



## **Conducting Seismic Exploration: Environmental Challenges and Government Requirements**

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# Conducting Seismic Exploration: Environmental Challenges and Government Requirements

## 1.0 Introduction

The purpose of conducting seismic exploration is to develop an image of the subsurface geology. The optimal surface location and lay-out of a seismic program is determined primarily by the subsurface location and structure of the target of interest. The optimal line spacing of any given seismic program is determined by the depth(s) of the horizon(s) of interest, the type of survey that is to be used<sup>1</sup> and the nature of the subsurface geology of the horizons of interest. As a result, the potential for surface disturbance or other environmental impacts are only one of the factors that are taken into account in planning a seismic program.

The conduct of a seismic exploration program, even with new low impact techniques, necessarily involves activities that can have an impact, sometimes a lasting impact, on the environment.

With multiple resource developers, such as forestry and oil and gas, becoming increasingly active in the same region and with seismic being conducted in areas which have previously seen very little or no industrial activity, or which are the subject of a land claim settlement or fall within a traditional territory, the environmental impacts of seismic are being subject to increasing scrutiny.<sup>2</sup>

The balance of this paper will provide a brief overview of the framework of environmental laws and regulation that may apply to seismic programs and associated activities. It will then provide a fuller discussion of some current and future issues that may affect seismic operations.

## 2.0 Regulatory Framework

In Canada, the jurisdiction to make laws relating to the environment does not lie exclusively with one level of government. Indeed the environment is not a distinct category of law making power under the Canadian constitution so laws relating to the environment are made under other powers allocated to either the federal or provincial government, such as the federal criminal law power and provincial powers over provincial lands and resources. In addition, the modern land claim settlements in the North include provisions which are intended to protect the environment<sup>3</sup> and which apply in respect of the lands that are the object of the settlement. Finally, many municipalities or other local government authorities make by-laws aimed at protecting the environment.

As seismic exploration can involve a wide range of activities requiring land and water use it can attract a wide range of environmental regulation at the federal, provincial, territorial and local levels. Environmental laws and regulation that affect seismic have evolved to cover the full life-cycle of activities, from planning to restoration and reclamation: environmental assessment may be triggered at the permitting stages of an activity and reclamation requirements may apply after the completion

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<sup>1</sup> e.g. 2-D or 3-D; dynamite (shot hole or surface) or vibroseis.

<sup>2</sup> e.g. Schneider, R. *The Oil and Gas Industry in Alberta: Practices, Regulations, and Environmental Impact* – Draft Report. November, 2001: Alberta Centre for Boreal Research.

<sup>3</sup> For example: the Gwich'in and, Sahtu Dené and Métis Comprehensive Land Claim Settlement Agreements in the Northwest Territories contain provisions requiring any person that wants to gain access to settlement lands to consult as a prerequisite to entry. The scope of consultation expressly includes environmental impacts and mitigative measures.

of a seismic program. Throughout the active phase, environmental protection provisions of permits and approvals<sup>4</sup> will apply in addition to environmental laws of general application.

The regulatory framework that applies to a particular seismic program will depend in large measure, but not exclusively, on the lands and waters on or near which it is to be conducted. As illustrated by the following examples, it is important to be aware that there are environmental laws of general application, such as the *Fisheries Act*<sup>5</sup> at the federal level, and the *Environmental Protection and Enhancement Act*<sup>6</sup>, and the *Waste Management Act*<sup>7</sup> at the Provincial level which do not contain provisions specific to seismic but which may apply to a seismic program or related activity.

## 2.1 Regulatory Framework – Specific Examples

The following are some examples of the regulatory frameworks that can apply in respect of the environmental impacts of seismic in various scenarios:

### Scenario 1:

Seismic Program on Land Claim Settlement Lands (Gwich'in or Sahtu) in the Mackenzie Valley Region of the Northwest Territories

