeholders |
| Degree of Conflict | Used to establish the complication and severity of each case situation regarding the siting of the facility proposed. Taken into consideration were aspects of the case conflict such as the existence of self organized groups, any forms of initiated actions against the project and the hiring of some form of assistance (i.e. lawyer or other). The greater the involvement of such bodies the greater the conflict and vice versa. |

Project type consisted of categorizing the cases into generalized environmental groups specific to what each case dealt with. There were four categories identified: energy, mining, waste, and gas. The *scale* criterion specifically dealt with the size and proportion of the facility on a geographic scale. The scales of the projects were identified by the proponents one either the project site or in the environmental assessment performed. The scales given in the documents differed amongst the cases found, therefore, in order to illustrate a consistent measurement in a table the scales given were converted to hectares (ha) and kilometers squared (km²) where needed, while the length (km) and number of turbines were left as stated by the proponents. The scale of the project was used to assess the impact and risk associated with the facility focused on in each case. The *proponent type* was critical in the characterization of each case. This consisted of differentiating between public, private, crown corporations, and government/private bodies which were a part of the agreements and initiation of the facility siting proposals. *Length of time* was used as a criterion in this study to help evaluate the time

taken by the proponent and stakeholders to come to a formal documented agreement. This length of time was measured from the date a proposal for a hazardous facility was made, to the signing date of the agreement itself. Finally the *degree of conflict* was used to establish the severity and complication of each case situation regarding the siting of the facility. In order to estimate this value, several observations were used to help define the degree to which the conflicts existed. Such observations included the existence of self-organized group/groups, any forms of initiated actions against the project, the involvement of other organizations, and the hiring of some form of assistance, lawyers or other. A case was deemed a high conflict case when a large number of self-organized group/groups became involved, some form of initiated actions against the project were made and were brought forward in media through highly publicized public oppositions, and some form of assistance was hired whether it be legal or non-governmental.

3.3.1 Cost Estimate Analysis

The ‘cost estimate’ analysis for this study was performed to aid in the evaluation of fears that the cost of compensation to proponents is potentially very high. This analysis was also set out to investigate the estimated percentage of compensation costs when compared to the estimated capital cost of the projects themselves.

Where available, two main sets of costs were investigated, estimated capital cost and compensation expended, both of which were representative of current dollar amounts. The estimated capital costs associated with each of the case studies, for majority of the projects, were available through stakeholder information or were a part of the initial environmental assessments performed by the proponents. The compensation expended also included the aspect of on-going costs, which were as well provided in the compensatory documentation regarding the community agreements. Unlike direct costs, which are given in a lump sum at the start of the projects, these

costs were forms of compensation that were agreed upon during negotiations on a yearly basis for a set number of years. In some cases such as Crane Mountain Sanitary Landfill and the Horizon project, it was not clearly indicated what length of time the on-going costs would persist for. A simple percentile calculation as follows was use to find the estimated costs for those projects where it was applicable:

$$\text{Compensation Expended} \div \text{Estimated Capital Cost} \times 100 = \text{Estimated Cost (\%)}$$

There were nine cases, such as the Kendall Willowhill Landfill and Benton Windfarm project, which had no available information regarding the estimated capital cost or the compensation expended. Although these cases were not part of the cost analysis regarding estimated capital cost, they were included in the study as they met other necessary criteria such as proponent identification, scale of project, length of time, as well as they were used in the conflict analysis.

The second set of costs investigated was associated with the amount of compensation expended by the proponent for the purpose of the project. This cost was set out to aid with identifying the percent of compensation allocated to the community by the proponent when compared to the initial capital cost of the facility itself. Such data show how high or how low the real burden of compensatory costs is on proponents when entering into community or socio-economic agreements.

When defining compensation expenses, the following costs were included in the calculation; direct purchases of lands, direct payments to communities/committees, ecosystem replacement, funding of citizen groups, tipping fees, and foregone money. The compensatory costs are direct payments to communities for off setting benefits. What was not included in the compensation costs was contributions to company committees, employment and unspent liabilities, such as property protection and security insurance.

Expenses such as direct purchases/payments of lands or ecosystem replacement, funding for citizen groups, tipping fees, and foregone money were considered a part of compensation costs expended by the proponents. Eleven out of the twenty cases had all required information to make up data for this part of the cost estimate analysis. The nine case studies which did not were removed and not used only during this part of the analysis.

3.4 Definition of Terms

Although attempts have been made to develop a conceptual framework that clearly distinguishes different environmental siting approaches, no accepted framework has yet been generally accepted. Although this report does not attempt to resolve the problem of definitions; however, for the purpose of clarity within the paper the following terms were interpreted to be defined.

There are many terms used in different approaches. The term *Community* throughout this study refers to a group of people living together that are affected by the impacts of a sited facility. *Success*, for the purpose of this study, refers to reaching an agreement where the parties themselves judge that the outcome is better than the most likely outcome using some other strategy. The term *conflict resolution* is used in this report to refer collectively to a variety of approaches that allow the parties to meet in an effort to reach a “mutually acceptable resolution of the issues in a dispute or potentially controversial situation” (Bingham, 1986, p.70). *Negotiation* is used in this report to refer to direct interactions among the parties for the purpose of reaching an agreement. *Mediation* is the assistance of a neutral “third party” to a negotiation. A *compensatory agreement* refers to a signed document detailing negotiated forms of compensation or reward agreed upon by the proponent and stakeholders while outlining the accountability of each party in the agreement.

4. RESULTS

4.1 Proponent Identification

Proponent identification was used in this study as one of the analysis criteria to better understand the political project structure behind each of the cases examined and to categorize the projects in this study according to the type of proponents encountered during facility siting. The objective was to evaluate whether the facility siting process differed based on the type of proponent involved in the approach.

In this study there were three types of proponents identified in the case investigated, public sector proponents, private sector proponents, and crown corporations (Table 3). Public sector proponents included provincial ministries and agencies, such as the Ministry of Natural Resources or the British Columbia Hydro and Power Authority; municipalities, such as regional municipalities, counties, cities, towns; and public bodies, defined by regulation such as Conservation Authorities (MOE, 2009). Public sector projects often include public roads and highways, transit facilities, waste management facilities, water and wastewater works, and flood protection works (MOE, 2009). They are most often large scale infrastructure projects as indicated in Table 3. Private sector proponents include: private companies such as waste management companies, commercial energy providers; individuals; and non-government organizations (MOE, 2009). Crown corporations are wholly owned federal or provincial/state organizations, structured like private or independent enterprises. Crown corporations generally enjoy greater freedom from direct political control than government departments. They can be involved in everything from the distribution, use, and price of certain goods and services, to energy development, resource extraction, public transportation, cultural promotion, and property management.

Table 3. Proponent identification related to scale of project and the degree of conflict encountered.

| Project | Proponent | Sector | Size/Scale (Approximate) | Degree of Conflict |
|--|---|-------------|---|--------------------|
| Crane Mountain Sanitary Landfill | The Regional Solid Waste Commission | Public | 160 ha | High |
| Port Hope Port Granby | The Low-Level Radioactive Waste Management Office (LLRWMO) | Public | 91.2 km ² | High |
| Kendall Landfill-Willowhill | Lisbon Development Limited Liability Company (LLC) | Private | 291.4 ha | High |
| Navan Landfill Expansion | Waste Services Inc. (WSI) | Private | 8.5 ha | Low |
| Diavik Diamond Project | Diavik Diamond Mine Inc. <i>Harry Winston Diamond Mines</i> | Private | 20 km ² | Low |
| Caribou Project | AREVA Resources Canada Inc. <i>Denison Mine Corporation OURD (Canada) Company Ltd.</i> | Public | 80 ha | Low |
| Fort Hills Oil Sands Project | Fort Hills Energy L.P (FHELP) | Crown Corp. | 18,700 ha | High |
| Snap Lake Mining Project | De Beers Canada | Private | <500 ha | Low |
| Voisey's Bay Project | Voisey's Bay Nickel Company Ltd. <i>Inco Ltd.</i> | Crown Corp. | 47.5 ha | High |
| Horizon Project | Canadian Natural Resources Ltd. (CNRL) | Crown Corp. | 46540.5 ha | High |
| Kemess North Copper Gold Mine Project | Northgate Minerals Corporation | Private | 31161.9 ha | High |
| Cheviot Coal Mine Project | Cardinal River Coals Ltd. | Private | 7455 ha | High |
| Benton Windfarm Project | Empire State Wind Energy, LLC | Private | 25 turbines | Low |
| Eastmain-1-A and Rupert Diversion Hydropower Project | Hydro-Quebec Production | Crown Corp. | forbay (228.7 km ²) tailbay (117.5 km ²) | Low |
| Bruce to Milton Transmission Reinforcement Project | Hydro One Networks Inc. | Crown Corp. | 180 km long | High |
| Bear Mountain Project | Bear Mountain Wind Ltd. Partnership <i>Peace Energy Cooperative Aeolis Wind Power Corporation AltaGas Income Trust</i> | Private | 57 turbines | Low |
| Emera Brunswick Pipeline Project | Emera Brunswick Pipeline Company Ltd. (EBPC) | Private | 145 km long | High |
| Vancouver Island Generation Project | Vancouver Island Energy Corporation (VIEC) | Crown Corp. | 4.1 ha | Low |
| GSX Canada Pipeline Project | British Columbia Hydro and Power Authority <i>Williams Gas Pipeline Company</i> | Public | 60 km long | High |
| Deep Panuke Offshore Gas Project | EnCana Corporation | Crown Corp. | 176 km long | Low |

In this study the cases examined revealed (Appendix A) that the amount of opposition encountered in the siting of the facilities was not related to the identified orientation of the project proponents. This is further confirmed in Table 3, where the distribution between high and low conflict cases is even and not specific to any public, private or crown corporation enterprise.

Based on these cases both public sector proponents and crown corporation enterprises followed a more collaborative approach to siting the facilities, such as the Crane Mountain Sanitary Landfill, Port Hope and Port Granby, as well as Eastmain-1-A and Rupert Diversion Hydropower projects, where upfront direct payments to the communities and to local funds or on-going educational and enhancement funding to community incorporated the principle of compensation as part of the siting process. Although the use of all five of Armour's (1992) principles was not observed in any of the twenty cases studied, each of the cases separately focused on at least one principle of the collaborative model.

It was apparent that a greater effort was placed not only on public involvement, but in cases as The Diavik Diamonds Mine project where the focus was placed on creating well rounded and responsible committees for public use and incite during the decision making processes; and in the case of the Emeira Brunswick Pipeline, the commitment to a sensible and sound environmental path for the pipeline that would not compromise environmental safety of the surrounding communities was a priority in siting the project.

Private sector projects, for example Kendall Willowhill Landfill, Diavik Diamond Mine, Bear Mountain Windfarm, and the Brunswick Pipeline (Table 3), when engaged in negotiations, started off in their siting approach with very broad commitments and very basic fundamental

initiatives. When conflict or opposition arose, they became more flexible as to what they focused on and how they continued to approach the siting process. The approach taken by the private sector proponents, more often than not, incorporated both traditional siting aspects and some collaborative siting principles.

In this study, Kendall County Willowhill landfill and Kemess North Copper Mine for example, revealed that private sector projects were susceptible to proponent withdrawal from the facility siting process and to siting failure. The reason for this could be the fact that some aspects of the facility siting approach were very traditional in nature. In the case of Kendall County Willowhill landfill Lisbon Development Ltd proposed to site the facility in the area based on environmental screenings illustrating that it was a feasible area to site, regardless of the other two landfills already in the community. There was not public involvement at the beginning of the process; rather it was not until the site was chosen that public consultations began.

Although an approach incorporates public involvement and community incentives, in some cases that is not enough to make it a voluntary siting approach. In the cases studied, examples such as the Brunswick Pipeline Project, Diavik Diamond Mine, the Cheviot Coal Mine, and the Deep Panuke Offshore Gas projects, reveal projects where a voluntary siting approach is not used, rather the sites for the hazardous facilities were traditionally chosen prior to any form of negotiation. In cases such as the Brunswick Pipeline and the Deep Panuke Offshore Gas projects, a route was mapped out as it 'best fit' the pipeline plans. Observed in the assessments of both cases, environmental conditions lead the siting process before any form of public consultation and public involvement in decision making was offered. In the cases of the Diavik Diamond Mine and the Cheviot Coal Mine, the mining pits were pre-planned as a result of the local availability of the resource and the rights to the lands. The proponents in each of

these cases, although committed to public awareness, limited the involvement of the decision making process for the members of the surrounding communities and therefore were more susceptible to experience siting failure.

4.2 Project Type

The cases in this study were segregated according to the nature of the projects found. The four facility project types were described as shown in Table 4. Of the twenty cases; four were waste; eight were mining; four were energy; and four were gas related. It was apparent that mining projects were the most commonly found in the search.

Table 4. Descriptions of facility types.

| Facility Type | Project Description |
|----------------------|---|
| Waste | These projects pertain to waste management facilities which are used to control the collection, treatment and disposal of different wastes. The different types of facilities deal with many waste types, including municipal solid waste, commercial waste, and hazardous waste. |
| Mining | These projects involve the extraction of any non-renewable resource, usually from an ore body, vein or (coal) seam. The materials recovered can include base metals, precious metals, iron, uranium, coal, diamonds, petroleum, and/or natural gas. |
| Energy | These projects pertain to renewable energy facilities. Such facilities use energy generated from natural resources—such as sunlight, wind, and/or water, which are naturally replenished to create new forms of energy. Some projects within this category may also pertain to the transmission of power. Hydroelectricity and wind power are the largest renewable source projects being proposed. |
| Gas | These projects deal with the transportation and storage of LNG. Such projects include pipelines and/or underground storage reservoirs. |

It has been theoretically suggested that the progression of hazardous facility siting has moved forward successfully as a result of co-operative siting initiatives in North America. According to Kuhn and Ballard (1998) and Huitema (2006), there is an expected progression into more open, voluntary siting approaches. This would suggest that there would be more documentation available to the public, yet the successful facility siting projects found in this study search were limited in number.

In the realm of the search performed for this study, a small number of cases were available. This resulted in only twenty cases found which met the criteria set out for this study. Such results were the outcome of unpublished agreements, undiscovered project documentation, and the inconsistent sourcing of available information regarding facility siting project requirements. The exact number of cases in North America is unknown because of such circumstances even though one can infer from medial coverage and the number of proposals that the number of siting cases is high, therefore twenty cases when compared to this unknown number is rather small in comparison. The limitations set out by the study in the research design also inhibited the number of cases that would be found.

4.3 Scale of Project

The scale of the projects, as seen in Table 5, was investigated to better understand the impact and significance of the size of the hazardous facility on both the community and the community agreements negotiated. For the purpose of the study the scale of the projects was not metrically defined, rather subjectively were classified based on the amount of land covered and the amount of capital cost estimated. These subjective reasons for scale judgments are associated with the environmental impacts which assist land cover, as well as the proportion of space taken by the facility and its implications on balance within the community itself. The estimated capital cost of the facility also relates to the idea that the larger the amount invested in a project the greater the scale of the project.

Table 5. Scale of projects related to estimated capital cost and degree of conflict encountered.

| Project | Size (Approximate) | Scale | Estimated Capital Cost | Degree of Conflict |
|--|---|--------------|-------------------------------|---------------------------|
| Crane Mountain Sanitary Landfill | 160 ha | Large | \$654,000 | High |
| Port Hope & Port Granby LLRWM Project | 91.2 km ² | Large | \$260 million | High |
| Kendall Landfill – Willowhill | 291.4 ha | Large | n/a | High |
| Navan Landfill Expansion | 8.5 ha | Small | \$5 million | Low |
| Diavik Diamond Project | 20 km ² | Small | \$1.3 billion | Low |
| Caribou Project | 80 ha | Small | \$60 million | Low |
| Fort Hills Oil Sands Project | 18,700 ha | Large | \$14.1 billion | High |
| Snap Lake Mining Project | <500 ha | Large | \$975 million | Low |
| Voisey's Bay Project | 47.5 ha | Small | \$710 million | High |
| Horizon Project | 46540.5 ha | Large | \$8 billion | High |
| Kemess North Copper Gold Mine Project | 31161.9 ha | Large | \$330 million | High |
| Cheviot Coal Mine Project | 7455 ha | Large | \$50 million | High |
| Benton Windfarm Project | 25 turbines | Small | n/a | Low |
| Eastmain-1-A and Rupert Diversion Hydropower Project | forbay (228.7 km ²) tailbay (117.5 km ²) | Large | \$4 billion | Low |
| Bruce to Milton Transmission Reinforcement Project | 180 km long | Large | \$635 million | High |
| Bear Mountain Project | 57 turbines | Large | \$240 million | Low |
| Emera Brunswick Pipeline Project | 145 km long | Large | \$350 million | High |
| Vancouver Island Generation Project | 4.1 ha | Small | \$370 million | Low |
| GSX Canada Pipeline Project | 60 km long | Small | \$139.3 million | High |
| Deep Panuke Offshore Gas Project | 176 km long | Large | \$700 million | Low |

n/a –Projects which did not have information available pertaining to estimated capital costs

Based on the cases studied, thirteen of the twenty projects investigated were large scale hazardous facilities. The results in Table 5 suggest that of the thirteen cases defined as large scale facilities, nine were associated with a high degree of conflict.

The investigations of the cases in this study reveal that the larger the facility, the greater the associated perceived risk and therefore a higher level of conflict associated with the project. For example, this was observed in the case of the Cheviot Coal Mine, where at 7455 ha in size, major issues brought forward by the local and surrounding communities were; community health, concerns over reserve lands; adverse effects on aboriginal community philosophies and on the environment; land loss and degradation due to the sheer size of the project; and adverse effects to traditions including hunting grounds and medicinal use of local plants. In another

example, the Emera Brunswick Pipeline project, 145 km long, the affected public was concerned with the preservation of Rockwood Park; species protection; disturbance to aboriginal hunting ground and general concern over sacred lands; agricultural impacts; and disturbance to heritage resources. As seen from these two cases, the public associates destruction, loss, and adverse effects to human health and impacts on socially important aspects of the land such as traditional hunting and heritage with large scale facilities. Large scale hazardous facilities in this study also experienced a greater level of conflict during the preliminary stages of the siting process (Appendix A).

Small scale projects, such as the Navan Landfill Expansion (8.5 ha) and Benton Windfarm Project (25 turbines), revealed that the major concerns lay with Odor; noise; visual impacts; property value; and road/ traffic concerns, revealing a lower level of conflict and equally better results in resolving the conflict than larger scale projects such as the Kemess North Cooper Gold Mine Project, where the proponents withdrew from the siting process once the opposition peaked to revise their approach. Therefore, according to the results in this study, observations indicate that the scale of the hazardous facilities frequently has an impact on the degree of conflict presented by the public during the siting process.

The scale of the facility also had an impact on the amount of risk taken by surrounding communities when agreeing to host the project. As discussed earlier, the risks perceived regarding large scale facilities were greater than those risks associated with small scale facilities. It is therefore important that large scale projects pay adequate attention to transparency, trust, fairness, and meaningful compensation during negotiations to minimize the conflict and to successfully site the facility. Something which may aid in minimizing perceived risks would be the public education of the risks associated with the large scale hazardous facilities, creating positive public dialogue during siting decision making.

4.4 Capital Cost and Compensation Expended

The cost estimate analysis in this study was performed to investigation through a comparison of available estimated capital cost and expended compensation, whether compensation is a burden on proponents or is it a relatively small portion of the estimated capital cost perhaps an incentive to the proponents to continue with negotiations.

Negotiated compensation, whether direct or indirect in nature, manifest themselves in community agreements and socio-economic agreements along side hazardous facility siting projects. Most, if not all agreements, have some form of compensatory stipulation so as to help alleviate cost-benefit distribution inequities experienced by the host communities. In the initial planning stages of hazardous facility proposals, capital costs are estimated based on an array of factors mainly dealing with the possible expenses associated with the type of facility and the size of project proposed. Earlier studies have suggested that compensation has been thought of by proponents as a large expense (Peelle, 1979; Pushchak and Burton, 1982).

For several cases indirect costs to the proponent, in the form of employment agreements, channeled millions of dollars into the communities. As seen in Table 6, the indirect costs are large sums of reward directed to the host communities that are independent of any negotiated compensations in the host community agreement. These monies are associated with expenses that would have been spent to hire needed employees, provide adequate training knowledge, and even secure property values. Therefore when looking at both Table 6 and Table 7, one can observe that the combination of indirect and direct compensation and reward provided, in some cases, is substantial enough to offset the risks associated with the facilities and present more equitable cost-benefit distributions.