<u>Process</u>	<u>Comments</u>
Consultation	<ul style="list-style-type: none"><li>▪ A pre-requisite to gaining surface access to settlement lands for seismic (or any other activity) is consultation with the appropriate interest holder. The Gwich'in and the Sahtu comprehensive land claim settlement agreements require that such consultation include the possible environmental effects of a proposed activity as well as mitigation and restoration measures.</li><li>▪ The consultation process may require traditional ecological knowledge and will provide an opportunity to obtain it (see discussion below).</li></ul>
Surface Access Agreement	<ul style="list-style-type: none"><li>▪ A pre-requisite to securing a land use permit is negotiation of a surface access agreement with the appropriate interest holder. Such agreements will likely contain environmental protection measures.</li></ul>
Land/Water Use Permits	<ul style="list-style-type: none"><li>▪ Applicants are required to file environmental assessment information as part of the application process.<ul style="list-style-type: none"><li>○ Environmental Assessment<ul style="list-style-type: none"><li>▪ In accordance with Part V of the <i>Mackenzie Valley Resource Management Act</i><sup>8</sup> (the "MVRMA"), the Land and Water Board that is considering the permit application must conduct an environmental screening and if the proposed land use may cause any adverse</li></ul></li></ul></li></ul>

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<sup>4</sup> Whether public or private.

<sup>5</sup> R.S. 1985, c. F-14

<sup>6</sup> RSA 2000, c. E-12

<sup>7</sup> RSBC 1996, c. 482

<sup>8</sup> RS 1998, c. 25

environmental impact or gives rise to public concerns, it must be referred to the Mackenzie Valley Environmental Impact Review Board (“MVEIRB”) for assessment and possible review.

- Because of the temporary nature of the activity, seismic programs that employ low impact technology and techniques typically do not get referred to the MVEIRB.<sup>9</sup>
  - Applicants are required to include traditional knowledge as part of the assessment information.
  - The permit will contain terms and conditions to protect the environment.
- Seismic Permits/Approval
- Authorization for seismic operations is required under the *Canadian Oil and Gas Operations Act*<sup>10</sup> (“COGOA”). The National Energy Board may issue authorizations subject to requirements for carrying out environmental programs or studies.
- Environmental Protection
- In addition to terms and conditions in any approvals, general environmental protection laws will apply.
  - In the Mackenzie Valley region of the Northwest Territories environmental laws of general application include: the *Environmental Protection Act*<sup>11</sup>; the *Fisheries Act*<sup>12</sup>; the *Migratory Birds Act*<sup>13</sup>; and the *Northwest Territories Waters Act*.<sup>14</sup>
- Restoration and Reclamation
- May form part of initial consultation.
    - May be negotiated as a term or condition of access to land.
  - Will be required as a term or condition of land use permit, typical requirement is restoration of vegetation removed during land use operations.

**Scenario 2:**

Seismic Program on Provincial Public and Private Lands in the Green Area of Alberta

Process

Comments

Consultation

- May be required depending on specific location, in particular, if program is to be located in a protected area consultation will likely be required and environmental effects, mitigation and restoration will be subjects of the consultation process.

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<sup>9</sup> However, an Explore Data Ltd. land use permit amendment application was referred to the MVEIRB for assessment after concerns were raised by Parks and Heritage Canada. The MVEIRB found, after considering evidence and submissions, that there was no need for a full review as the proposed amended seismic program was not likely to have any significant adverse impact on the environment or to be a cause of significant public concern (Decision October 12, 2000 LUP N1998B0861).