Table 6. Indirect costs allocated by proponents to communities during negotiations.

| Case | Indirect Costs (CAN) |
|---|---|
| Port Hope Port Granby | Property Value Protection Program-\$57, 624 ¹ |
| Diavik Diamond Project | Provision of environmental security-\$180 million ² Northern Aboriginal businesses-\$974 million ³ |
| Snap Lake Mining Project | NWT businesses-\$526,010,750 ⁴ Aboriginal training-\$40 million ⁵ |
| Kemess North Copper Gold Mine Project | Aboriginal employment-\$>50 million ⁶ |
| Cheviot Coal Mine Project | Employment-\$31.2 million ⁷ |
| Kendall Landfill - Willowhill | County reimbursement-\$100,000 ⁸ Tax appeal-\$75,000 ⁹ |
| Brunswick Pipeline Project | Private sector energy investments-\$1 billion ¹⁰ |
| Eastmain-1-A and Rupert Diversion Project | Cree businesses-\$240 million ¹¹ |

¹ LLRWMO, 2001; ²Government of the Northwest Territories, 2000; ³Government of the Northwest Territories, 1999; ⁴Government of the Northwest Territories, 2004; ⁵DeBeers Canada, 2005; ⁶Northgate Minerals Corporation, 2005; ⁷Alberta Energy and Utilities Board, 2000; ^{8,9}Lisbon Development, 2007; ¹⁰National Energy Board, 2007; ¹¹Grand Council of the Crees, 2002.

The results in Table 7 illustrate that the estimated cost of compensation expended, on the part of the proponent, when compared to the estimated capital cost of the facilities ranges from as low as 0.004% to as high as 15.4% of the total cost. On-going costs were also identified for cases such as Crane Mountain Sanitary Landfill, Horizon Project, and the Kemess North Copper Gold Mine project. In the community agreements negotiated for these cases, no direct payments were solidified; rather yearly contributions were formalized between the proponent and stakeholders. With the estimated revenues received by these projects on a yearly basis, one can interpret that the on-going costs will seem relatively small in comparison. Kemess North Copper Gold Mine project was the only case specifying the number of years for which it would continue its on-going payments, the other cases did not reveal the length of time agreed upon for the on-going costs.

Also seen in Table 7, the Port Hope and Port Granby case has shown to be an outlier amongst all the cases investigated in this study. The case is unique in that unlike the others, it has endured the most historical chemical contamination. High demands have been voiced by the public regarding the project, and because of how unique the case is an upfront large sum direct

payment to each community involved was issued, resulting in high compensatory cost when compared to the estimated capital cost.

Although the on-going costs and the unique case of Port Hope and Port Granby are taken into consideration, estimated costs of Eastmain-1-A and Rupert Diversion Hydropower project (1.09%), Voisey's Bay (1.41%), and Navan Landfill expansion (4.70%) indicate that individuals have increased their knowledge of what they must ask for in order to balance the costs and benefits in their communities. This is a natural social progression, and when looking at Table 7 the estimated compensatory costs are still relatively small when compared to estimated capital cost. Not all the cases may exemplify the theoretically quoted 0.29% to 0.31% of total costs (Peele, 1979; Pushchak and Burton, 1982), but in some cases in this study the estimated costs are much lower.

It is clear that compensatory agreements, initiatives/rewards presented and committed to by the proponents are relatively small when compared to the estimated capital costs of the projects, except in the case of Port Hope and Port Granby, where historical contamination and frustration with facilities has demanded higher compensatory measures. The nature of compensation agreements has evolved and not only includes direct rewards, but as well takes indirect costs and ongoing community investments into consideration. This makes the negotiation process seem more flexible and adjustable to any kind of facility sited and any type of community dealt with. Based on the cases in this study and the limited number of agreements found, the amount of direct compensation factored into the negotiations is relatively small. Most of the compensation packages presented to the host communities pertain to education funds, training for employment purposes, and some monetary incentives for agreeing to take on the projects.

Table 7. A comparison of initial cost and compensation expended for projects where information was available.

| Project | Estimated Capital Cost (CAN) | Compensation Expended (Approximated) | On Going Cost | Estimated Cost (%) |
|--|-------------------------------------|--|----------------------|---------------------------|
| Crane Mountain Sanitary Landfill | \$654,000 ¹ | Host Community School Funding-\$600max/school/yr Host Community Enhancement Fund-\$75,000/year Total= \$75,600² | \$75,600 per year | |
| Port Hope Port Granby | \$260 million ³ | Town of Port Hope Fund-\$10 million Town of Hope Fund-\$10 million Clarington Fund-\$10 million Long-term maintenance and monitoring-\$10 million Total=\$40 million⁴ | | 15.4% |
| Navan Landfill Expansion | \$5 million ⁵ | Waste diversion activities and initiatives (\$1/tonnes/yr)- \$234,750 Total=\$234,750⁶ | | 4.70% |
| Diavik Diamond Project | \$1.3 billion ⁷ | Funding to Advisory Board for each of the first two years after establishment is \$600,000=\$1.2 million Total=\$1.2 million⁸ | | 0.09% |
| Snap Lake Mining Project | \$975 million ⁹ | Kimberlite Career and Technical Center-\$500,000 Expansion of Center-\$100,000 Social investments-\$384,224 Educational books (over 5 yrs)-\$300,000 Festivals-\$15,000 Training equipment-\$122,000 Training programs-\$75,000 Total=\$1,496,224¹⁰ | | 0.15% |
| Voisey's Bay Project | \$710 million ¹¹ | Inco Innovation Center-\$10 million Total=\$10 million¹² | | 1.41% |
| Horizon Project | \$8 billion ¹³ | Building Futures Training and Education Program-\$100,000/year Total=\$100,000¹⁴ | \$100,000 per year | |
| Kemess North Copper Gold Mine Project | \$330 million ¹⁵ | Aboriginal support-\$1 million/year for life of project (11 yrs)-\$11 million Total=\$11 million¹⁶ | \$1 Million per year | |
| Eastmain-1-A and Rupert Diversion Hydropower Project | \$4 billion ¹⁷ | Funds total in-\$43.65 million Total=\$43.65 million¹⁸ | | 1.09% |
| Bruce to Milton Transmission Reinforcement Project | \$635 million ¹⁹ | Land Acquisition Compensation-\$20,000/property owner Total=\$20,000²⁰ | | 0.0031% |
| Deep Panuke Offshore Gas Project | \$234 million ²¹ | Education-\$10,000 Total=\$10,000²² | | 0.004% |

¹Gallagher Associates and G. Fred Lee and Associates, 1997; ²CMEI, 2007; ³LLRWMO, 2000; ⁴LLRWMO, 2001;

^{5,6}Golder Associates, 2007; ⁷DDMI, 2005; ⁸Government of the Northwest Territories, 2000; ^{9,10}DeBeers Canada, 2006; ^{11,12}Government of Newfoundland and Labrador, 2009; ^{13,14}Canadian Natural Resources Limited, 2009; ¹⁵

¹⁶Government of Canada, 2007; ¹⁷Government of Quebec, 2006; ¹⁸Grand Council of the Crees, 2002; ¹⁹Hydro-One, 2008²⁰Hydro-One, 2008b; ^{21,22}EnCana, 2006.

4.5 Length of Time

The time criterion was used in the study to clarify the length of time it takes for community agreements to become finalized from the date they are proposed. The specific content of community agreements varies but typically they include “provisions governing royalties and/or profit-sharing, employment, wider economic development opportunities, and enhanced protection of environmental and socio-cultural amenities” (Galbraith *et al.*, 2007, pg. 28). Two types of agreements were most common in the cases investigated in this study, environmental community agreements and socio-economic agreements. Environmental community agreements were largely private agreements which served as documentations of the benefits that a local community could have expected from the development of a local environmentally hazardous facility in exchange for its support and cooperation. They primarily focused on environmental mitigation, monitoring, and follow up. The socio-economic agreements in the study focused more on ensuring benefits and supporting broader economic developments.

These agreements are set out to compensate for the inequities and failings of the siting process, and offer compensation to offset the unequal distribution of risks and benefits (Cutter, 1995). The time it takes for proponent and stakeholder negotiations to result in this type of agreement is important in understanding whether they are offered at a meaningful time and in a meaningful way during the co-operative approach. The agreements seem to be a response to several deficiencies in the facility siting approach such as: inadequate follow-up to enforce decisions made during the siting process; lack of trust felt by the stakeholders; and failure “to maximize and ensure equitable distribution of the benefits associated with natural-resource developments that are necessary to ensure lasting positive outcomes” (Galbraith *et al.*, 2007, pg. 36).

Illustrated in Table 8, the length of time between the date of the project proposal and the date of the finalized community agreement is evenly distributed. Ten out of the twenty cases reveal a time frame between four to eight years, while the other ten cases indicate the finalization of the agreements within the first three years.

Table 8. Number of years taken between project proposal and the date of agreement.

| Project | Proposal Date | Agreement Date | Total Time (Years) |
|--|------------------------------|-----------------------|---------------------------|
| Crane Mountain Sanitary Landfill | December 1993 | December 7, 1999 | 6 |
| Port Hope Port Granby | 1997 | March 29, 2001 | 4 |
| Kendall Landfill - Willowhill | 2005 | April 17, 2007 | 2 |
| Navan Landfill Expansion | December 2005 | April 25, 2007 | 2 |
| Diavik Diamond Project | March 1992 | March 8, 2000 | 8 |
| Caribou Project | March 2002 | August 2008 | 6 |
| Fort Hills Oil Sands Project | December 2000 | December 2006 | 6 |
| Snap Lake Mining Project | September 2000 | May 10, 2005 | 5 |
| Voisey's Bay Project | 1996 | September 30, 2002 | 6 |
| Horizon Project | June 2002 | August 18, 2003 | 1 |
| Kemess North Copper Gold Mine Project | June 2004 | September 17, 2007 | 3 |
| Cheviot Coal Mine Project | March 1996 | October 7, 2003 | 7 |
| Benton Windfarm Project | 2006 | October 15, 2007 | 1 |
| Eastmain-1-A and Rupert Diversion Hydropower Project | 1997 | February 7, 2002 | 5 |
| Bruce to Milton Transmission Reinforcement Project | March 2007 | April 2008 | 1 |
| Bear Mountain Project | October 2005 | July 13, 2007 | 2 |
| Emera Brunswick Pipeline Project | May 2006 | February 8, 2007 | 1 |
| Vancouver Island Generation Project | January 2002 | November 7, 2003 | 1 |
| GSX Canada Pipeline Project | March 7 th , 2000 | August 15, 2001 | 1 |
| Deep Panuke Offshore Gas Project | February 2000 | November 2006 | 6 |

Factors which have been observed to contribute to lengthier agreement negotiations are associated with the scale of the proposed projects. Of the ten cases in this study where the agreements were finalized within four to eight years, only three cases revealed to be small scale facilities; Diavik Diamond Mine, Caribou project, and Voisey's Bay project. The other seven cases were associated with large scale facilities. Large scale facilities such as the Snap Lake Mine, discovered in 2000 did not finalize the approval for its environmental assessment till 2003;

requiring more time for the EA process to be performed and reviewed, as well as the associated impact assessments which were performed added substantially to the length of time it took for an agreement to be made.

However, agreements made within three years or less had a shorter time frame within which the agreements were struck as a result of three observed factors. The first was that the project itself was a part of several smaller projects associated with a larger multi-project siting initiative. This was the case, for example, for the Fort Hills project as it is a sub-proposition to an already existing oil sands initiative in Alberta. Most of the sands of Canada are located in three major deposits in northern Alberta. These are the Athabasca-Wabiskaw oil sands of north northeastern Alberta, the Cold Lake deposits of east northeastern Alberta, and the Peace River deposits of northwestern Alberta. Along side the Fort Hills project, other projects such as Horizon have followed the process for approval.

The second factor that shortens the time frame in which agreement settlement is reached deals with the possibility that the proposed project was an expansion of an already existing project previously approved; such as in the case of the Navan Landfill. The project site started operations in 1960 when its initial proposal for a landfill in the area was approved. It is owned and operated by WSI under Provisional Certificate of Approval No. A460702 issued by the Ontario Ministry of the Environment (Golder Associates Ltd., 2007). The purpose for the undertaking and the rationale for the expansion of the landfill were documented in the approved 2006 Terms of Reference and supporting documents. The analysis presented in the ToR clearly illustrated that the Navan Landfill was an essential part of the City of Ottawa's waste management system. Discontinuation of the operations at the Navan Landfill in 2011 would have result in a significantly reduced waste disposal capacity for businesses in the City of Ottawa and surrounding areas. The approval of a proposed expansion took less time than the original siting of the facility in the mid 1950s.

The third and last reason for a shortened time frame within which an agreement is settled results from the proponent's initial intention during the siting process and negotiations to come to a benefit impact agreement at the beginning of the project initiative. This can be seen in the case of the Bruce to Milton Transmission Project. The proposed transmission right of way (ROW) is adjacent to the existing 500kV corridor from Bruce to Milton. It crosses approximately 350 properties where typically easements would be required but in case where a house or permanent residence would be located within the new proposed ROW then a property purchase would be required (Hydro One, 2008). To lessen the opposition posed by the residents, it was with the discretion of Hydro One that the communities involved were presented at the start of the siting process with a set of land acquisition and compensation principles outlining the regulations and intentions, which formed an agreement to achieve voluntary property settlements through a fair, consistent and transparent process (Hydro One, 2008).

Based on the cases in this study, the average length of time it takes for an agreement to be negotiated from the time of the project proposal is approximately four years. There is no difference in this average if scale is considered.

4.6 Degree of Conflict

Facility siting has been a highly contentious, conflict-ridden process. When a specific location for a proposed hazardous or noxious facility is announced, the announcement more often than not is met by some degree of local opposition. Local resistance to the siting approach is often fuelled by the public's perception that social issues are not adequately taken into account; this can be seen in many of the mining cases where a large number of local aboriginal communities are involved. Based on the cases in this study, community resistance to siting proposals has been linked to five key concerns of potentially affected residents: perceived risk; inequities in the distribution of costs and benefits; the stigma of an unwanted facility; a feeling of

loss of control over focus affecting the quality of one's life and community; and lack of trust in proponents and regulators (Table 9).

Community agreements of all kinds, whether environmental or socio-economic, are negotiated for the main purpose of relieving conflict associated with the siting of environmentally hazardous facilities through mitigation of issues, such as those summarized in Table 9. Once the agreements are finalized, the associated parties are aware of their roles and responsibilities in the siting process. It is the role of the agreements to equate the balance between costs-benefits distributions, and in doing so some form of compensation is involved. In such community agreements as investigated in this study, monetary offers and incentives/rewards are set out in order to enhance the community (ies) to voluntarily become involved and inevitably agree to host the facility. They also combine to help offset not only operational issues, but also social and aesthetic issues raised by the public.

The degree of conflict associated with each of the facilities was estimated to determine the degree to which agreements are meeting their intended goals, and thereby actually addressing and resolving the public's concerns. In the conflict-resolution summaries made for this study in Appendix A, it was observed that conflicts of any sort encountered at the beginning of the siting process, by the end of the agreement negotiations were redirected to some other issue. For example, in the case of Kendal Willowhill Landfill, the conflicts between the proponent and stakeholder individuals began with issues regarding transparency of the process and technology to be used, once addressed by Lisbon Developments through a supportive environmental assessment the residents re directed their argument to the studies performed for the environmental assessment and were concerned with water contamination and overall health impacts and economic costs to the community. Once the proponent came forward in wanting to address the issues raised regarding the impact assessment performed, the conflict was redirected

again by the public to cumulative effects of the hazardous facilities in the area, causing Lisbon Development to withdrawal from the approval process.

Table 9. A summary of the main community issues raised in each of the cases studied.

| Project | Main Issues |
|---|--|
| Crane Mountain Sanitary Landfill | Budgeting cost; lack of studies in area of leachate transport and adequate safety precaution and the inclusion of such extra costs in budget; no real commitments agreed upon; questioning of ability to implement programs. |
| Diavik Diamonds | Loss of fish habitat; water quality changes; land wildlife habitat loss; no compensation set in place; increase in greenhouse gases; lack of territorial and federal policy governing; distrust in government promises and lack/delayed implementation; lack of funding for cumulative impact monitoring programs. |
| Port Hope (LLRWM) | Historical distrust and concerns for transparency; historical contamination; concerns over long-term health impacts; concerns over transportation and storage of waste; frustration with company compliance; fear of inadequate emergency procedures, expenditures and funding. |
| Port Granby (LLRWM) | |
| Caribou | Land habitat disturbance; air emissions; release of effluent; exposure of workers to harmful toxins. |
| Town of Benton Wind Energy Facility | Bird impacts; visual impacts; noise and road/ traffic concerns. |
| Kendal Landfill- Willowhill | Transparency issues; water contamination; health and wealth impacts; farmland being ruined; noise and smell. |
| Fort Hills Oil Sands | Concern over threat to wetlands and pristine environment; economic concern; water contamination; air pollution; questioning cumulative effects. |
| Emera Brunswick Pipeline Project | Preservation of Rockwood Park; species protection; route of pipeline; disturbance to aboriginal hunting ground and general concern over sacred lands; agricultural impacts; disturbance to heritage resources; noise impacts at Milford and Pokiok. |
| Navan Landfill Expansion | Odor; noise; visual impacts; property value; concerns over end use; potential adverse effects on the Mer Bleue bog; pollution; traffic. |
| Eastmain-1-A and Rupert Diversion Hydropower | Social problems; psychological effects such as loss linked to the flooding of land; water quality; concerns over water level of the Rupert; impact on fish feeding area; ignorance of traditional knowledge in monitoring and follow-up programs; fear that other hydropower projects would follow on the territory; impact on sport fishing activities; changes in traditional lifestyle; mercury levels and associated health effects; fear of "boom and bust" phenomenon; dam safety. |
| Bruce to Milton Transmission Reinforcement | Air quality; noise levels and their effects on productivity and or behavior of sensitive wildlife; soil erosion and compactions; soil/surface and groundwater quality; vegetation removal; woodland loss; loss of habitat; loss/destruction of NEP escarpment, nature areas, and wetlands; displacement of nesting birds; loss of visual appeal to landscape; effect on treaty and traditional lands. |

| | |
|--|--|
| Snap Lake Mine | Loss of terrestrial habitat and the quality of lost habitat for relevant species; disturbance of feeding, nesting and breeding grounds; wetland loss; disruption to migration of seasonal wildlife; impact on aboriginal traditional fishing activities; aboriginal rights and cultural practices; human health. |
| Voisey's Bay | Innu and Inuit community incomes; adverse effects of project on family and community relations; undermining of culture identity, values, and traditions; physical loss and disruption of habitat including lakes and forests; wildlife disturbance, contamination of water and land; reduced access to harvesting areas. |
| Horizon | Effect oil sand developments on the community; traffic volumes and safety on local highway's; diversion of rivers; loss of fish habitat; air emissions; effect on human health and quality of life; smell associated with tailing ponds and potential for harmful emissions; lack of education and training in the field. |
| Bear Mountain | Human health; sound and visual impacts; alternative locations; adequacy of public consult; potential impact to existing grazing tenures; wildlife (birds and bats); recreation and access; water quality; traffic and property values; traditional land use; aesthetic issues. |
| Vancouver Island Generation | Air quality impacts; health impacts; water supply; wastewater quality; noise impacts. |
| Georgia Strait Crossing (GSX) Canada Pipeline | Potential marine environment effects on vegetation and fauna species at Manley Creek and Cape Ice; interference with movement and behavior patterns of benthic organisms; change in predator/prey relationships; remobilization of contaminants on sediments; acoustic disturbance from pipeline construction; cumulative effects; alterations of surface water and groundwater; visual aesthetics; short/long-term effects on fishing harvesting, and agriculture activities. |
| Kemess North Copper Gold Mine | Loss of a natural lake with important spiritual value for aboriginal people; effects to downstream water quality and public safety; metal leaching and acid rock drainage; fish and fish habitat loss; loss of traditional use of land. |
| Deep Panuke Offshore Gas Project | Adverse effects on fishing activities; effects on ecosystem; loss of benthic communities and both endangered and commercial species; infrastructure stability, spills, safety of near by fisheries; access to fisheries; contamination of potential food sources. |
| Cheviot Coal Mine | Community health and wealth; concerns over reserve lands; adverse effects on aboriginal community philosophies and on the environment; grizzly bear migration; land loss and degradation; lack of involvement; adverse effects to traditions including hunting grounds and medicinal use of local plants. |

As summarized in Table 9, the most commonly formed oppositions posed by the public in the cases investigated for this study, overall dealt with the following: inaccuracy in studies performed during the EA; the quality of water, lack of budget information available; health and economic impacts; stigma of being a host to a hazardous facility affecting tourism; ecological impacts such as habitat loss and disturbance of wildlife; and aboriginal disregard relating to spiritual and social traditions. Based on the cases examined, the generalized common attempts

made at resolving these issues (Appendix A) were presented by the proponent through contributions to allocated funds pertaining to education and social interests, as well as restoration of ecological sites. Committees were also set up and funded to help maintain and follow through with regulatory supervision. Also in a large number of cases, offers of employment opportunities and educational training to support those opportunities were made.

4.7 Summary Analysis

Negotiated siting agreements themselves have changed significantly since 1998. There has been a progression in the components associated with the compensatory aspects involved. As seen in Appendix A, the resolutions and mitigation measures pay lots of attention to education, employment, training, more so now the psychosocial aspects of facility siting on the community residents. The agreements incorporate more use of incentives and reward to offset the social and aesthetic concerns raised by residents. In cases such as Port Hope and Port Granby the Property Value Protection Program (PVP) no longer just compensates property owners for financial losses relating to the siting of the facility, but incorporates “any diminution of property value realized on the sale of property, loss of rental income and mortgage renewal difficulty” (LLRWMO, 2001, p.22). This encompassing protection creates reassurance and helps build trust within the community. What has further happened in some agreements, such as the one in Port Hope and Port Granby is that not only are individual property owners protected but the agreements also include municipality protection for the cities for “mitigation against diminished property tax revenues as a result of the reduction of the assessed value of properties caused by the facility” (LLRWMO, 2001, p.22).

It has been observed in the study that public sector and crown corporation enterprises associated with large scale projects initially were faced with a high level of conflict and opposition, but as negotiations were conducted, the conflicts were redirected. It can be seen in

the results that the agreements made between the proponents and the communities are a great aid in lessening and redirecting the conflicts encountered during the siting process of hazardous facilities. They have proven to be a feasible tool in focusing mitigation measures and co-operatively helping individuals to come to some kind of compromise regarding the projects proposed. It is also evident that the cost of compensation on the part of the proponent, in relation to the estimated capital costs of the facilities themselves still remains small. Even though some of the cases in this study show higher estimated costs than those quoted in literature (Peelle, 1979; Pushchak and Burton, 1982), the aspect of increased community knowledge of what to ask for combined with years of economic changes still shows that compensation if offered at a meaningful time and in a meaningful way could be a small enough incentive for proponents to continue community negotiations and no longer fear compensation as a burden during the siting process.

5. DISCUSSION AND CONCLUSIONS

The thesis asks the question “What role does compensation play in the facility siting process?” In this study the question has been addressed based on the understanding that the siting of noxious facilities is both a public acceptance issue as well as a technical process. The paper has sought to answer this question through a systematic search of available recent environmental community agreements and the analysis of: the project type; scale of project; capital cost and compensation expended; length of time taken to come to a negotiated agreement; and the degree of conflict associated with the cases. This third party study utilized a review of twenty host community agreements to analyze whether they are helpful in resolving public opposition issues and to show that compensation is relatively small when compared to the estimated capital cost invested in a facility siting process.

Negative outcomes arising from NIMBY facilities are often attributed to health impacts, property prices, noise and air pollution, traffic congestion, community stigma, loss of amenities, and negative visual impact (Quah and Tan, 1998). Thus, while the greater public enjoys the goods and services newly created, it is the local residents who must bear the brunt of the cost-benefit inequities. As more of a demand for energy sources is voiced, siting environmentally hazardous facilities has become difficult. The sheer size of some of these facilities, as seen in this study in Table 5, large areas of land are required for their operation. Remote or rural areas become more suitable for such sites and raise the risk for environmental and ecological conflict of a much larger scale. Facility siting continues to be a lingering problem as attempts to impose these hazardous facilities on unwilling recipients is not adequately dealt with. Only by reconciling the perceived risks, benefits and costs could community opposition be overcome. The literature seems to suggest that active public involvement together with mitigation and compensation actions during a siting decision process are potentially useful components of a

successful strategy (Kunreuther, 1996; Blackman *et al.*, 2006). However, it is without doubt that the decision process can be time-consuming, and in most cases, a costly exercise (Quah and Tan, 1998).

The challenge in negotiating community settlements is to seek areas of agreement between the parties. The difficulty mainly lies within the available information provided and the amount of control the communities have in making decisions during the siting process. Public perceptions suggest that the risks and benefits of hazardous facilities result in an inequitable burden for the host community. The reason why proposals have failed is partly attributed to the fact that majority of communities have not been allowed to retain control of the decision making process. In some cases risks have not been effectively communicated and implementation has not been adequate (Pushchak and Rocha, 1998). Another reason for failure is that “because of the risk characteristics of hazardous waste and human perceptions of threats to health and safety, many communities have refused facilities regardless of the information communicated to them or the amount of compensation they have been offered” (Pushchak and Rocha, 1998, pg. 38).

The approach taken in the siting of hazardous facilities today is still in its developing stages and not as advanced as is suggested by Kuhn and Ballard (1998). The open, voluntary approach guards against the imposition of a facility on a community that does not want it. Although the intention of moving into a more voluntary and co-operative approach has been encouraged, a large number of the cases, more often than not, combine some aspects of the traditional approach with those of the co-operative approach.

The use of dated cases in Kuhn and Ballard (1998) suggest that there has been a gap in the literature regarding current facility siting progressions. The conflicts associated with hazardous facilities have continued, yet the literature on conflict resolution and facility siting has not advanced since the success cases of 1987, Swan Hills and Montcalm. Although both cases

set the path for possibilities in facility siting, they are the only well known North American cases which have resulted in successful co-operative facility siting. In this study Swan Hills and Montcalm were used to make clear that they were and still are the last known siting successes in North America and are used as the prime examples of successful co-operative facility siting.

The reason these for the enthusiasms regarding these dated success stories are as follows. Swan Hills used both environmental and social criteria in its siting process and incorporated an open approach. It was primarily a success as a result of its long-term and open public involvement program. This program was flexible and opposition was not avoided or overly offset. In the case of Swan Hills, there was a joint ownership of the facility between government and private industry which ensured community interests would be protected.

Montcalm also incorporated an open approach when engaging in the siting process. It did so by incorporating the principle of co-management between the proponent and community (Kuhn and Ballard, 1998). The siting focused on defining the waste issues, determining the available options and creating public awareness and involvement in decision making.

From the affirmed North American successes of Swan Hills and Montcalm, as suggested by Kuhn and Ballard (1998), when compared to the cases investigated in this study, the observation is made that although in the past there were specific cases where the evolution of siting moved from “paternalistic forms of decision making to more active participatory ones” (Kuhn and Ballard, 1998, pg. 542), in today’s North American siting attempts, there have been very few cases where such claims can be made. Based on this study research, it has been observed that the number of proposals may be high but, the number of actual willing hosts and siting successes is small.

In a theoretical review of hazardous facility siting, public participation is the primary focus of what is thought to be a key principle in progressing forward with the co-operative

approach. It was observed that, although public involvement is important, it is one of several principles which need to be incorporated during the siting process to demonstrate the possible successes of a voluntary approach. Mitigation and negotiation measures associated with siting environmentally hazardous facilities require that all aspects of Armour's (1992) principles be utilized under fair, trusting, and transparent conditions; "if principles like equity, trust and community participation are not meaningfully addressed, the process should be flexible enough to be changed to confront these key issues" (Baxter *et al.*, 1999, pg. 522).

Compensation, like the other principles in Armour's (1992) co-operative approach, does not work independently otherwise it is considered a bribe. All five principles must be adhered to in order to create conditions under which individuals would be willing to take part in the facility siting process. If each principle is focused on individually, it can be seen that combining all five principles in Armour's (1992) model truly makes it a holistic collaborative approach. For example, public involvement is significant in helping community members gain control over the input of their opinions during the decision making process, when paired with the principle of volunteering for the site it creates an environment where the community has control over the acceptance of the facility and also has a right to opt out at any time. The compensation principle is incorporated to offset unmitigable impacts and to balance any costs which could be perceived as a burden rather than a benefit for the community. Finally, commitment on the part of the proponent in ensuring that environment and human health are not compromised allows for trust to be built among the parties and requires proponents to carry out a transparent siting process.

A major assumption in offering compensation is that proponents and local governments must somehow have an idea of how to estimate the actual and the perceived welfare loss on the part of residents. Such assessments are difficult and in some cases losses are not readily identifiable; "things as aesthetic nuisance and social pollution borders on the intangibility of

social costs” (Quah and Tan, 1998). However, for other items such as treatment costs for pollution, expenditures for expanded infrastructure such as roads, and compensation for land acquisition are more easily measured. Assuming that social costs to local residents can be measured; there is also the question of whether the compensation received by the local government is equitably distributed to its residents in proportion to the harm suffered. Valuing intangibles such as peace and quiet, unpolluted air and water, aesthetic beauty and visibility is not an easy task. It is helpful in such cases to differentiate between compensation and reward. Compensation is usually some form of monetary value for maintenance, operation or restoration. Rewards on the other hand are offered to offset those intangible costs which cannot be fixed through monetary funds. Rewards usually encompass some form of incentive by posting restrictions on land use and/or creating positive aesthetic conditions for local residents. Based on the observations made in this study, with issues raised in the cases pertaining to the natural aesthetics and traditional changes, and even psychosocial impacts on community members dealing with grief and loss, rewards have become more common in attempting to offset the impacts posed by the facilities themselves. So not only are monetary compensations used in funding groups and community well being but rewards are used to help alleviate the emotional and psychological burdens individuals bear when dealing with hazardous facilities.

Compensation, incentives, and rewards are integral parts of the agreements made between proponents and stakeholders. In this study the agreements found specify one of the three compensatory initiatives as a focus in the mitigation measures proposed. Direct lump sum payments were observed in the case of Port Hope and Port Granby, while on-going monetary contributions were used in cases such as the Crane Mountain Sanitary Landfill, and the Horizon project where training and education funds were set up to enhance community involvement. In other cases such as the Bear Mountain Project, rewards were focused on primarily during

mitigations pertaining to re-vegetation, limiting noxious weeds, and protection of local forestry values.

It has been questionable when one should bring compensation into the negotiation process. Kunreuther (1995) stated that compensation will be viewed as a bribe unless the affected groups feel that the facility satisfies rigorous, well enforced safety standards. According to Gregory *et al.* (1991), compensation is flexible in the time it can be offered as it “[can have] temporal dimensions; [where] it can be provided at the time a facility is sited (ie. ex ante), [it can be offered] while the facility is operating smoothly (ie. interim), and/or after some negative event occurs (ie. ex post)” (p. 673). This study did not focus on the specific timing of compensatory offers, but did evaluate whether the compensation was offered at a meaningful time and in any meaningful way. In the agreements examined, some form of compensation was offered. Some cases such as Crane Mountain Sanitary Landfill and Kendal Willowhill Landfill strictly offered monetary compensation to the communities. Other cases such as the Eastmain-1-A and Rupert Diversion Hydropower project encompassed both monetary funding to significant Aboriginal funds relating to the protection of traditional hunting and fishing lands as well as trainings and remedial works. Along side the monetary compensation, Hydro-Quebec also focused on re-creating spawning sites for fish of significant cultural importance to the Cree. In other cases such as in the Benton Windfarm project, a minimal compensatory package consisting of an undisclosed annual host community fee and monetary compensation for audits and associated facility expenses was agreed upon by Empire State Wind Energy LLC and the Town of Benton. Although the incentives are not always elaborate and sometimes proponents present only the bare minimum in compensation to communities, the potential use of compensation is more frequent. The role of compensation in facility siting and in community agreements is to make the host community better off (Kunreuther, 1995). As part of a voluntary process, initiatives and

negotiated compensatory commitments help to address fairness and protect against tangible losses (Kunreuther, 1995). Benefits, compensation, and other incentives are designed to address specific needs and concerns related to the facility that cannot be further prevented, controlled or mitigated (Zeiss and Lufraud, 1995).

Based on this study the cost estimates and compensatory expenditures suggest that although a unique case, Port Hope and Port Granby (15.4%), exists revealing high estimated cost, it is an outlier amongst the rest of the cases, which do show similar ranges to the theoretical ones where “total costs of the project [were] moderate, ranging from 0.29% to 0.31% of total cost” (Pushchak and Burton, 1982, p.73). Aside from the cases categorized by their ongoing compensatory contributions, the rest of the cases where estimated compensatory costs were calculated range between 0.0014% - 4.70%. Some cases still fall into the theoretical range but those that do not and are higher than 1% are most likely the result of years of increased community knowledge of what should be asked for and any economic adjustments. It can therefore still be suggested that the direct costs of compensation are relatively small when compared to estimated capital cost. This should encourage proponents not to fear compensatory offers in the facility siting process, as well as it should encourage more offers of compensation in host community dialogues. This means the compensation in these cases are a cost effective means of reducing the uncertainties and delays in siting facilities due to local community opposition.

Environmental mediation is the most common form of environmental dispute resolution and is more likely to succeed than any legislative mandate (Heiman, 1997). Under certain conditions voluntary agreements can improve welfare by generating more private sector investment in pollution control and more public sector investment in regulatory capacity than the status quo (Backman *et al.*, 2006).

Environmental agreements of any kind are a useful medium through which the uses of compensatory initiatives are committed to by proponents. The incorporation of compensation in environmental settlements is critical in upholding the ideals of a voluntary collaborative approach in hazardous facility siting. In analyzing the research, it became evident that there is no specific step by step model that is followed when an environmental community agreement is struck. The agreements themselves do not go through any specific process with the involved parties to come to the concluding decision whether to accept the facility site. Community agreements can result from parties going through the EA process, while others are reached during separate drawn out negotiations. Although they are commonly referred to as host community agreements, environmental agreements, or socio-economic agreements, there is no consistency in the documentation and there is not requirement for having them be published at all. The ability to strike a compensatory agreement is dependent on the proponent and the approach chosen. It is not a requirement that some form of compensatory agreement is made.

The importance of compensation used as a tool in creating conditions for successful siting agreements is that it aids in achieving a balance between risks versus benefits. With compensatory packages being a part of agreements, communities are encouraged to look at the benefits associated with allocating funds or presenting rewards to offset the perceived injustices. Compensation provides accountability on the part of the proponent to the community as to the investments they are willing to adhere to throughout the siting process of the noxious facility. This is the role that is played by compensatory agreements in facility siting. Not only do they provide incentives for communities to become more willing to accept the facilities, they mimic contracts but have very little legal standing in court. This reassures local communities in that their rights will not be taken away from them once they enter into the agreements, and as well,

they affect the perception of the community members as to whether the facility balances risks and benefits appropriately.

Current compensatory agreements/incentives and rewards are largely effective in minimizing conflicts. Based on the cases in this study, the degree to which the agreements address public concerns varies. In most cases the agreements redirect the arguments posed by concerned communities. The compensatory offers are important in alleviating some opposition and creating a willing environment for the stakeholder(s). However, in negotiations, compensation is sometimes offered either too early or too late in the process. There needs to be some form of step by step method which slowly unfolds the compensatory measures as the facility siting process deepens, and in doing so should have a designated timeframe that could be general in nature but applied to different types of projects and their circumstances.

In conclusion, agreements are intended to be transparent. Based on the cases in this study they have progressively evolved in the type of offers presented. One way in which local community impact agreements have become more sophisticated is in indirect costs, such as local employment and business support over time, rather than up-front compensation. They also tend to provide more protection for both parties, securing private and governmental properties such as in the Port Hope and Port Granby case discussed earlier. The frequency of these host community agreements is low. In the cases investigated, there is a willingness to consider compensatory agreements to resolve conflict. There are few siting successes that are independent of compensation. In this study, a majority of the facility siting cases consist of some form of compensation offered.

After the investigations of the cases in this study the enthusiasms shared by Kuhn and Ballard (1998) are not fully the enthusiasms relevant in facility siting today. North America seems to be in its preliminary stages of increased negotiations and collaborative siting, although

there are still traces of traditional siting methods. In the cases examined, compensation attempted to balance the risks and benefits, alleviate fears, as well as create proponent accountability within the agreements negotiated. Independent of any other collaborative principles, compensation alone does not solidify willingness to site a facility in a community. Large scale projects, more so than smaller scale, are in most need of community agreements where liability, monitoring and control processes are defined and adhered to. One encouraging sign that the voluntary process is an improvement over traditional approaches is the level of trust which has been generated (Kunreuther, 1995).

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Appendix A

Case Summaries

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| Crane Mountain Sanitary Landfill | |
| Proponent: Fundy Region Solid Waste Commission (FRSWC) | |
| Saint John, New Brunswick | Population: 122, 385 |
| Negotiation Period: 1993-1999 | Scale of Project: 160 ha |
| Principle Stakeholders: Fundy Future Environment and Benefits Council Ministry of the Environment Host Community (Crane Mountain, NB) Fundy Region Solid Waste Commission Crane Mountain Enhancement Inc. | Community(ies) Affected: City of Saint John, Town of Quispamsis, Town of Rothesay: <i>Fairfield</i> <i>Hampton (Fairmont & Nauwigewauk)</i> <i>Kingston Petersville Rothesay</i> <i>Simonds St. Martins Westfield East</i> Town of Hampton: <i>Greenwich</i> <i>Musquash</i> <i>Westfield</i> |
| Project Description: | |
| The Fundy Regional Solid Waste Commission (FRSWC) proposed the construction of a sanitary landfill at the Crane Mountain site. The site selection process included approximately 157 potential sites assessed for geotechnical conditions, environmental screening, accessibility, hydrogeology and socio-economic factors. | |

Conflict

The FRSWC faced a public which was aware of a long history of landfill owners/operators failing to keep commitments on protecting public health, groundwater resources and the interests of those who own or use properties within the affected areas (Gallaughier Associates and G. Fred Lee and Associates, 1997). Organizations such as the *River Road Concerned Citizens Committee* (RRCCC) and the *River Road Action Team* (RRAT) voiced concerns regarding studies done in the environmental assessment and hired lawyers to investigate. This resulted in increased resistance to the siting of the landfill, and lead to suggestions of additional studies.

These additional studies inquired about the following (Gallaughier Associates and G. Fred Lee and Associates, 1997): calculation of the ability of the landfill operator to reliably predict the transport of leachate; the speed of transport through fractured rock potentially hydraulically connected to the Spruce Lake system; and expected concentration of leachate, especially in rock

fractures. There was also concern that the quantity, composition and concentration of leachate delivered to the sewage treatment plant had the potential to overload its capacity and in doing so caused damage to its normal functioning, thereby creating surface water pollution. In such a case, the cost of providing alternative facilities would be significant, especially when considering the importance of the fisheries to the Saint John area. It was a concern that these costs were not been included in the proposed budget. It was also felt that although the FRSWC proposed numerous mitigation measures to be incorporated into the site design and operations, that there was no “real” commitment. The public significantly questioned how well the proponent would actually implement additional design operations measures as well as off-site impact management measures should there be the need (Gallaugh Associates and G. Fred Lee and Associates, 1997).

It was suggested that a dedicated trust fund of sufficient magnitude be formed, to address all plausible worst-case scenario problems that could develop at the landfill. In 2002, news broke of overspending at the landfill causing the community to lose confidence in the city and commission capabilities to work together. Then in 2004, problems with the water treatment plant were published, where it was indicated that only 20% of the leachate was being treated. This perpetuated the problem of the public trying to understand who is responsible for the landfill’s accountability.

Resolution

The Canadian Mountain Enhancement Inc. (CMEI), formerly Fundy Future Environment and Benefits Council, was formed in 1997 as set by the Department of the Environment for approval of the landfill:

establish a community Environmental Monitoring Committee which membership, terms of reference and mandate shall be determined in consultation with the Department of the Environment. The Committee shall be established prior to initiating construction of the

facility. The Department of the Environment shall have the authority to review the results of the monitoring programs and make appropriate recommendations (CMEI, 1999).

Its mandate, set out in a 1999 Agreement between the Fundy Region Solid Waste Commission and the Fundy Future Environment and Benefits Council is to “monitor the operation of the facilities and to represent the concerns of the host community regarding the safety and workings of the Crane Mountain Sanitary Landfill during the entire life of the site, including the post-closure period” (CMEI, 1999). A sum of \$20,000 (adjusted for inflation) was agreed upon to be transferred annually from the Waste Commission budget to CMEI to fulfill this mandate. The purpose of this independent surveillance of the landfill was to ensure that the landfill was operating in compliance with the provincial and federal Clean Environment, Clean Air, Clean Water and Health Acts, as well as its Approval to Operate (CMEI, 2007). The Monitoring Committee also responds to ideas and concerns of the public about the landfill and bring these to the attention of the Waste Commission. An Education Committee was appointed to improve student knowledge, with an emphasis on protection of the environment, since it was felt by the proponent that the management of waste has not been sufficiently emphasized in the current education programs (CMEI, 2007). A *Crane Mountain Environmental Education Program* was created with the intent that the communities take part in active learning programs designed to introduce the fascinating world of recycling, composting, and landfill solid waste management. In conjunction with this program *Host Community School Funding* is offered to schools in the host communities and to university and college students. The CMEI has set aside a maximum of \$600 per school in the host area per calendar year. The funding must go towards projects of an environmental nature and cannot be carried over from year to year. Four scholarships are offered every year. These scholarships are funded by the *CMEI Host Community Enhancement Fund* with funds provided by the FRSWC, where between 1998 and

2008 forty three scholarships have been awarded (CMEI, 2007). According to the 1999 Agreement \$75,000 is allocated annually to the *Host Community Enhancement Fund*. This commitment adds up to a total of about \$2 million dollars over the life of the landfill.