<sup>10</sup> RS 1985, c. O-7

<sup>11</sup> RSNWT 1988, c. E-7

<sup>12</sup> RSC 1985, c. F-14

<sup>13</sup> SC 1992, c. 39

<sup>14</sup> RSNWT 1992, c. 39

Surface Access Agreement	<ul style="list-style-type: none"> <li>▪ Required with private landowner and leaseholder on public lands. Access agreement may contain terms and conditions relating to the environment – only applicable on the lands which are subject to the access agreement. Note that, terms and conditions of private access agreement do not supercede environmental protection laws.</li> </ul>
Environmental Assessment	<ul style="list-style-type: none"> <li>▪ There is no formal provincial environmental assessment process triggered by seismic programs.</li> <li>▪ Note, if a program were to be conducted in part on federal lands in the Province of Alberta or if an approval was required under the <i>Fisheries Act</i><sup>15</sup> or the <i>Navigable Waters Protection Act</i><sup>16</sup> then an environmental assessment under the <i>Canadian Environmental Assessment Act</i><sup>17</sup> (“CEAA”) might be triggered.</li> </ul>
Seismic Permit/Approval	<ul style="list-style-type: none"> <li>▪ Issued pursuant to the <i>Mines and Minerals Act</i><sup>18</sup> seismic exploration is regulated by the <i>Exploration Regulation</i><sup>19</sup>. The Alberta Department of Environmental Protection is the approving authority and the department does consider the environmental impacts of proposed seismic programs. For example, the Department will consider whether there is a risk of irreparable surface disturbance, whether harassment to wildlife will be minimized and whether there is risk to the residence or critical habitat of a species at risk.</li> <li>▪ No authorizations will be issued for seismic programs proposed for Zone 1, Prime Protection areas in the Province unless they form part of a “step-out” application<sup>20</sup>.</li> </ul>
Water Use/Land Use	<ul style="list-style-type: none"> <li>▪ Authorization under the <i>Water Act</i><sup>21</sup> is required where program crosses a water body. Approval will contain environmental protection provisions.</li> <li>▪ A water use permit may be required where an activity associated with a seismic program requires water (such as a camp).</li> <li>▪ Seismic programs in the Green Area may require approvals under the <i>Forests Act</i>.<sup>22</sup></li> </ul>
Environmental Protection	<ul style="list-style-type: none"> <li>▪ In addition to terms and conditions in any approvals, general environmental protection laws will apply.</li> <li>▪ Environmental laws of general application include: the <i>Alberta Environmental Protection and Enhancement Act</i><sup>23</sup> (the “AEPEA”);</li> </ul>

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<sup>15</sup> supra

<sup>16</sup> RSC 1985, c. N-22

<sup>17</sup> RSC 1992, c. 37

<sup>18</sup> RSA 2000, c. M-17

<sup>19</sup> AR 214/98

<sup>20</sup> The Eastern Slopes Policy contains grandfathering provisions which provide that the government must honour pre-existing legal commitments to lessees and recognizes that oil and gas pools discovered prior to the implementation of the Policy may require further development and access.

<sup>21</sup> RSA 2000, c. W-3

<sup>22</sup> RSA 2000, c. F-22

<sup>23</sup> RSA 2000, c. E-12

<sup>24</sup> supra

<sup>25</sup> Migratory Bird Regulation, CRC C. 1035

<sup>26</sup> RSA 2000, C. W-10

the *Fisheries Act*<sup>24</sup>; the *Migratory Birds Act* and associated regulations<sup>25</sup>; and the *Wildlife Act*<sup>26</sup>

- Restoration and Reclamation

  - Finally, the *Exploration Regulation* contains environmental protection provisions specifically relating to seismic including: s. 41 – prevention of contamination of water; and ss. 43-46 – width of cut lines – salvage of timber – clearing of vegetation – cleanup of debris.
  - The *Conservation and Reclamation* regulation made under the AEPEA does not apply to seismic operations.
  - Currently a permittee is issued a letter of clearance by the responsible land manager when all issues relating to restoration and clean-up have been satisfactorily resolved (e.g. shot-holes plugged; flowing holes capped; cleaned-up debris).

**Scenario #3:**

Seismic Program on Provincial Public Lands in Northeast British Columbia involving a stream crossing

<u>Process</u>	<u>Comments</u>
Consultation	<ul style="list-style-type: none"> <li> <p>The Oil and Gas Commission (“OGC”) requires persons planning to conduct seismic operations to consult with trappers and others in the area of the program who may be impacted. Consultation may include consultation about environmental impacts and mitigative measures.</p> </li> <li> <p>If the program will cross lands which are claimed as traditional territory by a First Nation, then the proponent may be required to consult with the affected First Nation<sup>27</sup> and environmental impacts should be a topic of discussion.</p> </li> </ul>
Surface Access/Approval Environmental Assessment	<ul style="list-style-type: none"> <li> <p>No formal requirement.</p> </li> <li> <p>No formal requirement unless CEAA is triggered.</p> </li> <li> <p>Pursuant to s.4(1) of the <i>Geophysical Exploration Regulation</i><sup>28</sup>, an operator is required, as directed by an authorized OGC employee to supply information regarding access to the area of the program, terrain conditions and any anticipated environmental impact.</p> </li> </ul>
Seismic Permit/Approval	<ul style="list-style-type: none"> <li> <p>Will be issued pursuant to the <i>Petroleum and Natural Gas Act</i><sup>29</sup> and the <i>Geophysical Exploration Regulation</i><sup>30</sup>. The Oil and Gas Commission may impose terms and conditions on the approval intended to protect the environment.</p> </li> </ul>