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| Port Hope | |
| Proponent: Low Level Radioactive Waste Management Office | |
| Port Hope, Ontario | Estimated Population Affected: 77, 820 |
| Negotiation Period: 1997-2001 | Scale of Project: 91.2 km ² |
| Principle Stakeholders: Ministry of Natural Resources Natural Resources Canada The Canadian Nuclear Safety Commission Fisheries and Oceans Canada Low Level Radioactive Waste Management Office Atomic Energy Canada Limited | Community(ies) Affected: Municipality of Clarington Town of Port Hope Township of Hope |
| Project Description: The Port Hope Project will involve the construction and development of a Long-term Waste Management Facility (LTWMF), the remediation of contaminated sites with transfer of the contaminated material to the LTWMF, the integration of the existing waste at the Welcome WMF into the new facility and the maintenance and monitoring of the LTWMF for a period of several hundred years. Waste material that will be placed into the LTWMF will originate from four sources: the Welcome WMF (app. 620,000 m ³), remediation sites (app. 572,000 m ³), and industrial waste contaminated sites (51, 250 m ³), as well as Cameco decommissioning waste materials (150,000 m ³) (LLRWMO, 2006). | |

Conflict

As the result of thirty years of effort to find a solution to the contamination problem the communities of Port Hope have faced in the past, the socio-economic effects of the presence of the Low Level Radioactive Waste (LLRW) in the surrounding areas have been an ongoing concern for local residents and governments, as are the anticipated socio-economic effects of the project to clean it up. The waste was created over the past 70 years, mainly by a former Crown corporation, Eldorado Nuclear, which used the waterfront plant in downtown Port Hope to refine the uranium used in the first atomic bomb dropped on Hiroshima (F.A.R.E, 2005). Contaminated waste from the plant was used as fill on properties and in ravines before it was known to be hazardous. Recent documents cast doubt on how soon the project will be completed,

and at what cost. *Families Against Radiation Exposure* (F.A.R.E.), a 1,500-member citizen's group based in Port Hope, has voiced its opposition about the project's escalating costs and whether the federal government will actually pay for the clean up. The Natural Resources Canada (NRC) Report (2006) indicated the planning phase of the project was three years behind schedule and running 14 percent over budget, with approximately \$80 million spent and only three of ten tasks completed. It was brought to public attention through the NRC report that the Property Value Protection Program (PVPP) initiative was well under budget. Only \$57,624 had actually been paid out in compensation to homeowners (NRC, 2006). The program is thought of as a failure, and yet the concerns and frustration of property value declines is persistent in the communities. The communities have come to the conclusions that there are no breakdowns of the areas where spending ran over budget.

Overall for the last thirty years the local residents and governments had alleged economic impacts associated with the stigma of being the home to a major contamination problem. They expressed the same concerns should they volunteer to host the LTWMF, arguing that development would be slowed (businesses would avoid locating there) and tourists would avoid visiting as a result of the stigma.

The public was concerned and angry when statements made by The Canadian Nuclear Safety Commission and Cameco were made that there has never been a requirement for a buffer zone around a facility like Port Hope's (Harries, 2008). Knowing that UF₆ plants require such a buffer zone because of the dangerous chemicals and materials they use, not limited to uranium and other radioactive isotopes, the residents are also aware of the harm caused by chronic exposure to low-dose radiation to human cells, human health and DNA. Without a buffer zone, the public in Port Hope is exposed daily to uranium particulates in air as well as other harmful compounds. The most hazardous non-radioactive material used in the facilities is hydrofluoric

acid, which alerted residents of issues relating to its transportation. After a mock accident was carried out in Port Hope with a leak of hydrofluoric acid from a tanker truck, the analysis of the exercise concluded that local emergency personnel were not prepared to deal with such an accident, causing local communities to fear for their lives and safety, and to be concerned about worst case scenarios (F.A.R.E, 2005).

Conflicts rose over the safety and legality of waste storage. There are currently 13,000 barrels of radioactive waste stored in the buildings on the Centre Pier at Port Hope harbor. In addition, there are 15,000 cubic meters of radioactive waste stored under tarps on the pier. It is expected to stay there for at least four or five years until it can be disposed of in a new low-level waste disposal site being built in the community. But there is a question of safety. The tarps covering the pile of waste on the pier blew off three times during high winds this past winter. This then raises the local concern over human exposure to contaminants. In December, 2004, the *Uranium Medical Research Centre* detected unusually high levels of gamma radiation on the public sidewalk beside Cameco (F.A.R.E, 2005). This area is used regularly by children, fishermen and other members of the public to reach the waterfront. When it comes to health concerns, the people of Port Hope are frustrated and still waiting for the health studies commitment to be honored. Independent statistical analysis of two preliminary federal studies showed elevated rates in Port Hope of incidence and mortality from diseases such as lung cancer, brain cancer, colon cancer, lip, nose and pharyngeal cancer, leukemia, non-Hodgkin's lymphoma, and circulatory disease. The *Port Hope Community Health Concerns Committee* (PHCHCC) has a 'steering' committee in place of professionals to oversee implementation of additional work: follow-up on rates of specific diseases; cohort studies of specific populations who were at risk such as students of contaminated schools; a comprehensive community health survey; biological testing of people; a long-term monitoring and records program.

There is also the great fear within the communities that in the event of a nuclear accident, all homeowner policies would be null and void. The Nuclear Liability Act takes away the right of citizens to sue for compensation. Rather, the government appoints members of a claims commission who decide how the maximum insurance of \$75 million is to be expended.

Resolution

A Legal Agreement was formed in 2001 to address and mitigate concerns relating to potential future socio-economic effects. The principal of compensation was considered in the agreement to offset unmitigable impacts and to enhance local benefits. During the negotiations, a number of forms of compensation were considered. In the end, the simplest approach – a cash grant to the communities – was agreed to. The Municipalities were each provided with a host community grant of \$10 million to enable them to address, as they see fit, the impacts of the presence of LTWMFs within their communities (LLRWMO, 2001). As a result, one of the conditions the municipalities required in the Legal Agreement was for the establishment of a *Property Value Protection (PVP) Program*. The PVP Program allows property owners to seek compensation from Canada if, because of the Initiative, they realize financial loss on the sale of their property, lose rental income, or have difficulty renewing their mortgage at fair market value. The agreement also stipulated that for a year, from the date the facility is licensed for long-term surveillance and monitoring, “Canada will provide compensation to the Municipalities to mitigate against diminished property tax revenues as a result of the reduction of the assessed value of properties caused by the Project” (LLRWMO, 2001). The Parties agreed that the total maximum amount of compensation that Canada may be required to pay to a Municipality for any one year is limited as follows: “Town of Port Hope \$50,000.00, Township of Hope \$15,000.00 Clarington \$5,000.00” (LLRWMO, 2001).

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| Port Granby | |
| Proponent: Low Level Radioactive Waste Management Office | |
| Port Granby, Ontario | Estimated Population Affected: 77, 820 |
| Negotiation Period: 1997-2001 | Scale of Project: 91.2 km ² |
| Principle Stakeholders: Ministry of Natural Resources Natural Resources Canada The Canadian Nuclear Safety Commission Fisheries and Oceans Canada Low Level Radioactive Waste Management Office Atomic Energy Canada Limited | Community(ies) Affected: Municipality of Clarington Town of Port Hope Township of Hope |
| Project Description: | |
| The Port Granby Project will include the excavation of approximately 204,400 m ³ of historic low-level radioactive waste and approximately 101,000 m ³ of associated marginally contaminated soils currently located at the existing waste management facility. It will also involve the construction of a new long-term waste management facility immediately north of the existing facility, including the necessary infrastructure. A transfer and placement of low-level radioactive waste and marginally contaminated soils into the long-term waste management facility will be necessary. Following these activities, restoration of the existing waste management facility will take place. Monitoring and maintenance will be performed for the long-term waste management facility to confirm its ability to provide effective containment (LLRWMO, 2006). | |

Conflict

The community of Port Granby, also faced with historic contamination of its lands, identified several concerns and conflicts. The displacement of some farming businesses and overall disruption to farm operations within the zones of influence and along transportation routes was opposed by the community, as farming developments are part of the social environment in Port Granby.

The increased potential for out-migration of residents in the area was of concern to the public, attributing this to changes in the quality of existing views and loss of aesthetic value. The public was not pleased with estimated reduced residential property values in the order of 2 to 8% within the zone of influence. Residents along transportation routes, where nuisance effects from increased traffic noise are expected, were against the construction of the facility.

One of the largest conflicts faced was the community's perception of changes in the use of property and reduced enjoyment of property among some residents living within the zone of influence. This included the disruption of community and recreational activities. It was felt that this would result in changes to the 'community character' or image. Aboriginal communities within the area voiced their concerns over increased potential for adverse effects on the ability of current and future generations to exercise inherent Aboriginal and Treaty rights. The residents voiced their worry over the project causing increased levels of stress and adverse effects to health and general well-being resulting from negative changes to people's feelings of health and sense of well-being, feelings of personal security and feelings of satisfaction with living in the community. While there appears to be a high awareness of the presence of low-level radioactive waste in the community, survey results suggest that information levels are mostly at the broad level and not in-depth, with residents needing more information before they increase their acceptance of and confidence in the Port Granby Project (Hausmann Consulting Inc., 2008). Although there are diverse concerns there is a need for more information. The community feels that more effort needs to be placed on communicating with residents on this topic in order to improve awareness and assessments of LLRWMO communications efforts.

Resolution

As a result of a Legal Agreement made in 2001, The Port Granby Project is expected to increase direct, indirect and induced employment opportunities during the construction and development phase. The LLRWMO outlined its commitments to increased business activity related to the Port Granby Project and increased attractiveness of the waterfront and enhancement of tourism opportunities associated with Clarington's waterfront during the maintenance and monitoring phase. This in turn will enhance potential for increased property values in the vicinity of the Clarington waterfront following the successful completion of the

Project and implementation of a recreational end use. The LLRWMO hopes to do this by creating public access routes to natural areas and trails in the immediate vicinity of the existing waste management facility once successful remediation is completed. It is also committed to improving transportation systems and infrastructure resulting from pre-Project upgrades and maintenance activities.

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| Kendall County- Willowhill | |
| Proponent: Lisbon Development LLC | |
| County of Kendall, State of Illinois | Population: 96, 818 |
| Negotiation Period: 2005-2007 | Scale of Project: 8.5 ha |
| Principle Stakeholders: Kendall County Board Illinois Environmental Protection Agency Illinois Pollution Control Board | Community(ies) Affected: Kendall County Township of Kendall Lisbon Township Na-Au-Say Oswego |
| Project Description: | |
| 720 acre landfill that shall accept only authorized waste. | |

Conflict

Kendall County residents presented a common 'NIMBY' opposition to the proposed Willowhill landfill. It was requested that the *Health and Environment Committee* motion that a decision to scrap landfills in the community be made immediately. The community was in the processes of having three landfills proposed. Fox Moraine, the first landfill proposal in the area, then Willow Run, and finally Willowhill. Still in the midst of an appeal with the *Illinois Pollution Control Board* regarding the Fox Moraine proposal, the initiation of Willowhill caused the community to react with an uproar. The attorneys representing Kendall County residents argued that the landfill was thought to be poorly assembled in the end causing the proponent to withdraw its application. The law states, however, that Lisbon Development can resubmit its application. In other words, according to the community the proponents were allowed to conduct

a 'dry run', examine where they went wrong and try again, a concept that residents in the area disprove of.

Parts of the conflict within the community reside with land issues. Farms, or acres of land, that have been in the family for over 50 years are now going to lose their property value with the construction of a landfill near by. Further opposition revolves around safety issues pertaining to the proposed truck traffic route and the ability of all emergency services to safely carry out their responsibilities in the area. The increase in truck traffic will have a significant impact and increase the risk of collisions.

Other conflicts in the community pertain to the potential impacts of the project on clean water, flooding, odor, and air quality. Contamination of drinking water supplies or the aquatic environment, impacts to flooding conditions at the project site or downstream, adverse impacts to other natural resources such as streams, air quality, and ambient odor, would all constitute unacceptable impacts to the public health, safety, and welfare of our members, many of whom live in the vicinity of this site. Some of the community members from the *Plattville Lutheran Church* were instrumental in passing the recent 45 million dollar open space referendum, which allow the Forest Preserve District to acquire approximately 1,200 acres of natural areas and open space. Other groups, such as the *Aux Sable Creek Watershed Coalition*, oppose the project as a result of the potential impacts of the landfill on clean water, flooding, and wildlife habitat. The proposed landfill site is in an area consisting mostly of hydric soils, which are subject to high water tables. With tributaries to the Aux Sable Creek located at the eastern and southern edges of the site there is a potential for stream and associated wetland contamination to occur as the result of landfill leachate reaching the groundwater that likely feeds these tributaries (Willowhill Hearing, 2008). The *Aux Sable Watershed Coalition* is concerned that such a large surface area, created by the proposed site and road system, would seal off the recharge area, preventing water

from downward movement to the aquifer. Overall, the conflict with the proposed site deals primarily with three criteria; health, safety, and welfare; compatibility with surrounding area and effect on property values; and traffic.

Resolution

An Agreement was struck between the County of Kendall and Lisbon Development (LD). In this agreement there were several commitments made by LD to help resolve the conflict and negotiate siting acceptance. The commitments agreed upon were collectively intended to ensure the safety and environmental integrity of the landfill. In the Minimum Guaranteed Payment section in the agreement, LD guarantees that the County will receive a minimum annual host fee (or tipping fee) that equates to one million tons of waste per year. In addition to host fees, LD also guarantees lump sum payments to the County. They also outlined their commitment to correcting any environmental destruction arising out of or related to the landfill. A *Property Value Guarantee and Well Testing Program* was also established in order to assure that properties in close proximity to the landfill are protected against their values being detrimentally impacted by the landfill. LD agrees to offer Property Value Guarantees to all owners of property located within 1 mile of the landfill footprint. For dealing with Community Relations/Complaint Resolution, LD shall assign and designate a telephone number and representative who shall be responsible for receipt of complaints which may arise from the public relative to the development or operation of the landfill, or to report incidents of alleged violations of this Agreement, environmental or employee health regulations, the Act or Siting Conditions. As part of communication with the public, LD shall also keep a Complaint Log and an updated Website. LD is also committed to upgrading and/or paying for the County to upgrade White Willow Road. LD agrees to pay all additional costs incurred by the County in upgrades or improvements or widening streets under the County's jurisdiction, or adding or upgrading traffic

controls, necessitated, in whole or in part, by the number, speed or weight of vehicles going to or coming from, or reasonably anticipated by the County to be going to or coming from, the landfill (Agreement, 2007).

LD further agrees to keep all areas at and around the Property free from loose debris or litter resulting from operation and maintenance of the landfill and shall keep the public streets and adjacent areas at and within one mile of the landfill entrance(s) free from mud, dust and litter from vehicles using the landfill. LD shall notify all waste haulers that when delivering soil or other materials used in the construction of the landfill, and soil, solid waste or other materials during the operation of the landfill, they shall strictly adhere to the route specified in the Truck Traffic Plan and Truck Tarping Plan, including posting of the Truck Traffic Plan on the landfill Web site (Agreement, 2007). In the agreement, the host community fees and benefits are effective for the first five years of this Agreement, on a yearly basis. LD shall pay a Host Community Fee to the County “in the amount of \$3.85 for the first 750,000 tons of solid waste received that year; \$4.00 for the next 750,000 tons received that year, and \$4.15 for every ton of solid waste received thereafter in that year” (Agreement, 2007). These fees will continue on this annual “stair step” basis, adjusted by the CPI, until the beginning of the fifth year of operation.

LD further guaranteed to pay a minimum annual Host Community Fee based on 1,000,000 tons of solid waste, regardless of the amount of solid waste actually disposed at the landfill. In addition to the Host Community Fee, LD agrees to pay to the County \$1,000,000 in lump sum payments as follows: an initial payment of \$500,000 such time as the landfill siting is approved and all appeals or period for such appeals has been exhausted and a payment of at the commencement of operations at the landfill of \$500,000 (Agreement, 2007). LD shall pay the County an amount not to exceed \$100,000 per year to reimburse the County for its reasonable and documented costs of inspecting and monitoring compliance of the landfill with the Act, this

Agreement and Siting Conditions. LD shall give preference in hiring for work at the Property to suitably skilled applicants residing in the County before hiring applicants residing in other communities. In awarding contracts for goods or services, LD shall give preference to firms headquartered in the County which provide a competitive price and which are capable of performing the required work, before contracting with or otherwise retaining firms headquartered elsewhere. The proponent also has committed to paying the County an amount not to exceed \$75,000 to reimburse the County for its reasonable and documented third party costs, including attorneys fees and experts, incurred in connection with a challenge or appeal by LD of a real estate tax assessment on the Property, in the event the challenge or appeal results in no reduction in the challenged tax assessment (Agreement, 2007).

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| <i>Navan Landfill Expansion</i> | |
| Proponent: Waste Services Inc. (WSI) | |
| Ottawa, Ontario | Population: 870, 762 |
| Negotiation Period: 1992-2000 | Scale of Project: 20 km ² |
| Principle Stakeholders: City of Ottawa Province of Ontario Friends of the Mer Bleue Rideau Valley Conservation Authority South Nation Conservation Authority Department of Fisheries and Oceans | Community(ies) Affected: Residence of Notre Dame des Champs Local Aboriginal Communities |
| Project Description: | |
| The proposed undertaking consists of extending the landfill by about 8.5 ha. The total air space created would result in an estimated additional Site life of approximately 10.8 years (Golder Associated Ltd., 2007). A total of approximately 515,000 m ³ of soil would be excavated. Modifications to the current site entrance, buildings, scale location and drop-off and stockpile areas will take place. To support site operations, on-site access roads will be constructed to facilitate access to the disposal and processing areas, as well as to the landfill gas and leachate collection, and other site facilities. | |

Conflict

Conflict in the expansion of the existing landfill came forward pertaining to several types of community concerns in an open house held in 2005. Residents voiced their concerns over odor emissions from the site, especially in the summer, as a result of composting operations at

the site. Requests were made to discontinue the composting and all together stop the expansion of the landfill. It was stated that the increased height of the landfill will pose a visual impact in the community, which in turn would result in property value decreasing. Air quality and noise of traffic from the trucks, as well as the dirt and mud they would bring from the site were just some of the other conflicts residents brought forward to be addressed.

The largest opposition encountered with the project was with the involvement of a citizen group, *Friends of the Mer Bleue* (FOMB). These citizens of Notre-Dame-des-Champs and surrounding areas came together to protect the Mer Bleue Bog. Actively involved in the consultations, they argued the expansion was “out of sync with the surrounding community, which started to rapidly develop” (Lonergan, 2009).

Resolution

An Agreement between the FOMB and WSI was struck which among other things sets out a closure process and decommissioning of the landfill. The agreement also sets out a framework for continued protection and monitoring of the Mer Bleue Bog, adjacent to the landfill, odor control, control of road dirt and property value protection. WSI committed to the installation of an active gas collection system at the landfill, terminating leaf and yard waste composting and the leachate trucking. The proponent also agreed to implement a ‘best management practice plan’ to enhance its existing efforts to minimize dust generation at the site and dirt drag-off from the site onto Navan Road (WSI, 2007). In addition it stipulates that a *Public Advisory Committee* (PAC) will be formed to ensure that community concerns are addressed quickly and efficiently in the future (East Ottawa Star, 2007). The PAC will be comprised of six members with two members from FOMB, as well as a representative from WSI, the MOE, the City of Ottawa, and the NCC. In the agreement it is also stipulated that WSI will “not seek any further expansion of the Navan Road landfill beyond what it has applied for

under Alternative 3...and will decommission the aide after the expanded capacity has been reached” (WSI, 2007).

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| Diavik Diamond Project | |
| Proponent: Diavik Diamonds Mines Inc (DDMI) | |
| East Island in Lac de Gras, Northwest Territories | Estimated Population Affected: 21, 921 |
| Negotiation Period: 1992-2000 | Scale of Project: 8.5 ha |
| Principle Stakeholders: Diavik Diamonds Mine Inc. Ministry of Indian Affairs Minister of Natural Resources Dogrib Treaty 11 Council Lutsel K'e Dene Band Yellowknives Dene Dirst Nations North Slave Metis Alliance Kitikmeot Inuit Association Government of Northwest Territories Government of Canada | Community(ies) Affected: North Slave Region: Behchoko, Dettah, Gameti, N'Dilo, Wekweeti, Whati, and Yellowknife Aboriginal Communties: Wekweti, Gameti, Wha Ti, Rae-Edzo, Dettah, Ndilo, Lutsel K'e, Kugluktuk and the North Slave Métis Alliance |
| Project Description: The proposed project intends to mine four diamond deposits in the Lac de Gras region about 300km northeast of Yellowknife, Northwest Territories (NWT). The project mine life is expected to be 16-22 years. The facilities would be situated on the island, with open mining pits behind water retention dikes located immediately offshore. The island facilities include a “processed kimberlite containment facility, country rock areas, a diamond recovery plant, accommodation buildings, power generation facilities, mechanical and administration buildings and a 2,000 m airstrip” (Environmental Monitoring Advisory Board, 1999, pg.6). Other developments on site would include mine haul roads, access roads, service roads and quarry and borrow sites. The proposed Diavik Diamonds Project is subject to federal legislation including the “ <i>NWT Waters Act</i> , the <i>Territorial Lands Act</i> , the <i>Fisheries Act</i> , the <i>Navigable Waters Protection Act</i> , the <i>Explosives Act</i> and the <i>Canadian Environmental Assessment Act (CEAA)</i> ” (Environmental Monitoring Advisory Board, 1999, pg.5). | |

Conflict

The opposition encountered by the proponents of the project primarily deals with environmental implications and contamination, such as concerns over loss of fish habitat through draining of lakes, destruction of streams, changes in water quality. It is the communities' historical experience of loosing twenty lakes and having no fish habitat compensation measures in place. Loss of land-based habitat for wildlife such as caribou, grizzly bears, and wolverine

has come to the forefront of environmental opposition as a result of organizations as the *Canadian Arctic Resources Committee*. Also increased production of greenhouse gases from the diesel used to fuel the mine have become a target for conflict. The public is frustrated with some of the unfulfilled federal government promises which were made before the diamond mining began.