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<sup>27</sup> Either by the OGC, as the result of an MOU or as a result of case law such as *Haida Nation v. B.C. and Weyerhaeuser* 2002 BCCA 147.

<sup>28</sup> B.C. Reg. 361/98

<sup>29</sup> RSBC 1996, c.361

<sup>30</sup> B.C. Reg. 361/98

## Water and Forest Approvals

- Any changes to be made in and about a stream must be authorized under the *Water Act*<sup>31</sup>. Similarly, any short-term (or long-term) use of water must be authorized<sup>32</sup>.
- If timber is to be cut then approvals will be required under the *Forest Act*<sup>33</sup>

## Environmental Protection

- In addition to terms and conditions of any approvals, general environmental protection laws will apply, in particular the federal statutes identified in the previous examples and the following provincial statutes: *Water Act*,<sup>34</sup> *Waste Management Act*,<sup>35</sup> *Forest Practices Code*.<sup>36</sup>
- The *Geophysical Exploration Regulation* (s.16) requires an operator to take immediate steps to prevent further damage to land, if any damage occurs, and must repair the damage as soon as possible.
- Under the provisions of the *Petroleum and Natural Gas Act*,<sup>37</sup> an employee of the OGC may order work on a seismic program to stop if that employee considers that unreasonable damage to the terrain or the environment will be caused by the continuation of the project<sup>38</sup>. Since terrain is referred to explicitly, damage to the environment must refer to impacts other than damage to the ground.

## Reclamation/Restoration

- There are no formal reclamation requirements per se.
- The *Geophysical Exploration Regulation*<sup>39</sup> contains terms which require an operator to ensure that all camp waste has been disposed of in a manner that will not have an adverse effect on

the environment and that slash from camp construction is burned or otherwise disposed of in a manner that does not have an adverse effect on the environment.

## 2.2 Regulatory Framework – Selected Issues

Many different issues can arise from the environmental regulation of seismic operations and associated activities. Some of those issues and what to watch for are discussed below.

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<sup>31</sup> RSBC 1996, c.483, s.9. Note this applies equally in respect of repair work carried out on a road stream crossing.

<sup>32</sup> *Water Act* s.8(1)

<sup>33</sup> SBC [1996] c.157

<sup>34</sup> supra

<sup>35</sup> RSBC 1996, c.482, s.3(2)

<sup>36</sup> [1996] s.45(1) provides that a person must not carry out a forest practice that results in damage to the environment (cutting timber pursuant to a License to Cut amounts to carrying out a forest practice). Section 96(1) provides that a person must not cut, damage or destroy crown timber unless authorized to do so. A similar provision applies in respect of hay on Crown range.

<sup>37</sup> RSBC [1996] c. 361

<sup>38</sup> *Petroleum and Natural Gas Act*, s.33(3).

<sup>39</sup> supra., s. 15

## 2.2.1 Environmental Assessment

A proposed seismic program triggers the federal environmental assessment process under the CEAA if it requires an approval under subsections 5(1)(b) or 5.1(4) of COGOA. Other circumstances when a proposed seismic program will trigger a federal environmental assessment are where:

- The program may cause a significant adverse environmental effect on Indian reserve lands;
- The program may cause a significant adverse environmental effect on federal lands;
- The program, or associated activities (such as access roads) will require an approval under the *Navigable Waters Protection Act* or the *Fisheries Act*.

As noted above, in Alberta and British Columbia, a conventional seismic program conducted solely on provincial crown or private lands which does not cross any navigable waters, will not trigger a formal environmental assessment process such as that mandated under the *Environmental Assessment Act*<sup>40</sup>, (B.C.), or the AEPEA.

In the Mackenzie Valley region of the Northwest Territories, any application for land or water use must undergo a preliminary environmental screening<sup>41</sup>. A seismic program will require a land use permit at a minimum. If the program may have a significant adverse effect on the environment or if it might be a cause of public concern, then the proposal must be referred to the MVEIRB for an environmental assessment<sup>42</sup>. A review of recent approvals for seismic programs in the Mackenzie Valley<sup>43</sup> indicates that, typically, seismic programs to be conducted in the winter employing mitigative (i.e. low impact) measures are found not to have significant adverse effects on the environment.<sup>44</sup>

In the Inuvialuit Settlement region of the Mackenzie Valley, there are two environmental assessment processes: CEAA and the process established under the Inuvialuit Final Agreement (“IFA”). The IFA process applies to certain “developments” in the Inuvialuit Settlement Region. Developments are broadly defined and could incorporate virtually any commercial or industrial undertaking.<sup>45</sup>

In the Yukon, environmental assessments of oil and gas activities are carried out as part of the approval process<sup>46</sup> and, until the Yukon implements its long planned development approval process, the process is the same as that under the CEAA.

The environmental assessment process, particularly for major developments, is frequently a source of litigation. This is because the legislation is drafted in relatively broad terms, with multiple decision points where its application is subject to the exercise of discretion or interpretation.

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<sup>40</sup> RSBC 1996, c. 119

<sup>41</sup> MVRMA s.62

<sup>42</sup> MVRMA, s.125(1)

<sup>43</sup> e.g. Paramount Resources Ltd. Permit No. MV2001B0088; Anadarko Canada Permit No. MV2001B0091

<sup>44</sup> However, for an example of a seismic program which did require an assessment by the MVEIRB (but not a full review), see MVEIRB Decision: October 12, 2000 re: Explore Data Ltd. Land Use Permit N1998B0861 Amendment (Explore Data LUP).

<sup>45</sup> IFA, s. 11.

<sup>46</sup> Yukon Oil and Gas Act, s. 67



Any person applying for an approval or permit relating to a seismic program who is required to provide information to assist with a preliminary screening or other review that is to determine whether a more comprehensive environmental review or assessment will be required is well advised to take the time and care necessary to provide the best possible information and all necessary information to the person who will conduct the screening. The information should be up to date, and related to the specific seismic program. Having said that, it is also important for the project proponent to assure themselves that the scope of the environmental assessment is not too broad.

Once an environmental assessment process has been triggered, the responsible authority must determine the scope of the project to be assessed and will then determine the scope of the assessment. The scope of the project to be assessed should be limited to the actual project that triggered the assessment<sup>47</sup> and any necessary (as opposed to speculative) accessory developments or activities<sup>48</sup>.

For the purposes of the scope of the assessment, the person conducting the assessment will be required to consider all of the environmental effects arising from the project as scoped that fall within that person's jurisdiction<sup>49</sup>. So, for example, if a process is triggered under the CEAA, it must include an assessment of all environmental effects on matters within federal jurisdiction such as Indian lands, federal lands, inland waters and navigable waters otherwise it may be open to challenge. Where an assessment is to be conducted by a Territorial or Provincial authority, it must include an assessment of all environmental effects on matters within that authority's jurisdiction.

In addition, the CEAA requires that every screening or comprehensive study requires a consideration of:

“the environmental effects of the project, ... including any cumulative environmental effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out.”<sup>50</sup>

Provincial and Territorial environmental assessments also require consideration of cumulative effects.

In the *Sunpine* decision, the Federal Court of Appeal said that implicit in the cumulative effects requirement in the CEAA is that while the scope of the project which is to be assessed must be limited to that part of the project falling within federal jurisdiction (for example, the bridges over navigable waters in the *Sunpine* case), the assessment of cumulative effects must include all projects or activities that have been or will be carried out and which are likely to have effects that combine with those of the project to be assessed regardless of the jurisdiction in which they fall. For further discussion of cumulative effects, see below.

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<sup>47</sup> So for example, for a regional reconnaissance program, the proposed seismic program and not any possible follow-up seismic or possible wells would fall within the scope of the project. If the purpose of the program is to identify the specific location for a well then the well might come within the scope of the project except to the extent it will require a separate approval process triggering an environmental assessment.