A Cumulative Impact Monitoring Program, mentioned in Part 6 of the Mackenzie Valley Resource Management Act, and constitutionally entrenched in the Gwich'in and Sahtu land claims agreements, is now more than five years overdue. A cumulative effects assessment and management framework, a condition of the Diavik mine environmental assessment approval, is now over two years behind on implementation, and has no adequate or long-term funding (Canadian Arctic Resources Committee, 2003).

The overall conflict mainly lies in the lack of federal monitoring of diamond developments. Over the past few years, there has been no funding for cumulative impact monitoring program. The largest opposition prominent in this project is that from the Native communities. Conflicts with loss of traditional hunting and spiritual ground, as well as concern over community practices caused the proponent to adhere to a socio-economic monitoring agreement between the government, the proponent and the aboriginal signatories and parties. Jobs, training, and education were also some of the issues raised in open house hearings.

Resolution

Diavik Diamond Mine Inc. (DDMI) has made several commitments, one of which addresses employment where the proponent states it is committed to recruiting and hiring as many Northerners as possible during the Construction and Operation Phases. First priority, Aboriginal persons; second priority, Northerners who have been continuously resident in the Northwest Territories or the West Kitikmeot Region at least six months prior to being hired; third priority, other Northerners resident in the Northwest Territories or the West Kitikmeot Region; fourth priority, all other Canadians; and then other candidates will be considered.

DDMI also has made a commitment to place special emphasis on pre-employment training and employment of Aboriginal persons who live in or originate from the communities of Wekweti, Gameti, Wha Ti, Rae-Edzo, Dettah, Ndilo, Lutsel K'e, Kugluktuk and the North Slave Métis Alliance. It is the goal of the proponent to establish a minimum of grade nine as a standard for trainable positions and provide employees, on their own time, with free work-related round-trip transportation to the mine site from the surrounding Aboriginal communities. DDMI agrees to take all reasonable steps, acting in good faith, to work towards ensuring that: purchases of goods and services through or from Northern Businesses during the Construction Phase will be at least 38% of the total purchases associated with the Construction Phase; and purchases of goods and services through or from Northern Businesses during the Operation Phase will be at least 70% of the total purchases associated with the Operation Phase (Government of the Northwest Territories, 1999).

Overall DDMI wants to assist and maintain Aboriginal community communication and family support, through encouraging Aboriginal language dialogue and addressing cultural sensitivity and cross-cultural awareness. An *Environmental Monitoring Advisory Board* is promised, whose mandate is to assist all parties in implementing a co-operative approach, as well as review and make recommendations with regards to any plans, programs, annual reports and environmental protection measures. Parties may appoint their respective members to the Advisory Board as follows (Government of the Northwest Territories, 2000):

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| Dogrib Treaty 11 Council | 1 representative |
| Yellowknives Dene First Nation | 1 representative |
| Lutsel K'e Dene Band | 1 representative |
| Kitikmeot Inuit Association | 1 representative |
| North Slave Métis Alliance | 1 representative |
| GNWT | 1 representative |
| Government of Canada | 1 representative |
| DDMI | 1 representative |

During the term of this Agreement, DDMI shall provide funding to the Advisory Board to carry out its mandate. The Advisory Board's annual budget for each of the first two years after its establishment shall be cumulatively \$800,000. DDMI, Canada, and the GNWT shall contribute respectively, \$600,000, \$150,000, and \$50,000 of that amount (Government of the Northwest Territories, 2000). As to archeological sites DDMI shall establish appropriate protection of the Archaeological Sites in the vicinity of the Project, in accordance with applicable laws and regulations, to minimize the impacts on Archaeological Sites. The Environmental Agreement Diavik entered into with local Aboriginal groups and the federal and territorial governments formalizes Diavik's environmental protection commitments, establishes reclamation security requirements, and provides transparency and oversight to local communities. Diavik's adaptive management and prevention programs are designed to protect the local environment. Included in the environmental management system is protection for caribou and other wildlife, as well as water and fish habitat.

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| Caribou Project | |
| Proponent: AREVA Resources Canada Inc. | |
| Athabasca Basin, Wollaston Lake, Saskatchewan | Estimated Population Affected: 202, 340 |
| Negotiation Period: 2002-2008 | Scale of Project: 80 ha |
| Principle Stakeholders: Northern Saskatchewan Environmental Quality Committee Athabasca Working Group Athabasca Economic Development and Training Corporation Northern Labour Market Committee Mineral Sector Steering Committee Northern Apprenticeship Committee Athabasca Land Use Planning (ALUP) Interim Advisory Committee Environmental Quality Committee | Community(ies) Affected: Athabasca communities: Hatchet Lake First Nation, Black Lake First Nation, Fond-du-Lac First Nation; northern settlements of Wollaston, Uranium City, and Camsell Portage; and the northern hamlet of Stony Rapids. Cities of La Rouge and Saskatoon |
| Project Description: | |
| AREVA Resources Canada Inc. proposes to extend the mining and milling operations at the McClean Lake Operation through development of an additional small uranium deposit, referred to as the Caribou deposit. The project involves open pit mining within the surface lease boundary of the McClean Lake Operation and processing of the ore at the JEB mill (AREVA, 2006). The development of the Caribou deposit will use the existing infrastructure and facilities. | |

Conflict

Concerns and opposition were posed by Aboriginal First Nation's in the area as a result of the projects impact on about 41 ha of shallow marsh and wetlands. Concerns dealt with loss of fish and fish habitats, and loss of traditional use of the land. The contamination of water and effects on water quality and sediments was also raised by local residence. Chemical concentrations for arsenic, selenium, uranium and molybdenum are bound to be higher than the objectives set out in the environmental assessment, causing the public to be concerned over public health and local wildlife and plants. A fear exists among the communities of the potential for animals to be affected by eating and drinking food and water in the area. It was indicated that there is a potential that ducks, mergansers and semi-aquatic furbearers in Sink Reservoir and Vulture Lake could be exposed to enough chemicals to cause some effects. There is also the potential that muskrat may be periodically affected by molybdenum concentrations in the

McClean Lake east basin. Air quality and contributions to greenhouse gas emissions in the local area became also an issue. Although it may be within guidelines, the cumulative effects over years of operation were a potential fear amongst the communities.

Resolution

In the Athabasca region, employment opportunities are primarily in education services, public administration, and mining industries. Resource harvesting (largely trapping, fishing, and guiding) also provides an important seasonal income for many residents, and a number of lodges in the region offer sport fishing and outfitting services. With five operating mines, the uranium mining industry plays an important role in the economy of the Athabasca region. AREVA and Cameco Corporation have been involved in developing initiatives to support mining employment for Athabasca residents. This has included implementation of employment, training, and business development opportunities for these communities. Through such initiatives, AREVA hopes to maximize the benefit of the development of the Caribou deposit to northern residents.

The McClean Lake Human Resource Development Agreement between AREVA and the Government of Saskatchewan sets out a number of intentions and commitments for the recruitment, hiring, training, and advancement of residents of Saskatchewan's North. The Caribou Project is expected to generate about ninety new or extended positions. Total manpower requirements, beginning in 2006 when the pit workforce is expected to be in place, are estimated at about 310 positions (AREVA, 2008). AREVA, in addition to the above activities, participates in several other northern initiatives and committees which provide additional opportunities to discuss ongoing operations and topics related to the Caribou Project. They include (AREVA, 2008): Northern Labour Market Committee; Mineral Sector Steering Committee; Northern Apprenticeship Committee; and Athabasca Land Use Planning Interim Advisory Committee (ALUPIAC).

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| Fort Hills Oil Sands Project (FHOSP) | |
| Proponent: Fort Hills Energy L.P (FHELP) <i>Formerly TrueNorth Energy L.P</i> | |
| North of Fort McMurray, Alberta | Estimated Population Affected: 79, 810 |
| Negotiation Period: 2000-2006 | Scale of Project: 18,700 ha |
| Principle Stakeholders: Petro-Canada, UTS Energy Corporation, Teck Cominco Limited Fort Hills Energy Corporation Alberta Energy and Utilities Board Alberta Environment | Community(ies) Affected: Sturgeon County Fort McKay First Nations Mikisew Cree First Nations Athabasca Chipewyan First Nations |
| Project Description: | |
| The Fort Hills project intends to capture synergies arising from an oil sands mine and a synthetic crude oil manufacturing facility. The project will also incorporate the construction and operation of a Sturgeon upgrader, approximately 40 km northeast of Edmonton, Alberta. The project is expected to process and convert bitumen and heavy oil into light sweet synthetic crude oil for the refining market. | |

Conflict

Formal objection by *Alberta Wilderness Association (AWA)* was made to existing approvals for the Fort Hills Oil Sands Project (FHOSP). AWA is a province-wide conservation group with 7,000 members and supporters. Their focus on protecting areas of special ecological significance in Alberta resulted in opposition to the Fort Hills project on behalf of the protection of the McClelland Lake watershed. AWA opposes the mining, as “mining of the ‘upper’ portion of the watershed will almost certainly lead to prolonged water table disruption in the lower part of the watershed” (AWA, 2008). This will produce severe effects on vegetation and organic soils of the peat wetlands. To sustain the water quality, water quantity and biodiversity of this landscape, it is necessary to retain the most ecologically significant functioning natural watersheds in the larger Athabasca watershed. The McClelland Lake watershed includes a unique system of wetlands, the complex “supports at least 14 provincially rare plants in addition to 205 bird species – including occasional visits by endangered whooping cranes” (Lowey, 2003). Conservation groups and some scientists are calling on the province to protect the rare northern wetlands-and-lake ecosystem. Environmental groups, including the AWA and the

Pembina Institute for Appropriate Development, want the provincial government to designate the entire McClelland Lake wetland complex as an ecological reserve – prohibiting any industrial development (Lowey, 2003).

Environmental pressure groups have sprouted up across the country in an effort to undermine Canada's oil sands industry. Groups like *Greenpeace*, *Sierra Club* and *Environmental Defense* release frequent reports raising alarm about the environmental impacts of the oil sands industry (MacLean, 2009). Environmentalists have waged an international campaign against the development, branding oil sands products "dirty oil" (Henton and Brooymans, 2009). Environmental group *ForestEthics* has placed "In Search Of" personal ads in dozens of North America's largest newspapers in an effort to highlight growing concern surrounding Canada's oil sands (Henton and Brooymans, 2009).

Resolution

Petro-Canada and the Fort Hills partners are committed to responsible development. The Fort Hills mine approval includes 180 regulatory conditions and commitments to ensure the Athabasca Region's socio-economic prosperity. Here are some of these commitments (Fort Hills, 2006):

- Respect and follow the First Nations approach to bridging western and traditional knowledge.
- Relocate fish species desirable to First Nations, such as Lake Whitefish and Burbot.
- Work with First Nations to ensure that reclamation planning and design meets their needs and expectations.
- Provide ongoing funding and sponsorship to First Nation daycare facilities.
- Work to increase access to regional educational initiatives.
- Participate, through funding, in an Aboriginal Summer Student Program for Mikisew Cree First Nation students in Fort Chipewyan — aimed at older students to help them with employability skills.
- Identify areas to provide funds and resources for projects such as Science Fair, Year Book, Reading Program, Winter Carnival, Earth Education Camp and other special events.

- Provide funding to Athabasca Chipewyan First Nation to support development of the Community/Youth Camp.
- Maintain the stability of the Athabasca River valley wall by sufficiently distancing the mine from the 100-year high water mark.
- Ensure wildlife use of river valley habitats isn't disrupted by setting back the mine.
- Maintain a visual buffer of vegetation between the Athabasca River and mining operations to minimize the aesthetic effects of the mine for river travelers.
- Provide First Nations community representatives with a detailed reclamation plan for the first phase of mining.
- Provide transportation for employees and contractors from the community working at the Fort Hills mine site.
- Manage activities to prevent contributing to potential tainting of fish in the Athabasca River and its tributaries.
- Plan final post-reclamation land use in accordance with First Nations expectations.
- Manage the protected un-mined portion of the McClelland Lake Wetland Complex such that it remains a peat-forming rich fen with similar plant species and soil characteristics to predevelopment conditions.
- Provide funding in support of First Nations Elders' Committees.
- Improve habitat on the Fort Hills leases through the reclamation of traditional exploration trails outside of the mine footprint.

Assist First Nations with educational transition programs for students entering high school in Fort McMurray or leaving the community to pursue post-secondary education.

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| <i>Snap Lake Mining Project</i> | |
| Proponent: De Beers Canada | |
| Yellowknife, Northwest Territories | Population: 18, 700 |
| Negotiation Period: 2000-2005 | Scale of Project: <500 ha |
| Principle Stakeholders: Tlicho Government Dogrib Treaty 11 Council Government of NWT | Community(ies) Affected: Lutsel K'e Dene First Nations Yellowknifes Dene First Nation North Slave Metis Alliance |
| Project Description: | |
| <p>The Snap Lake deposit is a kimberlite dyke which will be extracted by underground mining methods at an average rate of 3,150 tonnes per day. It is estimated that the life of the Snap Lake Mine will be approximately 20 years. The main access to the underground mine will occur from two ramps located on the surface of the northwest peninsula. One ramp will allow access for people and equipment to the mine, and the other will contain a conveyor gallery to the Process Plant from an underground crushing facility. A raise to the surface on the northwest peninsula will provide additional ventilation for the mine (DeBeers, 2005). Kimberlite extracted from the mine will be crushed, washed, screened, conveyed, pumped and cycloned at an on-site Process Plant. A Dense Media Separation (DMS) circuit will be used to concentrate the diamonds and other heavy minerals, which will then pass through x-ray sorters to recover the diamonds. Processed kimberlite that is not used for backfill and waste rock from the underground mine will be deposited at what is called the North Pile. The North Pile will become a significant feature of the Snap Lake Mine that will eventually measure 1,700 meters long by 900 meters wide and reach a height of 34 meters during the later years of production (DeBeers, 2005). Seepage water from the mine, runoff from the North Pile and surface water in contact with core site facilities will be collected in sumps, ponds and ditches for transport via surface pipelines to the Water Treatment Plant (WTP) in the Utilities Building (DeBeers, 2005). Treated water will either be used in the Process Plant or provided it meets discharge standards will then be released into Snap Lake.</p> | |

Conflict

The First Nation communities involved in the public hearings raised their concerns and frustrations over the impact the Snap Lake facility will have on the loss of terrestrial habitat, and the quality of lost habitat for relevant species. Other issues brought forward dealt with (MVEIRB, 2003):

- Disturbance of feeding, nesting, denning or breeding habitats;
- Wet-land habitat alteration, loss;
- Disruption, blockage, impediment and sensory disturbance, of daily or seasonal wildlife movements (e.g., migration, home ranges, etc.);
- Indirect and direct wildlife mortality;

- Reduction in wildlife productivity; and
- Implications of the proposed development acting as an attractant for particular species.

The elders of the Aboriginal sects were concerned over Caribou. This concern reflected the integral role that caribou play in the lives of the Aboriginal people and communities of the Northwest Territories (MVEIRB, 2003). Effects on grizzly bear and wolverine behavior and movement were also discussed by the GNWT, and Aboriginal groups. Issues of baseline data adequacy, impact assessment methodology, mitigation planning details, and monitoring details were raised by the Parties in relation to the potential impacts of the SLDP on wildlife movement and behavior. Aboriginal groups from the YKDFN and the LKDFN felt that there was a threat to heritage resources surrounding the project, as the teachings, stories and spiritual sites were an integral part of the Aboriginal culture. The NSMA indicated that traditional fishing places proximal to Yellowknife were not considered. The NSMA's TK holders have observed adverse changes on NSMA traditional fisheries from recreational non-aboriginal fishing, and expressed a concern that increased recreational fishing pressures for off-work De Beers employees would further degrade the resource. The NSMA expressed its position that the lakes at which its members carry out traditional fishing activities cannot sustain any increased angling pressures and that any further negative impacts to the fisheries will result in corresponding effects on Métis culture, land use, economy, health, Aboriginal rights, and spiritual and cultural practices (MVEIRB, 2003). The Northwest Territories Métis Nation also indicated that the traditional South Slave Métis use of the Snap Lake area has not been acknowledged by De Beers. Representatives of the LKDFN indicated that the mine may impact berries and plants that are valued for food and medicine. Noise from the SLDP has the potential to affect both humans and wildlife, both on and off-site.

Resolution

The Snap Lake Diamond Project Socio-Economic Agreement was signed by the Government of the Northwest Territories and De Beers Canada Mining Inc (DBCMI) in 2004, as a result of recommendations laid out in the Impact Assessment Report. It was developed with the participation of the Digrib Treaty 11 Council, Yellowknives Dene First Nation, Lutsel K'e Dene Band and the North Slave Métis Alliance. The agreement stipulated that members of the Aboriginal Authorities and Aboriginal people residing in the Northwest Territories will be given priority in hiring arrangements. DBCMI is also dedicated to maximizing business value of local NWT businesses. Trainings, schooling and transportation will be provided for members of the Aboriginal Authorities and NWT residents. Literacy programs to employees and residents will be provided for as well as DBCMI is committed to promoting the equal participation of women in all aspects of the project. In order to provide a healthy and stable workplace and social environment, the proponent is committed to lending its support to the promotions of alcohol and substance abuse programs, family violence and domestic abuse counselors, and family counseling services.

A socio-economic monitoring agency was also agreed to for the purposes of implementing all commitments in the Agreement, monitoring performance, providing a forum for participation, and making any recommendations needed. During the course of the MVEIRB hearings, De Beers, through its corporate parent in Canada, De Beers Canada Corporation, made a commitment to establish in Canada, the De Beers Canada Fund (the Fund) for social investment in Canada. Monies in the Fund are to be used to support projects initiated and driven by those communities that are most likely to be affected by De Beers' mines. Specific criteria for expenditure of monies in the Fund will be defined by De Beers but key requirements for

successful proposals will include sustainability of art, culture and heritage, promotion of literacy and building community capacity in affected communities (Government of the Northwest Territories, 2004).

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| Voisey's Bay Project | |
| Proponent: Voisey's Bay Nickel Company Ltd. (VBNC) and Inco Ltd. | |
| Nain, Newfoundland Labrador | Population: 1, 034 |
| Negotiation Period: 1996-2002 | Scale of Project: 47.5 ha |
| Principle Stakeholders: Labrador Inuit Association Government of Canada Government of Newfoundland and Labrador | Community(ies) Affected: Inuit and Innu Nation |
| Project Description: | |
| The Proponent intends to construct an "integrated mine and mill/concentrator processing plant" at the Voisey's Bay site in Labrador that will process ore from the Voisey's Bay deposits and a hydrometallurgical nickel/copper/cobalt processing operation at Argentia that will process the nickel/copper/cobalt concentrate from the mill/concentrator processing plant at the Voisey's Bay site to a finished nickel product and be capable of processing concentrate and intermediate feeds containing nickel from other sources around the world (Government of Newfoundland and Labrador, 2009). An Inco Innovation Centre will be developed and operated in St. John's, focusing on education and research in mineral exploration, mining and metallurgical processing. | |

Conflict

Majority of issues raised regarding socio-economic relations were characterized by the Inuit and Innu communities of northern Labrador having below average income, above average population growth, and above average social and health problems. According to the 1991 Census of Canada, average family income in Labrador was \$50,854 (Canadian Environmental Assessment Agency, 2005). Substance abuse remains one of the most significant social problems for Inuit and Innu families and communities. Substance abuse is also directly related to incidents of crime and family violence. Participants at the community hearings focused their concerns on the possible adverse effects of the project on family and community relations and on their culture and way of life. Many feared that the project would further undermine their culture, identity, values, traditions and language (Canadian Environmental Assessment Agency, 2005). Many felt the project would also threaten life on the land, and the values associated with it, such

as sharing and mutual support. This is not merely an economic issue to the participants but also a social and cultural one, and no amount of jobs and money could compensate them for such losses. A man from Sheshatshiu, referring to the Atlantic Groundfish Strategy (TAGS), said he felt sorry for Newfoundland fishers because, as he saw it, they were being paid to lose their culture, and he did not want that to happen in Labrador (Canadian Environmental Assessment Agency, 2005). To some Innu and Inuit, particularly elders, the project would be, by its very nature, disrespectful and even a violation of their homeland, quite apart from any specific adverse effects it might have on places or resources they use (Canadian Environmental Assessment Agency, 2005).