<sup>48</sup> Such as line cutting, shot-hole drilling, shooting and recording; clean-up; and logistical support.

<sup>49</sup> *Friends of the West Country Assn. v. Canada (Minister of Fisheries & Oceans)*, 31 C.E.L.R. (N.S.) 239 (Fed. C.A.) (“*Sunpine*”)

*Friends of the Oldman River v. Canada (Minister of Transport)* [1992] ISCR 3.

<sup>50</sup> CEAA, s.16(1)(a)

Finally, it is important to know that in some cases a proposed amendment to a project that has previously been approved can trigger a new environmental assessment. For an example of an environmental assessment of a seismic program, which was triggered by an amendment to a previously approved program, see the MVEIRB Decision on the Explore Data Ltd. Land Use Permit.

### 2.2.2 Program/Activity Approvals

Regardless of whether a given seismic program has triggered an environmental assessment, the approvals for the program and related activities will contain terms and conditions intended to protect the environment.

Often, those who issue approvals will develop template application forms and approvals for use in respect of categories of activities carried out in certain areas or at certain times of year. The template approval, or aspects of it, may prove to be impracticable in circumstances which are unique to a certain seismic program or associated activity<sup>51</sup>. Once a program is under way, it may not be possible to obtain an amendment to the terms or conditions of an approval in order to allow the timely completion of the program. Exploration companies and seismic contractors should consider carefully, ahead of time, whether there are aspects of a particular program they are proposing which would render the standard environment-related terms and conditions in an approval, or specific aspects of it, impracticable.<sup>52</sup>

Finally, just because a company has received all of the necessary permits and approvals for a proposed seismic program, and has complied with the terms of those approvals, does not mean that it can safely ignore environmental laws of general application.<sup>53</sup> Indeed, land use permits issued by the MVLWB contain a term which specifically provides that compliance with the terms and conditions of the permit does not absolve the permittee from responsibility for compliance with the requirements of applicable federal, territorial or municipal legislation. That caution in the environmental law context applies in respect of all approvals, regardless of whether it is found as a specific term in an approval or not.

### 2.2.3 Environmental Protection

Environmental protection provisions are often included as terms and conditions of approvals. They are also found generally in statutes and regulations and may be framed as an offence<sup>54</sup> or a mandatory requirement.<sup>55</sup> There are many issues that can arise from environmental protection provisions. It is important to know that not knowing of an applicable law is not a sufficient defence for a failure to comply with that law. That is why a broad provision like that for directives under the proposed amendments to the Alberta *Exploration Regulation* (see below) is somewhat troubling where

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<sup>51</sup> Such as the construction of an ice road where a water use permit is required but the permitted water use is insufficient to facilitate construction and ongoing maintenance of the road.

<sup>52</sup> For example, if the program is a large one in a remote area that will require a camp, are the terms of the water use permit adequate? Are the standard off-set and hand-cut provisions practicable for the program?

<sup>53</sup> For example, the fact that a person obtains and complies with the terms and conditions of an approval relating to seismic activity in, on, or near a water body does not mean that that person can ignore the provisions of the *Fisheries Act*, which prohibit the harmful alteration, disruption or destruction of fish habitat and the deposit of deleterious substances into water frequented by fish.

<sup>54</sup> e.g. s. 35 of the *Fisheries Act* makes it an offence to alter fish habitat in a harmful way.

<sup>55</sup> e.g. s. 41 of the *Exploration Regulation* (Alta.) which requires licenses and permittees to ensure that fluids and materials used for drilling or abandoning shot holes and test holes do not contain harmful contaminants.

there is no accompanying provision for notification to industry of the issuance of or amendment to a directive.