Several participants cast doubt on Voisey Bay Nickel Company's (VBNC) prediction that more employment and income would improve social conditions. Some, particularly women, were concerned that increased income would lead to more, not less, substance abuse and family violence. Some participants inquired how widely communities would share benefits from the Project, if these benefits came only in the form of employee wages. They observed that people who lacked the requisite skills or were unable to function in English would not get jobs on the site, and that they should benefit too (Canadian Environmental Assessment Agency, 2005).

Some participants, including the *Department of Health and Community Services*, were concerned that project employment and income would create greater inequalities in communities, and that this would adversely affect community and family relations. An expert appearing on behalf of the *Innu Nation* identified what he called a "master narrative" that had arisen among Innu over the last 30 years, by which they explain their situation. They believe they have been treated unfairly, and that in order to rebuild their social order, they must be treated fairly and with respect. Justice and fair treatment are necessary to gain their consent to the Project, and this requires that land claims be settled and that VBNC be accountable to Innu.

The *Labrador Inuit Health Commission* (LIHS) stated that health and socio-economic impacts should be monitored, but that there is neither an adequate baseline of information nor a program in place to do this. Government and public participants stated concerns about the following potential adverse effects of the project on lands, on access to resources, and on the abundance and quality of those resources (Canadian Environmental Assessment Agency, 2005):

- physical loss and disruption of habitat involving the loss of over 750 ha of habitat, including the lakes used as tailings facilities, as well as possible forest fires and possible adverse effects to the Reid Brook system, which could result in significant losses in the Voisey's Bay char stock;
- disturbance of wildlife - including the effects of shipping on seals, the effects of air traffic on the Gooselands, disruption of caribou movements on land and on sea ice, and the effects of oil spills on seabirds and marine mammals - which could change wildlife distribution, abundance and accessibility;
- contamination or tainting of fish, shellfish and wildlife by metals, oil spills or treatment effluent;
- additional harvesting pressures from workers on site, and kills of problem black bears and polar bears; and
- reduced access to important harvesting areas, such as the Claim Block itself and the port site at Edward's Cove, and the disruption of travel on the sea ice by winter shipping.

Labrador Inuit Association (LIA) indicated a more general concern that the combined effects of port activities, treatment effluent, oil spills and shipping could lead harvesters to avoid Anaktalak Bay altogether.

Many participants at the public hearings were concerned about the possible effects on their ability to harvest. There were concerns about whether families would continue to get what they need from the land when they need it, and whether families would still be able to spend time in the country together, and to transmit the knowledge, skills and values of harvesting to future generations (Canadian Environmental Assessment Agency, 2005). *Department of Fisheries and Oceans* (DFO) expressed concerns about VBNC's choice of scale and method, along with specific concerns about the validity of its assessment and predictions. The Department suggested

that the assessment area was not large enough as it did not include the pack ice area beyond the outer islands, which is important habitat for some species, including bearded seals. DFO asserted that not enough information exists about marine mammals and their requirements to establish a benchmark or baseline, and therefore uncertainty is a significant problem (Canadian Environmental Assessment Agency, 2005). Baseline deficiencies include lack of information on population definition, abundance, structure, dynamics and critical life history requirements, especially for the resident ringed seal population, which is potentially the most vulnerable to disturbance by the project. Inuit experts, on behalf of the LIA, questioned VBNC's understanding of the dynamics and complexity of the marine environment. They noted that all of Anaktalak Bay is a habitat for ringed, harp, bearded, harbour and grey seals. During the open water period, minke, beluga and humpback whales, along with narwhals, use Anaktalak Bay, and LIA stated that the EIS did not sufficiently recognize this fact.

Resolution

VBNC predicts that, without the project, population and the demand for housing and municipal services will continue to grow, and that this will compound many existing family, social and health problems in the communities. They also state that land claims settlements will have a positive effect, permitting greater autonomy and providing the means to improve living conditions. It is VBNC's commitment that the project will create significant employment opportunities in the Province of Newfoundland and Labrador. The construction phases of the mine and mill/concentrator processing plant and the hydrometallurgical processing plant will create 1,700 and 3,000 person-years of employment, respectively (Government of Newfoundland and Labrador, 2009). Most of the items in the Impact and Benefit Agreements relate to employment, working conditions and business opportunities. However, other items relate to environmental management, social and cultural protection, access to and use of the project area,

and financial compensation. An *Employee Assistance Plan* (EAP) would also be available to families of employees. These elements would include (Canadian Environmental Assessment Agency, 2005):

- counseling and awareness programs on matters such as financial management, stress, family violence and substance abuse;
- the services of Aboriginal employment coordinators, who would work with employees and their communities; and
- off-site counseling for drug and alcohol problems.

VBNC stated that the *Social and Cultural Protection Fund* would promote the individual and collective well-being of Innu and Inuit through social, cultural and civic activities. VBNC acknowledged the barriers that Aboriginal people and women would face in getting employment at the mine site. The company has worked with the federal and provincial governments, the College of the North Atlantic, LIA, and the Sheshatshiu and Mushuau Innu band councils to create a Multi-Party Training Plan (MPTP) to provide pre-employment education and training for interested individuals (Canadian Environmental Assessment Agency, 2005). An initial amount of \$1.3 million was dedicated to the program as part of the Labor Market Development Agreement.

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| Horizon Project | |
| Proponent: Canadian Natural Resources Limited (CNRL) | |
| Fort McMurray, Alberta | Population: 79, 810 |
| Negotiation Period: 2002-2003 | Scale of Project: 46,540.5 ha |
| Alberta Energy and Utilities Board Ministry of the Environment Environment Canada Government of Alberta Fisheries and Oceans Canada | Community(ies) Affected: Wood Buffalo Region Residence; Métis and First Nations Communities |
| Project Description: | |
| The Horizon Oil Sands Project is located about 70 km north of Fort McMurray on CNRL Oil Sands Leases 18, 10 and 25. These leases have sufficient resources to support mined bitumen production at the proposed level of 270,000 barrels per day (bbl/d) for 42 years. The Horizon project will include a mine extraction complex and an upgrader (CNRL, 2009). | |

Conflict

Residents of the Wood Buffalo region have expressed concerns about the effect current oil sands developments, including the Horizon Project, will have on their communities. The mine development will be in the area of the Tar River and portions of the headwaters of the Calumet River. To operate the mine, and recover the oil, the rivers will need to be diverted. It is the concern of the local community that this will result in a loss of fish habitats and fish species. The Horizon Project will also have air emissions from the processing of bitumen. Community members were concerned that these emissions will increase the level of air emissions in the region, including sulphur dioxide (SO₂) and nitrogen oxides (NO_x). The emissions from the project will add to the area affected by acidifying emissions in the region. Acidifying emissions may affect soils, vegetation and water. This potential effect is of concern to *Canadian Natural Resources Ltd.* (CNRL).

One of the primary concerns raised from residents in the region is the potential effects of oil sands developments on human health and quality of life. One of the main sources of these concerns was in fact air emissions from facilities and mine operations. Also public concerns were brought forward relating to the smell associated with tailing ponds and the

potential for harmful emissions. Traffic concerns of Fort McMurray and Fort McKay residents were directly related to traffic volumes and safety on local highways.

Resolution

In and Agreement made between the Ministry of the Environment and Alberta Energy and utilities Board (AEUB), a Joint Review Panel for the project will consist of three members. The Panel is put in place to help monitor, implement and adhere to the commitments set out in the Agreement. It is the sole responsibility of the AEUB to estimate expenses of all Parties involved and for the following costs (Agreement, 2003): salaries and benefits of the Joint Panel Chairman and the AEUB staff, and all costs associated with the federal Participant Funding Program. The proponent also commits to providing significant provincial and regional economic benefits during both its construction and operations phases, with an approximated employment of 7000 workers.

The proponent is also dedicated to fully integrated facilities to promote energy conservation, mitigate environmental impact and create synergies between facilities through the shared use of infrastructure. Mitigation measures associated with traffic concerns are as follows (Agreement, 2003):

- house the bulk of its construction workers in an on-site camp reducing daily commuting
- provide busing to/from Fort McMurray for company and contractor workforces
- establish a transportation policy requiring that, wherever possible, company and contractor workforces travel to/from site on buses
- continue work with stakeholders on the Fort McKay by-pass road to divert traffic from the community, and institute appropriate access and safety controls.

Education and training will be provided and is considered an integral part in facilitating business and employment development opportunities for stakeholders in the surrounding area. This will include CNRL to work with school systems to explore appropriate avenues for providing enrichment programming and to provide students with exposure to employment

opportunities in the oil sands industry. This will also consist of the proponent creating co-operative education and apprenticeship programs. CNRL is offering local students financial help through a new scholarship program geared to jobs in oil industry field operations, where more than \$100,000 annually is available in scholarships of up to \$5,000 each through CNRL's *Building Futures Training and Education Program*. These scholarships have been created by CNRL to encourage students to take advantage of the many technical and trade employment opportunities available locally and regionally in oil and gas field operations.

With regards to voiced concerns over fisheries habitats in the Tar River, CNRL has committed to replacing and compensating any diversion or loss in habitat and species the project will cause. The loss of fisheries habitat will be replaced by the creation of two lakes in the headwaters of the Tar River. These lakes will provide almost three times the fisheries habitat as that which existed in the Tar River. These lakes will provide stable fisheries stock and fishing opportunities that did not exist on the Tar and Calumet River systems. With regards to emissions control from the project CNRL will install high efficiency emission control systems to meet or exceed required government standards. This includes recovery of 99.2% of all SO₂ emissions. Mine vehicles will be equipped with the latest developments in NO_x controls. All compressors will also be designed to low NO_x emission standards.

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| Kemess North Copper Gold Mine Project | |
| Proponent: Northgate Minerals Corporation | |
| Peace River Regional District, British Columbia | Estimated Population Affected: 58, 264 |
| Negotiation Period: 2004-2007 | Scale of Project: 31,161.9 ha |
| Government of British Columbia Department of Fisheries and Oceans Health Canada Ministry of Energy Mine and Petroleum Resources Ministry of Tourism, Sports and the Arts Archeology Branch Natural Resources Canada Transport Canada | Community(ies) Affected: City of Fort St. John City of Dawson Creek District of Chetwynd District of Tumbler Ridge District of Taylor District of Hudson's Hope Village of Pouce Coupe Communities of: Germanson Landing, Manson Creek, Kwadadia, Tsay keh dene, Takla Lake, Gitxsan Hous, and Nii kyap |
| Project Description: | |
| <p>The proponent proposes to develop the Kemess North copper and gold deposit 6 km north of its existing Kemess South Mine, approximately 250 km northeast of Smithers, B.C., and 450 km northwest of Prince George, B.C (Government of Canada, 2007). The project will include: an expansion of the existing Kemess South mine; development of a new open pit; modification of the existing mill and related infrastructure. The Project has the potential to increase the productive life of the existing infrastructure by 11 years. Ore milling capacity will be increased from the current 55,000 tonnes per day to up to 120,000 tonnes per day (Government of Canada, 2007). To prevent metal leaching and acid rock drainage, Northgate proposes to place most of the waste rock and tailings underwater in a natural water body, the Duncan (Amazay) Lake. The Duncan Impoundment would be created by constructing three dams to expand the Lake's storage capacity, and would be managed to ensure a pH that is at least neutral, to minimize dissolved contaminants (Government of Canada, 2007).</p> | |

Conflict

The Kemess North Mine Joint Review Panel has concluded that development of the Kemess North Copper/Gold Project in its present form would not be in the public interest (Government of Canada, 2007). Potentially significant adverse effects include the loss of fish habitat in Duncan (Amazay) Lake for an indeterminate period, the alteration of downstream habitat caused by Lake dewatering during the construction phase, and flow reductions in Attycelley and Duncan Creeks during mine operations. Other issues were raised in relation to loss of wildlife, primarily the effects of the Project on Woodland caribou, mountain goats, moose

and Grizzly bears. During the hearings, Aboriginal people also voiced concerns about possible effects on Hoary marmots (groundhogs).

The Panel believes that there will likely be inequities in the distribution of benefits and costs between those interests which receive most of the benefits (workers, suppliers, government revenue coffers and company shareholders) and those people who incur most of the costs (locally-based, primarily Aboriginal, people). Aboriginal people would experience first-hand any impacts on traditionally-used environmental resources. The *Northern B.C. Mining Action Group*, a non-profit public interest research group founded in response to the Kemess North proposal, argued that the waste disposal plan (involving waste disposal in Duncan (Amazay) Lake) should not be approved, primarily because of concern over the protection of water quality.

MiningWatch Canada, a 20-member coalition of labor, Aboriginal, environmental, social justice and development organizations, also opposed the use of Duncan (Amazay) Lake for waste rock and tailings disposal. They presented the view that the use of Duncan (Amazay) Lake amounts to a public subsidy of the mining operation, and stated that the prospects for rehabilitation post-closure are highly uncertain (Government of Canada, 2007). MiningWatch also spoke of the environmental effects on fish habitat, wildlife, plant life, hydrology, and cumulative effects, as well as the lack of adequate compensation to Aboriginal groups.

The *David Suzuki Foundation* argued that the use of Duncan (Amazay) Lake for waste disposal is not the best available control technology to deal with acid rock drainage, and that not all options had been explored. Some members of the public raised concerns that they felt should be addressed if the project were to be approved. These were primarily related to environmental protection and included: protection of watersheds; ensuring long-term dam safety and providing for a contingency fund in the event of dam failure; air quality effects; effects on wildlife; and ensuring post-closure clean up and maintenance (Government of Canada, 2007). Mining

industry organizations raised concerns about the inefficiency of the environmental assessment process for mine projects in general.

Resolution

The proponent has proposed an array of fish and fish habitat mitigation and compensation measures to address these effects, including replacing and enhancing fish habitat elsewhere, and transplanting fish from the Lake to preserve genetic stocks. The proponent is also committed to developing a Habitat Compensation Strategy, which includes a literature review and field studies to be undertaken to identify possibilities for transplanting fish from lost habitat in Duncan Lake into non-fish bearing systems. Fish and fish habitat surveys, detailed topographic surveys, a geophysical survey and mercury testing were completed to identify fatal flaws and to further detail the conceptual design for lake creation. The following provides a summary of the preferred compensation options: “Transplant rainbow trout and Dolly Varden char to the Mulvaney Lake system; Transplant Dolly Varden char to the Whudzi Lake system; Construct a fish ladder at the outlet of Black Lake to provide rainbow trout access to the lake; Transplant Dolly Varden char to Jock Creek and enhancing the creek; Construction rearing channels in lower Attycelley Creek; and Construction bull trout spawning platforms in Reach 2 of Attycelley Creek” (Northgate Minerals Corporation, 2005).

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| <i>Cheviot Coal Mine Project</i> | |
| Proponent: Cardinal River Coals Ltd | |
| Cadomin, Alberta | Estimated Population Affected: 9, 838 |
| Negotiation Period: 1996-2003 | Scale of Project: 7455 ha |
| Principle Stakeholders: The Alberta Energy and Utilities Board Canadian Environmental Assessment Agency Assembly of First Nations Alberta Energy and Utilities Board Cardinal River Coal Ltd. Alberta Wilderness Association Alberta Environment Hinton and District Chamber of Commerce United Mine Workers of America | Community(ies) Affected: Treaty 8 FN Hinton |
| Project Description: | |
| The Cheviot Coal Project proposes the following; the construction, operation, and decommissioning of a coal processing plant; the development, operation, and reclamation of an open pit coal mine; the restoration of the Mountain Park subdivision rail line; the upgrading of the existing access road into the Cheviot mine area; and the installation of a new transmission line and substation to supply electric power to the Cheviot mine (Alberta Energy and Utilities Board, 2000). The project is located in the Rocky Mountains of west-central Alberta approximately 320 km west of the City of Edmonton and 70 km south of the Town of Hinton. | |

Conflict

The *Assembly of First Nations* (AFN) throughout the siting of the project felt that it was necessary to provide its members with long-term plans for community health and welfare. The group brought forward some resistance regarding Reserve lands bordering the Cheviot leased land. The AFN stated that the location of the Reserve, selected subsequent to the announcement of the project, was chosen as much for its natural attributes as “for the future socioeconomic benefits this project may hold for our community” (Canadian Environmental Assessment Agency, 2000). Thereafter, the AFN and CRC had entered into a socioeconomic agreement regarding job creation, business opportunities, and other project-related benefits for AFN members.

The *Mountain Cree Camp* stated that members of the camp who continue to live in the area of the project and in the zone of cumulative effects of the industry, want to be part of the

ongoing process of communication and involvement in resource development activities, which they felt there was a lack in. The camp members voiced their concerns about the adverse effects from the project, particularly on its philosophy and on the environment it needs for its survival. Concern about the effects of mining, oil and gas, and forestry activities on traditional grizzly bear and human trails and described its work with the *Mountain Cree Camp Syllabics Institute* to identify these trails were also brought forward during negotiations. According to the Mountain Cree Camp Syllabics Institute, the proposed surface disturbances associated with the Cheviot mine are located at a convergence of these routes and threatened to obscure the evidence of pre-contact trails and their destinations (Canadian Environmental Assessment Agency, 2000).

Some residence came forward with opposition over land loss and degradation caused by mining activities in the general area of the proposed mine and by industrial development generally in Canada. The *Treaty 8 FN* argued that through an oral tradition the First Nations people of *Treaty 8 FN* had long had the belief that the area around the proposed Cheviot Coal Project had been part of their traditional hunting and gathering grounds (Canadian Environmental Assessment Agency, 2000). Further opposition was faced when the AFN stated that it had not been approached by either the federal or provincial government with regard to the potential impacts of the project on either its lands or treaty rights. Claims were made that neither level of government had consulted it on its views regarding the impacts of the project or provided financial support to address these issues. Based on the likelihood that the project activities may adversely affect the exercise of the treaty right to hunt, the aboriginal right to acquire plants for medicinal and spiritual purposes, and the quantity and quality of water flowing through its Reserve, the AFN expected full consultation from the Crown, which in their opinion was not the case. The *AWA Coalition* launched study for the estimation of costs and benefits associated with the project and its impact on wildlife and in turn its impact on the social behavior

and annual cost of losses to the communities. Unfortunately, the study was disagreed with by *The United Mine Workers of America* (UMWA) and *The Hinton and District Chamber of Commerce* (HDCC) because it did not adequately consider the project's impacts on the citizens or businesses of the community.

Resolution

The AFN affirmed both its concerns about the environment and its support for the project. It observed that to date CRC had demonstrated goodwill and good faith in its consultations and negotiations. Chief Alexis said that, according to their oral history, the intent of the treaties of 1876 was to share the land and to have a working relationship with the dominant society. He said that the AFN's dealings with CRC marked the first time in the history of his people that they had had the opportunity to have input into that sharing relationship "to work together; a partnership, joint ventures." During both the initial hearings and the current public review, CRC committed to carry out a number of monitoring programs to ensure that its predictions of adverse effects and the effectiveness of its mitigation and compensation strategies can be determined. These commitments are described in this report and/or contained in the company's submissions. The Panel, through its authority under the EUB, has accepted these undertakings and considers these to be conditions of its approval, whether set out explicitly or not in its two reports and associated approvals. In addition, the Panel, again through its EUB authority, has set out in both its original report and in this report additional monitoring programs that it will require CRC to carry out. Again, failure by CRC to carry out these programs will result in the appropriate enforcement actions by the EUB.

As a result of the provincial approval process requiring coal mines to apply for sequential approvals for the development of each new pit, waste rock dump, etc., the EUB, AENV, and the public routinely monitor the ongoing impacts of a project and the success of the various

mitigative strategies. The company is also allowed to apply to amend its various monitoring and mitigation programs (i.e., adaptive management) in order to address new or unforeseen circumstances, but changes that vary substantively from the original approvals are brought back by EUB staff to the Panel for its consideration. Based on this, the Panel concludes that the provincial approval process will ensure that the Cheviot Coal Project is carried out in an effective manner (Canadian Environmental Assessment Agency, 2000).

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| <i>Benton Windfarm Project</i> | |
| Proponent: Empire State Wind Energy, LLC | |
| Town of Benton, Yates County, State of New York | Population: 2, 640 |
| Negotiation Period: 2006-2007 | Scale of Project: 25 turbines |
| Principle Stakeholders: Town of Benton Benton Town Board | Community(ies) Affected: Finger Lakes Region |
| Project Description: | |
| The project proposes a large scale wind power project in the Town of Benton (Yates County), with an upper limit of 25 wind power generation turbines. | |

Conflict

There is a lack of documentation regarding opposition posed to the Benton Windfarm project, but through the systematic investigations the main concerns dealt with the scenic nature of the Town of Benton. The Finger Lakes region, in which the Town of Benton is located, is known for agriculture, tourism, outdoor recreation, vineyards, and wine production. It is the concern of some of the public that the nature of the town will be changed and a stigma will be created for those living in Benton. This would include the decrease in tourism and outdoor recreation activities, as it would no longer be aesthetically pleasing.

Resolution

According to the Agreement between Empire State Wind Energy LLC and the Town of Benton, an annual host community fee was agreed upon. To maintain transparency, the proponent has agree to a verification of net revenue to e performed by an independent certified

public accountant selected by the Town and ESWE. Such verification will consist of an audit of revenues and expenses for the Facility for the relevant Fiscal year. The audit will be paid for by ESWE. ESWE will maintain a form of financial assurance for claims arising out of injury to persons or property, relative to either sudden and accidental occurrences or non-sudden and accidental occurrences, resulting from operation of the Facility, and calls for 75% of the project's annual net revenue to be paid to the Town of Benton. Those payments are to be made in addition to any property taxation or negotiated PILOTS (payments-in-lieu-of taxes). Other features of the 15 year agreement include an option for the Town of Benton to purchase the power generation project after 10 years (Empire State Wind Energy, 2007).

| <i>Eastmain-1-A and Rupert Diversion Hydropower Project</i> | |
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| Proponent: Hydro Quebec | |
| Rupert River watershed (James Bay territory), Quebec | Estimated Population Affected: 27, 566 |
| Negotiation Period: 1997-2002 | Scale of Project: forbay (228.7 km ²) tailbay (117.5 km ²) |
| Principle Stakeholders: Canadian Endangered Species Conservation Council COMEX Parks Canada Fisheries and Oceans Canada Environment Canada Canadian Environmental Assessment Agency Committee on the status of endangered wildlife Canada Government of Quebec | Community(ies) Affected: Cree population: Mistissini, Nemaska, Eastmain, Wemindji, Waskaganish and Chisasibi, chibougamau Nunavik |
| Project Description: | |
| <p>Hydro-Québec plans to divert a portion of the flow in the Rupert River from a point known as km 314 (314 km upstream of where the Rupert River empties into Rupert Bay) into Eastmain 1 reservoir. It also plans to build a powerhouse (Eastmain-1-A) on the Eastmain River near the Eastmain-1 powerhouse already under construction, upstream of the existing Opinaca reservoir in the La Grande complex. Once turbinéd at the Eastmain-1-A and Eastmain-1 powerhouses, the diverted waters of the Rupert River will be channeled north into Robert-Bourassa and La Grande 1 reservoirs through the existing Eastmain-Opinaca-La Grande diversion. The route chosen for the Rupert River diversion would limit the flooded areas in the newly created tailbay, since a series of dikes would channel the diverted waters. Under the currently planned diversion scenario, neither Cramoisy Lake nor Lake Mesgouez would be flooded. A total area of 395 km² would be flooded, including 165 km² already under water and 230 km² of land (Canadian Environmental Assessment Agency, 2003). Volume for the diversion is estimated at 14.4 million m³ of fill and excavated material and 25,000 m³ of concrete (Canadian Environmental Assessment Agency, 2003). The construction of the tailbay would involve relocating some of the existing power transmission lines. This would require dismantling 9 towers, reconstructing 9 towers and building 5 islands. The partial diversion of the Rupert River would also call for the construction of temporary work camps, permanent access roads from Albabel substation and from an existing secondary road, a temporary 69-kV transmission line from Albabel substation to the construction site, and a permanent transmission line to the spillway on the Rupert River and the control structure (Canadian Environmental Assessment Agency, 2003). A permanent access road would be built to run west to east between Muskeg substation and the Eastmain-1 and Eastmain-1-A powerhouses. In order to factor in the increased inflows, the Sarcelle site would be modified, either to include the addition of a fourth gate to the existing control structure, or through the construction of a powerhouse with a capacity of some 130 MW, should the Crees choose to exercise this option, which is available to them. In the latter case, a 315-kV transmission line would link the Sarcelle powerhouse to the Eastmain generating substation via Muskeg substation (Canadian Environmental Assessment Agency, 2003).</p> | |

Conflict

The public hearings held on the project and its impacts revealed that Cree society, whose demographics are rapidly growing, is divided on the project. As a matter of fact, it is clear from the public hearings that all of the Cree are attached to their culture and feel that the practice of hunting, fishing and trapping is a core value of Cree society (Government of Quebec, 2006). In Chibougamau and Montréal, emphasis has been placed primarily on the economic spin-offs a project of this nature produces through the awarding of contracts and job creation, as well as the regional development opportunities and the resulting development of expertise.

Environmental issues are among the major concerns raised by a project. They are brought up repeatedly by communities affected by the project, the scientific community or the various specialists involved in the impact assessment. For the Crees, this concern mainly involves two species that they particularly value, lake sturgeon and anadromous lake cisco, which is traditionally fished every year at Smokey Hill (Hydro-Quebec Production, 2005). The Crees are next concerned by species such as walleye, northern pike and lake whitefish, and, finally, by fish in general. The concern primarily deals with whether these species will be present in sufficient numbers in the reduced-flow reach to continue harvesting them. From the Impact Assessment done on the project, it was found that it will affect the trap lines of six Cree communities, but especially those of Mistissini, Nemaska, Waskaganish and Eastmain. Using the land for hunting, fishing and trapping is closely linked to Cree culture and identity. Trap line users raised questions and concerns about the project's impacts on their wildlife resource harvesting activities. It was also expressed that preserving the recreational and scenic value of the Rupert was important to the communities and to their culture.

The Chisasibi community members spoke out against the current project at their consultation meeting, they argued that the native lifestyle and mindset are not the same as that of mainstream North American society, and that full understanding of impacts will take more time. "We will miss a lot of things and in the future we will realize the negative impacts ... this happens all the time" (Ferrari, 2003). It was felt that more time is needed to share the process with the elders, and to translate proceedings into the two dialects of Cree spoken in the region. "'Biodiversity'; how do you explain that in Cree? We need time to fully participate in the process" (Ferrari, 2003).

Community members also raised the issue of changes in water purity. Previous damming projects increased mercury levels in the waters of the La Grande and contaminated fish, a staple of the Cree diet. Concerns were also raised regarding winter travel on the river because of potential ice level changes, for the loss of medicinal plants, spawning grounds and the effects on migrating goose were also expressed (Ferrari, 2003). The Crees wondered how traditional knowledge could be attained with the process proposed by Hydro-Quebec, stating (Ferrari, 2003):

There are different kinds of listening: with a pen, ears, mind, heart. It's not just words in speaking, it's spirit too. Sharing is a sacred process we don't understand fully. Sit by the river, experience it – please do that. It's not the same as flying over it. I'm sure it's not written in your mandate, but please do it ... Water is sacred. Because it is sacred we cannot take what we do lightly. Don't let this process be a rubber stamping process. Please do this in honor.

Resolution

Hydro-Québec promises that it will carry out the remedial and mitigating measures, implement the guarantees, the commitments and the undertakings and provide the Crees, Cree Bands and Cree enterprises the economic and community benefits set out in an Agreement in

respect to the project. Within the agreement Hydro-Quebec guarantees several undertakings, some of which are as follows. They agree that the natural water levels and natural water flows of the Mistissini Lake, Lake Woollet, Lake Bellinger and Lake Mesgouez, Champion Lake and that Rupert River (and its tributaries upstream of the forebay) shall not be affected by the project. It is stipulated in the agreement that the Crees shall have access to the roads used in connection with the project as well as the use of Hydro-Québec's services and facilities. Hydro-Québec also committed to the mitigation measures required in case "any negative impacts are caused to existing wildlife and the aquatic and terrestrial habitat of Rupert Bay, affect the usual Cree crossings over the Rupert River by ice cover in the winter, and affect La Grande River bank stability, particularly the stability of the banks of La Grande River from LG 2 powerhouse to the mouth of the La Grande River" (Grand Council of the Crees, 2002).

In order to maintain to the greatest extent possible the character of the Rupert River, the proponent, in correspondence with Cree users, design and construct up to ten weirs along the Rupert River downstream from the point of diversion. Maintenance of the migration patterns of fish west of the point of diversion will be performed. This includes Hydro Quebec's implementation of appropriate remedial and mitigating works "including [if need be] fish ladders will be provided, maintained and replaced by Hydro-Québec" (Grand Council of the Crees, 2002). The spawning sites of fish downstream from the point of diversion will be maintained or replaced. Particular attention will be given to the Noodamessenan (Smokey Hill) cisco spawning site and sturgeon spawning sites, which are of important cultural significance to the Cree. Upon the diversion of the Rupert River, Hydro-Québec promises to ensure that the water for domestic use in the community from the Rupert River will meet Federal standards and "will be of no lesser quality and in no lesser quantity than that provided by the water treatment plant that preexists the project" (Grand Council of the Crees, 2002).

In relation to the water supply demands of the present and future Waskaganish community, Hydro-Québec shall ensure that the water treatment plant has a supply of water equal to what the Rupert River is able to provide in its natural state, prior to the existence of the project. Hydro-Québec will cut and dispose of trees in specific areas of land planned to be flooded prior to impoundment in order to create better conditions for fish habitat, fish harvesting, safety, transport and water flow. Prior to the disposal of trees in the proposed impoundment, Cree users shall have the opportunity to salvage wood for traditional uses.

Several Funds shall be created and adhered to by Hydro-Quebec. An *Eastmain 1-A /Rupert Mercury Fund* will be created considering the impact of the Eastmain 1-A/Rupert Project on the concentration of mercury in fish. Three million dollars shall be provided by Hydro-Québec for a maximum duration of twenty years. The Fund is intended to be used for (Grand Council of the Crees, 2002): access to alternative fishing sites; fishing and hunting subsidies; fish and wildlife habitat enhancement; and development of waterfowl hunting ponds. There will also be a *Boumhounan Remedial Works Fund* implemented. This Fund shall be under the control of and managed by Nadoshtin Companee, and consist of a \$30,000,000 budget. The Fund shall be used to facilitate the continuance of Crees traditional activities by alleviating negative impacts of the project, reorganization of Cree lands, regeneration of habitats, and favor the biological and visial quality of the environment as well as its productivity (Grand Council of the Crees, 2002). The *Boumhounan Archaeological and Burial Sites Fund* shall have a budget in the amount of \$2,500,000, provided by Hydro Quebec. The Fund shall serve the purpose of initiating archeological studies, covering any expenses with regards to analysis, equipment, and preservation. Another fund established is the *Eenou Indohoun Fund*. It serves to promote Cree traditional activities and to mitigate the impacts of the project. It shall consist of an amount of \$3,900,000 from the budget and funds of Hydro-Québec which shall be paid to Nadosthin

Companee. The Agreement also stipulated a *Training Fund* established to finance training costs, including (Grand Council of the Crees, 2002): tuition fees, room and board; transportation; and partial reimbursement of wages to contractors for on-the-job training incentives in contracts. The fund also serves the purpose of creating incentives for on-the-job training in the form of a partial reimbursement to contractors of Crees wages. The Training Fund shall consist of an amount of \$1,500,000. A *Wildlife Management Program* is also agreed upon, where funding is used for any remedial work dealing with land use, fish and wildlife harvesting, where a maximum budget of \$750,000 is allocated.

| <i>Bruce to Milton Transmission Reinforcement Project</i> | |
|---|---|
| Proponent: Hydro One Networks Inc. | |
| Kincardine-Milton, Ontario | Estimated Population Affected: 119, 288 |
| Negotiation Period: 2007-2008 | Scale of Project: 180 km long |
| Principle Stakeholders: The Ontario Power Authority (OPA) The Ontario Energy Board (OEB) The Ministry of the Environment (MOE) Hydro One Networks Inc. Pollution Probe Ontario Federation of Agriculture | Community(ies) Affected: Municipality of Milton and Halton Hills Bruce County First Nation and Métis Communities (6) Municipality of Kincardine Town of Hanover Municipality of West Grey Town of Southgate and Wellington North Town of Erin and Township of East Luther Grand Valley and East Garafaxa |
| Project Description: | |
| The proposed project will support provincial effort to increase electricity supply to approximately 40,000 MW by 2027, and to retire coal fired generation capacity, as well as to develop renewable energy generation facilities. The proposed project includes the planning, designing, constructing, operating and maintaining of new transmission facilities between the Bruce Power Complex and the Milton SS. The proposed transmission line will be approximately 180km long and be designed to accommodate the output of two refurbished Bruce units (app. 1500 MW), 700 MW of existing and committed renewable energy sources, and up to 1000MW of identified future renewable energy sources in the Bruce area (Hydro-One, 2008). | |

Conflict

The proposed pipeline route through the park and City neighborhoods' has been met with fierce local opposition, including a petition signed by more than 15,000 local residents and numerous interventions. In May 2007, concerned citizens appeared at hearings at the New

Brunswick Legislature demanding that the province not allow controversial legislative changes that would permit the pipeline to pass through Rockwood Park. Back in 2006, on the same issue, approximately 200 citizens participated in the National Energy Board proceedings. A New Brunswick community group, *Friends of Rockwood Park*, launch a lawsuit over the proposed project. The lawsuit was filed in the Federal Court of Appeal by *Sierra Legal*, Canada's leading environmental law organization. The non-profit volunteer group is concerned that the Brunswick Pipeline Project will harm the park and that NEB's recently completed environmental assessment was unlawful. The lawsuit alleges that the NEB failed to properly consider alternative means for the proposed pipeline, and specifically the environmental effects of an undersea pipeline route, as required by the Canadian Environmental Assessment Act (Ecojustice, 2007).

Resolution

Hydro One has made primarily commitments with the communities in its 2008 Land Acquisition Compensation Agreement. According to the proponent the main consideration in developing the compensation principles was providing property owner choices, flexibility and ensuring fair market value. It is intended to inform property owners directly affected by the proposed widened transmission corridor about their choices regarding the land interests required by the Project. The Project land acquisition process will formally commence when initial meetings take place between Hydro One's contracted property agent and each Property Owner to review and discuss these land acquisition compensation principles. Property Owners will be provided time to review the materials and "to consider the need for follow-up meetings and discussions with Hydro One's property agent in advance of Hydro One presenting a formal offer to acquire the specific Project Corridor property interests" (Hydro One, 2008). Once Hydro One has collected all pertinent property information, contracted accredited independent appraisers will prepare formal appraisal reports that quantify the fair market value of each Project Corridor

property interest, including injurious affection, if applicable. All appraisers retained by Hydro One will have received an Accredited Appraiser Canadian Institute (AACI) designation from the Appraisal Institute of Canada. This ensures that appraisals are conducted pursuant to professional standards established by the Institute. The independent appraisal valuation information will be used as the basis for the preparation of individual formal offers to be provided to each Project Corridor Property Owner.

If the Offer presented by Hydro One is accepted, the acquisition process will proceed and the parties will finalize the transaction. Alternatively, if the Property Owner considers that additional steps are necessary to independently assess/review the Offer, Hydro One will provide for the reimbursement of reasonably incurred independent review costs of up to \$7,500 (the expected cost of an additional appraisal report and/or legal review) (Hydro One, 2008). In order to be entitled to this reimbursement, the Property Owner, after receiving Hydro One's Offer, must notify Hydro One of its decision to incur independent review costs. An independent review appraisal carried out for the Property Owner must be conducted by an AACI-accredited appraiser and must be in a form that meets the requirements of section 25 of the Ontario *Expropriations Act*.

Hydro One will offer to Property Owners an up-front payment of \$2,500 as part of each full settlement package, in recognition of time taken to meet with and discuss necessary land settlement requirements with Hydro One. Additionally, Property Owners who accept Hydro One's offer to acquire easement interests will be provided with the following incentive compensation amounts (Hydro One, 2008): \$5,000 option payment paid at the time agreements are signed providing Hydro One with the option to purchase the interest are executed; plus a further \$4,000 paid at the time Option Agreements are executed if and where the Property Owner has not required reimbursement of any costs for the independent review of Hydro One's Offer;

and the Property Owner does not seek to challenge the injurious affection amount included in Hydro One's Offer; plus an amount equal to 40% of the appraised fair market value of the acreage over which the easement interest will be taken. This amount will be paid if and when Hydro One elects to proceed with the project.

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| Bear Mountain Project | |
| Proponent: Bear Mountain Wind Ltd. Partnership | |
| City of Dawson Creek, British Columbia | Population: 11, 811 |
| Negotiation Period: 2005-2007 | Scale of Project: 57 turbines |
| Principle Stakeholders: Canadian Wildlife Service Environment Canada Bear Mountain Grazing Association Louisiana-Pacific Canada Ltd. EnCana Oil Gas Co. Ltd Energy Explorer Inc. Natural Resources Canada Timberline Trail and Nature Club | Community(ies) Affected: The Kelly lake communities(3); Kelly Lake Métis Settlement Society, the Kelly Lake Cree Nation and the Kelly Lake First Nation City of Dawson West Moberly First Nations Sauteau First Nations McLeod Lake Indian Band Peace River |
| Project Description: | |
| The project involves the construction and operation of a 120 megawatt wind park consisting of wind turbines, access roads, a transmission network and substation located 16 kilometers southwest of the City of Dawson Creek (Government of British Columbia, 2009). The project is located southwest of the City of Dawson Creek in the Peace River region of British Columbia. The proposed project will be situated along the north-south ridge of Bear Mountain overlooking the community of Arras. The preliminary layout includes up to 57 two megawatt turbines, access and maintenance roads, an underground electrical network, an overhead transmission line and a substation to convert electricity for connection to the power grid (Government of British Columbia, 2009). The layout will also include ancillary facilities such as staging areas, an off-site operations centre and an interpretive centre in Dawson Creek. | |

Conflict

The principal concerns identified by the public were: human health; alternative locations for the proposed project; adequacy of public consultation; and potential impacts to existing grazing tenures, wildlife, recreation and access, water quality, traffic and property values. Issues that were of particular interest to First Nations related to monitoring and mitigation for vegetation, hydrology and water quality, traditional land use, wildlife and wildlife habitat,

recreation and access, and the development of an Impact Benefit Agreement in order to identify socio-economic benefits that might accrue to them as a result of the proposed project.

One hundred and two written submissions opposing the project were received by the Environmental Assessment Office. The 102 submissions represent 90 individuals/families, as well as the following associations: *Bear Mountain Grazing Association; Community for Responsible Wind Power; and Timberline Trail and Nature Club*. In brief the following were concerns and conflict that the public, including the First Nation communities had with the proposed project (Environmental Assessment Office, 2007):

- Aesthetic issues related to the visibility of wind turbines and strobe lighting during poor weather conditions;
- Re-vegetation of disturbed areas;
- Collision risks of birds and bats with the wind turbines;
- Impacts to the local water supply, including wells, dugouts and the Kiskatinaw River;
- Range land uses and potential effects of the Project on grazing activities during construction and operations;
- Continued access to Bear Mountain by recreational users;
- Setback of wind turbines from nearby residences;
- Potential effects on nearby residents resulting from the operation of navigational lighting installed on wind turbines;
- Safety issues due to falling ice from wind turbines;
- Shadow flicker effects on the health of nearby residents from the interaction of sunlight with the wind turbines;
- Health effects on nearby residents from the sound of operating wind turbines
- Thoroughness of public consultation; and
- Decreased property values for those residents located near the proposed project.

Resolution

Commitments by the proponent were made to develop and implement a construction and operation/maintenance environmental management system, which would be based on environmental management plans include sediment and erosion management to maintain natural drainage patterns and ensure protection of water quality. It was of importance to the proponent to also utilize an adaptive management approach to mitigate collision mortality of birds and bats

(through the continual refinement and implementation of a Raptor, and Migratory Bird and Bat Monitoring and Follow-up Program). Some other mitigation measures were as follows: pre-construction wildlife surveys to identify the presence of wildlife; ensure ongoing consultation with tenure holders and recreational users of Bear Mountain; and implement traffic and construction management plans.

The Proponent has committed to address concerns raised by grazing tenure holders through ongoing consultation regarding the following: placement of wind turbines; placement of the road and transmission corridor; fencing; provision of alternate amenity sources, such as water, as necessary; re-vegetation; limiting noxious weeds; and, traffic management. Other mitigation measures to address potential forestry impacts include: consideration of forestry values in the detailed design stage of the Project; negotiations with the forestry tenure holder or private land owner to salvage any merchantable timber where developments are unavoidably located on productive forested land; development of a long-term plan to manage access; coordination of Project construction with harvesting activities; and, adherence to standards and guidelines for removal of merchantable timber in private and Crown land, with compensation to land and tenure owners negotiated as necessary. Mitigation measures addressing potential impacts on subsurface oil and gas tenure holders are as follows: discussions regarding proposals for future oil and gas activities, as requested by stakeholders; and, a plan to manage access and construction where overlap occurs between industry activities, including consideration of construction timing.

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| <i>Emera Brunswick Pipeline Project</i> | |
| Proponent: Emera Brunswick Pipeline Company Ltd. (EBPC) | |
| Saint John, New Brunswick | Population(s): 122, 385 |
| Negotiation Period: 2006-2007 | Scale of Project: 145 km long |
| Principle Stakeholders: National Energy Board Department of Fisheries & Oceans Canada Transport Canada Environment Canada Natural Resources Canada Health Canada Union of New Brunswick Indians | Community(ies) Affected: 15 First Nation Communities |
| Project Description: The proposed Brunswick Pipeline Project includes the construction and operation of a natural gas export transmission pipeline, approximately 145 km in length, from Mispic Point to St. Stephen, New Brunswick. The proposed pipeline route would involve creating a trench 8 to 10 feet deep within a 100 foot right of way through the middle of Rockwood Park in terrain ranging from dense forest to wet boggy soil to steep rocky slopes (National Energy Board, 2007). | |

Conflict

Issues of concern and opposition have come forward regarding the loss of species at risk, species of conservation concern, and loss of critical habitat for these species. As part of its evidence, *Friends of Rockwood Park* (FORP) submitted the results of surveys for rare aquatic vascular plants in Rockwood Park. The data showed a large range of species which are indigenous to that part of Atlantic. The opposition was posed as a result of destruction of such species in their pristine habitat. Rockwood Park is a popular destination for Saint John residents and visitors. In various seasons, Rockwood Park offers the following attractions: Kiwanis Playpark at Fisher Lakes; Rockwood Park Municipal Golf Course & Aquatic Driving Range; Rockwood Park Campground; Cherry Brook Zoo & Vanished Kingdom Park; beaches at Fisher Lakes and Lily Lake; hiking, biking, cross-country skiing, and running trails; picnic sites at Fisher Lakes and throughout the wilderness zone of the Park; Rockwood Stables & Turn of the Century Trolleys; and horseback riding. Opposition was voiced to the development at the park and the loss of its intrinsic value and habitat, the aesthetic pleasure gained from enjoying some of

these activities, and the reason for tourism at Rockwood Park declining is a serious concern to the surrounding communities. There are approximately eighty wetlands identified during field studies as occurring within the preferred corridor of the project, with approximately 800 ha of total area occupied by wetland habitat. Opposition was posed with regards to the loss of the wetland function which may be lost during various construction activities: site preparation, pipe installation, watercourse crossings and temporary ancillary structures and facilities.

Another concern was Acid Rock Drainage (ARD) also came forth as an issue with potential impacts on water resources and aquatic life. Exposure of sulphide-bearing rock as a result of construction activities can result in acid drainage that can degrade water quality of down gradient water. During the Aboriginal open houses, the *Union of New Brunswick Indians* (UNBI) which represents twelve First Nation communities posed some opposition regarding the traditional use of lands and resources within the preferred corridor. Other issues raised were associated with psychosocial health impacts, effects on air from tree removal, construction emissions at the air shed level, community knowledge about worries, complaints, ideas, alternatives and personal impacts, and community security and pipeline safety.

The proposal has been met with fierce local opposition, including a petition signed by more than 15,000 local residents in favor of an alternative marine route for the pipeline (National Energy Board, 2007). In May 2007, concerned citizens appeared at hearings at the New Brunswick Legislature demanding that the province not allow controversial legislative changes that would permit the pipeline to pass through the park. *Friends of Rockwood Park*, who have filed legal proceedings challenging the environmental assessment of the Brunswick Pipeline Project, are upset that the NEB is rushing to finalize the Pipeline's controversial proposed land-based route (2007) calling them 'closed minded' to considering less harmful impacts of a marine route. The group's opposition made headlines. Canada's leading environmental law

organization *Ecojustice* (formerly Sierra Legal), on behalf of the Friends of Rockwood Park, is arguing for leave to appeal the NEB's decision. Ecojustice launched the lawsuit, arguing that the NEB's assessment of the project was unlawful because it failed to consider environmental effects of a marine pipeline, or the harmful effects of trenching in the St. John River (Ecojustice, 2007b). A lawsuit has been filed against the National Energy Board (NEB) alleging that its review panel failed to consider an alternative route before giving Emera Brunswick Pipeline Company Ltd. the green light to build a natural gas pipeline through Rockwood Park (Davis, 2007). The lawsuit alleges that the NEB failed to properly consider alternative means for the proposed pipeline, and specifically the environmental effects of an undersea pipeline route, as required by the Canadian Environmental Assessment Act (Ecojustice, 2007b).

Resolution

Emera Brunswick Pipeline Company (EBPC) has made commitments to the following in its 2007 agreement with UNBI:

- Avoiding environmentally sensitive areas and Species at Risk and Species of Conservation Concern by route selection
- Flagging or fencing environmentally sensitive areas prior to commencement of construction (including clearing)
- Checking open trenches for wildlife, such as wood turtles, prior to backfilling
- Minimizing footprint of temporary workspaces within forested areas
- Working with appropriate regulating agency to develop any additional mitigation measures based on fish and fish habitat surveys, vegetation surveys and bird surveys conducted late 2006, and including these measures in the EPP
- Conducting a drilling and sampling program with emphasis on bedrock areas near domestic water wells and in designated Watershed Protection Areas that present an acidic drainage risk
- Collecting baseline water samples for wells within 100 m of excavation zones in acid-generating bedrock and for watercourses in designated Watershed Protection Areas where the detailed RoW is within 250 m of a watercourse in acid-generating bedrock
- Diverting surface water and shallow groundwater away from excavation in acid-generating bedrock areas

- Remediating any affected wells by deepening the well, using grouted casing or liners, or replacing the well and
- Avoidance of wetlands by route selection, wherever practicable
- Developing a crossing and rehabilitation plan for wetlands, to be included in the EPP, that assesses alternative construction methods to minimize impacts to wetlands to protect wetland function
- Maintaining water flow and drainage within or across wetland
- Developing a specialized construction plan for Rockwood Park

The agreement ensures Aboriginal inclusion in the pipeline developments and consists of protocols for protecting Aboriginal culture, heritage and archeological resources. In addition, the agreements outline scholarship and training contributions, a skills development fund and an ongoing communication structure (National Energy Board, 2007). The Landowner Complaint Resolution Program is the process through which the Board deals with landowner complaints. It provides a number of options for the tracking and resolution of complaints. The process may involve informal discussion with the parties, inspections or site visits, ADR, and could eventually require a Board decision on an issue (National Energy Board, 2007).

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| <i>Vancouver Island Generation Project</i> | |
| Proponent: Vancouver Island Energy Corporation (VIEC) | |
| Duke Point near Nanaimo, British Columbia | Population: 92, 361 |
| Negotiation Period: 2002-2003 | Scale of Project: 4.1 ha |
| Principle Stakeholders: Ministry of Water, Land and Air Protection Government of British Columbia Environment Canada Island Trust Council | Community(ies) Affected: Snuneymuxw First Nation Nanoose an Qualicum First Nations The Hul'qumi hum Treaty Group Penelakut; Layackson Chemainus |
| Project Description: | |
| The project includes a 265 MW natural gas fired, combined cycle electricity plant, a water treatment system, a cooling water circuit, and a 850 meter long water supply pipeline. It will also consist of a connection to and upgrade of the existing transmission line, a 440 meter long natural gas service line to connect to the Terasen Gas (formerly Central Gas) system, and a 325 meter long pipeline to transport wastewater to the main sewage treatment plant. Upgrades of the Hooker Road are also considered in the project (Environmental Assessment Office, 2003). | |

Conflict

The *Georgia Strait Alliance* (GSA) is a nonprofit organization working to protect and restore the marine environment and promote the sustainability of Georgia Strait, its adjoining waters and communities. The opposition posed by the GSA for the projects has the support of 205 members in the Nanaimo area and 600 members in the Georgia Basin who would be affected by the proposed natural gas plant. The concerns and conflict deal with the overall context and process of the proposed facility. According to the NEB review of the proposed Georgia Strait Crossing Pipeline (GSX PL) is not yet complete, and therefore the VIGP proponent hasn't ensured that the resource necessary for transport of the gas to the plant is in place. Nor have the results of BC's Energy Task Force Review been released yet, so decisions about this plant are being made without the benefit of the task force's recommendations on provincial energy directions (Georgia Strait Alliance, 2002). It is thought by the group that BC Hydro is proposing to make a massive investment in fossil fuel burning technology and its associated environmental and economic costs, at a time when there is considerable doubt about the long term reliability of gas supply at an affordable cost.

People in the Nanaimo area are concerned about the plant. In fact, 3,375 local citizens signed a petition regarding opposition to the building of the facility as well as the environmental effect and public health hazards associated with emissions from such a facility (Georgia Strait Alliance, 2002). It is also the concern of the people that the provincial Environmental Assessment doesn't consider alternative energy sources and their impacts in order to evaluate the comparative impacts of the plant – i.e., the plant is considered in and of itself. However, the Assessment does consider alternative energy sources in order to allow for greenhouse gas (GHG) offsets. Thus, under the EAO process, project alternatives are considered in an unbalanced manner, by allowing the benefits of alternatives to the proponent without an adequate assessment of the full impacts of the project to local residents and the environment.

It was also voice that the proponent has not accounted for the effects that the 12 tonnes of sulphuric acid mist will have on acidic deposition from VIGP, or the interaction with acidic emissions from Harmac from their use of HCl, chlorine and H₂S.

Conflict has risen regarding the volume of water that will be taken from the Nanaimo River and its effect on aquatic life in the river and estuary. Of particular concern are water levels during the summer months. The Nanaimo River may not be able to support the additional proposed VIGP use. Minimizing the impacts on the Nanaimo River depends on the management and use of the water reservoir. However, the application contains no discussion on protocol around the water reservoir, making it impossible to determine the potential impacts to the river.

Another social cost of the proposed project relates to public anger and attitude if the project is built, despite the fact that there has been no demonstrated need for the project. In three Vancouver Island communities to date, the public has spoken out loudly to question the overall wisdom of this project. Many citizens are advocating other power generation options, such as

wind power, Independent Power Producers using more benign generating methods, an aggressive conservation program, and replacing the existing cable. The cost could be great if the provincial government is seen as ignoring a public willingness and desire create a different kind of energy future than the one proposed by VIEC (Georgia Strait Alliance, 2002).

Resolution

VIEC has committed to using all accessible scientific knowledge to model and mitigate environmental effect pertaining to the project proposed. BC Hydro is reducing its GHG emissions through a number of activities such as the Power Smart program, making ongoing improvements at existing facilities and purchasing clean power from independent power producers. VIEC has committed to preparing a GHG mitigation plan, which would include details on BC Hydro's commitment to offset 50% of GHG emissions through year 2010, and providing annual progress reports on the implementation of the plan.

VIEC is proposing the following measures to mitigate noise impacts (Environmental Assessment Office, 2003):

- Comply with City of Nanaimo Noise Control Bylaw No. 4750;
- Ask equipment suppliers to provide plant equipment that has noise characteristics equal to or better than the design basis levels used in the impact assessment;
- Verify compliance with noise specifications in the Application by undertaking 24-hour monitoring;
- Undertake additional noise mitigation if the plant does not meet noise specifications contained in the Application; and
- Establish a public advisory process to address noise concerns.

In response to issues raised by the SFN, MWLAP, CWS and The Nature Trust, VIEC agreed to provide funding for a baseline study to determine the effects of the existing transmission line on birds using the area, and a post-construction bird strike monitoring study to

determine any incremental impacts arising from the upgrade (Environmental Assessment Office, 2003). VIEC also committed to working with the SFN, The Nature Trust, CWS and MWLAP to develop a mitigation/compensation plan to restore bird populations. This would include ongoing discussions on the baseline and post-construction avian study to determine the before and after impacts, if any, as well as an agreed upon formula for funding. Any funds provided by VIEC would be directed to remedial activities within the Nanaimo estuary. VIEC also agreed to fund, in part, the data analysis and write-up of earlier collected data on bird use and species distribution throughout specific habitat units within the Nanaimo River estuary. The rest of the funding will be provided by The Nature Trust and its partners.

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| GSX Canada Pipeline Project | |
| Proponent: British Columbia Hydro and power Authority (BC Hydro) and Williams Gas Pipeline Company (Williams) | |
| Sumas, Washington-Vancouver Island, British Columbia | Estimated Population Affected: 742, 336 |
| Negotiation Period: 2000-2001 | Scale of Project: 60 km long |
| Principle Stakeholders: National Energy Board Environment Canada Forest harvest companies Gulf Crab Fisheries Association Harvesters Association Government of Canada Government of British Columbia Fisheries and Oceans Canada | Community(ies) Affected: Sencot'en Alliance Cowichan Tribe Tseycam First Nations Tsawwassen |
| Project Description: | |
| The project is the Canadian component of a proposal for a new international pipeline, referred to as the Georgia Strait Crossing Project, to transport natural gas from Sumas, Washington to Duncan, British Columbia, on Vancouver Island. The pipeline would be approximately 60 km in length, with 44 km offshore and 16 km onshore. It would extend from a point on the Canada-United States border in Boundary Pass to an interconnection with the existing Centre Gas British Columbia Inc. pipeline at a point west of Shawnigan Lake, south of Duncan (Canadian Environmental Assessment Agency, 2001). | |

Conflict

Community members along the pipeline route expressed concern with the analysis of biodiversity and ecosystem issues associated with the project. For example, the *Marine Coalition* submitted that species/community associations and interactions were not adequately addressed, particularly the dependence of various waterfowl (e.g., great blue heron) and fish (e.g., juvenile lingcod) species on eelgrass habitat at Boatswain Bank (Canadian Environmental Assessment Agency, 2003b). The *GSX Concerned Citizens Coalition* was amongst one of the groups opposing the pipeline, as it was mainly concerned with endangered species, such as the killer whale, and Great Blue Heron nest sites which were not adequately identified and considered by the proponent. They also feel that many of the mitigation measures proposed are unproven and thus are uncertain in terms of effectiveness. The major concern and conflict amongst groups has

been the possibility of the pipeline being built through the southern Strait of Georgia National Marine Conservation Area.

First Nations expressed concern over potential effects to valued shellfish and marine plant resources at Cape Keppel, which they claim is within their traditional territory. These concerns were also expressed by DFO. Effects to commercial fisheries were also of concern and generated some conflict amongst the Aboriginal communities, as part of their tradition and income includes the harvesting of crabs. Commercial crab harvesters, expressed concern that a bottom-founded pipeline may interfere with the movement and behavior patterns of marine benthic organisms such as Dungeness crab, California sea cucumber and the green sea urchin, and thus create a “barrier effect” for these organisms. The Marine Coalition expressed concern with what it considered to be deficiencies in the GSX PL baseline information, particularly with respect potential barrier effects on mobile epifauna (Canadian Environmental Assessment Agency, 2003b).

Specific concerns regarding the potential for alteration of surface water and groundwater quality were expressed. Potential effects on wildlife, including sensitive species, such as the following were feared by the public: loss and alteration of habitat; sensory disturbance; and direct mortality. Effects were primarily focused on the possible loss of old growth forest and large woody debris in the study area, which would result in the loss of habitat for species such as owls, woodpeckers, bats and clouded salamander (Canadian Environmental Assessment Agency, 2003b).

Resolution

GSX PL has committed to pre and post-construction surveys pertaining to habitat loss and species depletion. Follow-up monitoring and mitigation would also be carried out to ensure

adequate burial and to undertake backfilling operations where trenching specifications have not been met. They have also committed to implement industry-standard mitigation measures, such as runoff control during and immediately after construction (e.g., silt fences), a re-vegetation program for the stream-banks, soil compaction relief, terrain contour restoration and installation of cross ditches, diversion berms, trench breakers and subdrains, where appropriate, to reduce interference with surface and groundwater (Canadian Environmental Assessment Agency, 2003b). To minimize emissions, GSX PL will ensure that all vehicles and equipment are maintained in good working order and properly sized for the job. Crew buses would be used where appropriate and unnecessary vehicle idling would not be permitted. Protection measures along with additional surveys concerning rare species of plants in the proposed areas will be conducted.

Disturbance to nesting migratory birds, or any other bird, would be minimized by GSX PL's commitment to "pre-clearing" the ROW in advance of peak timing for bird nesting. Pre-clearing would occur prior to the 1 April to 31 July period, if other critical scheduling elements permit. Wildlife trees and snags would be retained within the perimeter of the ROW, especially along the eastern half of the route, if this does not compromise safety. To compensate for the loss of habitat provided by wildlife trees, GSX PL has committed to placing nest boxes, and possibly platforms, along the ROW to reduce potential effects to western screech owl, short-eared owl, barred owl and great horned owl (Canadian Environmental Assessment Agency, 2003b). An additional breeding bird survey will be carried out prior to clearing to identify active nests of breeding birds.

GSX PL committed to regular communication with fishers, including a preconstruction meeting to review the construction plan; posting construction-related details in local marinas and newspapers to inform commercial and recreational fishers in the area; and, during operation,

maintaining dialogue with fishers concerning any potential ongoing inconvenience or other issues arising from operation and attempting to address concerns to both parties' satisfaction. At the same time there was also an agreement made by the proponent to monitor for unforeseen archaeological effects during construction and address unanticipated discoveries of archaeological remains in the marine portion. GSX PL stated it would pay for project-related loss or damage to gear during construction.

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| <i>Deep Panuke Offshore Gas Project</i> | |
| Proponent: Encana Corporation | |
| Southeast of Halifax, Nova Scotia on Scotian Shelf | Population: 372, 858 |
| Negotiation Period: 2000-2006 | Scale of Project: 176 km long |
| Principle Stakeholders: Canadian Nova-Scotia Offshore Petroleum Board Petroleum Research Atlantic Canada Government of Canada Government of Nova Scotia National Energy Board | Community(ies) Affected: Goldboro Municipality of the District of Guysborough Municipality of the District of St. Mary's |
| Project Description: | |
| The project involves production and processing of gas offshore and transport, via subsea pipeline, of market-ready gas to Goldboro, Nova Scotia to an interconnection with the M&NP main transmission pipeline for further transport to markets in Canada and the northeast United States (EnCana, Volume 3, 2006). The project design consists of a jack-up MOPU in a water depth of approximately 44 m. The project will initially include completing four previously drilled wells and drilling two new wells, one production well and one acid gas injection well. Up to three additional sub-sea production wells could be drilled. All wells will have horizontal trees and will be tied back individually to the MOPU with subsea flow lines and control umbilical's (EnCana, Volume 3, 2006). The export system will consist of a single subsea pipeline delivering Deep Panuke sales product to one of two delivery points. The gas processing system will include inlet compression, separation, sweetening, dehydration, export compression and measurement (EnCana, Volume 3, 2006). Acid gas processing will be performed offshore through application of an amine unit to remove H ₂ S and some of the CO ₂ (also known as acid gas). Subsequent to its removal from the raw gas stream, the acid gas will be disposed by injection into a suitable reservoir. | |

Conflict

Several issues and conflicts regarding the project were identified by public members. Majority of concerns lay with environmental impacts of the project on fishing activities, effects on the ecosystem, particular benthic communities, species at risk and commercial species. Other

issues raised dealt with infrastructure stability, spills, drilling, safety to nearby fishers, and monitoring of impacts.

It was addressed that there is a need to retain access to the quahog resource and concern over potential contamination. This has both commercial and health implications which the public does not want to risk. Maintaining access to the fisheries is a primary concern. There is also a need by the public to evaluate impacts of accidental release of hydrogen sulphide from the injection well and/or feeder line. This relates to the previous mention of contamination and potential impact on fish. A blowout resulting in the release of large quantities of acid gas from an injection well and/or their corresponding flow lines could result in a significant adverse short-term effect to air quality, and could result in important consequences affecting the health and safety of workers on the MOPU and vessels within up to 6 km (EnCana, Volume 3, 2006).

Potential concern over produced water impacts on marine biota, including fish reproduction and development. There is uncertainty regarding the impacts of HDD on lobster distribution and behavior because of a lack of research. Some conflict was encountered regarding the potential impacts of drill mud and cuttings, including concern with the use of barite and the impacts of bio-available forms of methyl mercury on the food chain.

Aboriginal use of the study area for traditional purposes - of particular concern is underwater archaeology, especially in the near shore landfall area. The Mi'kmaq people currently undertake traditional use activities throughout the onshore study area (*e.g.*, fishing, hunting, overnight camps). The project not only threatens the environment, its species, but the traditions of the Aboriginal communities.

Resolution

As a part of the development and operation of the Deep Panuke offshore natural gas project, the proponent addressed its commitment to funding the advancement of education,

training, research and development in relation to offshore petroleum resource activities in Nova Scotia. These funds are administered by EnCana as directed by the Canada-Nova Scotia Offshore Petroleum Board (CNSOPB). The formula for funding is based on 0.5% of gross revenues generated by the Deep Panuke Project (EnCana, Volume 3, 2006). EnCana has also partnered with Petroleum Research Atlantic Canada (PRAC) to manage the research and development expenditures from the fund. One of these funds is the Environmental Studies Research Fund (ESRF) which funds environmental and social studies pertaining to oil and gas activities on Canada's frontier lands.

As part of EnCana's long term commitment to the Province of Nova Scotia, and in keeping with commitments outlined in the Offshore Strategic Energy Agreement (OSEA), employment of local citizens is a priority. Along side employment and training, EnCana has committed to a Developing Skills Initiative, which will provide candidates with the skills and experience that is in demand in Nova Scotia's offshore oil and gas industry. EnCana's Community Investment Program welcomes applications in four areas: youth and education; health and wellness; environment; and community development. Other initiatives have been addressed by the proponent in the Agreement specifically outlining its commitment to an Emergency Management Plan, Spill Response Plan, Environmental Effects Monitoring Plan, and Environmental Protection Plan. All of the following will be developed to ensure the implementation of EnCana's environmental commitments.