Whether something done or not done by a person conducting seismic operations amounts to an offence or breach of a term or condition of an approval will depend on the specific circumstances of the case. Where many resource companies get into trouble is in conducting operations in or near water. Any harmful alteration or destruction of fish habitat is an offence under the *Fisheries Act*<sup>56</sup>. Similarly, the deposit of a deleterious substance in waters frequented by fish is an offence under the *Fisheries Act*<sup>57</sup>. It is not just chemicals or other obviously harmful materials that are “deleterious”. Excessive amounts of silt, eroded or released from the banks of a fish bearing creek or river can amount to a deleterious substance as it can, in sufficient concentrations cause fish mortality. Any water crossing or seismic operations near a stream or river require extra precautions.<sup>58</sup>

Finally, the conduct of a seismic program often requires the delegation of responsibility for carrying out a specific activity or part of an activity to an employee or sub-contractor. As a result, it is important to know that a person who delegates such responsibility can be found guilty of a strict liability offence, such as the offences under the *Fisheries Act*, if the delegate was not properly trained or supervised and the lack of training or supervision was a factor in the commission of the offence<sup>59</sup>. Similarly, if a person can and should control an activity at the point where an alleged environmental offence occurs, then that person is responsible for the offence. Typically, where a person could have prevented the release of a substance, or some other circumstance, that leads to harm to the environment, for example by intervening pursuant to a contractual right to do so, but fails to do so, they may be found liable for an offence.<sup>60</sup>

## 2.3 Further Current and Future Challenges

### 2.3.1 Cumulative Environmental Impacts

Oil and gas exploration and production companies operating in the Inuvialuit Settlement Area of the Northwest Territories commissioned a comprehensive, multi-year mapping and study program to identify heritage resources and areas of concern from an environmental perspective within the Inuvialuit lands. The program was commenced this past summer and is intended to provide a data base to allow the Inuvialuit Land Administration to better assess the cumulative effects of seismic programs, helicopter fly-over, drilling camps, access roads and cut-lines on the natural environment<sup>61</sup>.

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<sup>56</sup> s. 35

<sup>57</sup> s. 36(3)

<sup>58</sup> Note that the OGC issued a bulletin to industry advising that the Department of Fisheries and Oceans has renewed its focus on the protection of Fisheries and inland waters, particularly in Northeast B.C.

<sup>59</sup> e.g. *R. v. Safety Kleen Canada* 1997 22 C.E.L.R. (N.S.) 202 (Ont. C.A.): If responsibility is delegated to an employee, then the employer may be guilty of a strict liability offence if it did not have in place a process of appropriate training and supervision. *R. v. Geo-Analysis Inc.* (1993) 13 C.E.L.R. (NS) 71 – In order to rely on a due diligence defence and avoid liability arising out of the acts of its agent, a company has to act reasonably in the control of its agent. Its system for control is to be judged by the ability to influence the agent.

<sup>60</sup> *R. v. Sault Ste. Marie (City)*, [1997] 2 SCR 1299 (SCC)

<sup>61</sup> Chandler, G. *Mapping New Ground*. Winter 2002: Oil and Gas Review, Yellowknife, NT.

In Alberta, the cumulative effects of oil and gas activity, particularly seismic, and forestry is increasingly becoming a concern<sup>62</sup>.

In Northeast B.C. the year over year increase of oil and gas related activities, often in areas that are also supporting forestry operations is an ongoing concern. Recently, a Treaty 8 Band in British Columbia has raised a failure to consider and consult about cumulative effects as a fatal flaw in an oil industry approval process.

Environmental assessment statutes require an assessment of cumulative effects as part of the process. A failure to consider cumulative effects where such consideration is required can be fatal to the process and leave any resulting approval open to challenge.<sup>63</sup>

Because of concerns like those identified in the previous paragraphs, applicants for approvals required for seismic programs are increasingly required to provide information regarding cumulative environmental effects or impacts of the proposed program even when a formal environmental assessment is not required.

In the Northwest Territories and the Yukon, an applicant for the necessary land use permit or program is required to provide information about the cumulative effects of the program<sup>64</sup>. In Alberta and British Columbia, while there is no explicit requirement that an applicant for the relevant approvals provide information regarding cumulative effects, the Oil and Gas Commission (“OGC”) and Alberta Environmental Protection have a broad discretion to request information which could include cumulative effects information.

Where information regarding cumulative (environmental) effects is required, what does it comprise? According to the Canadian Environmental Research Council, there are two types of cumulative effects:

- Impacts on the natural and social environments which take place so frequently in time or so densely in space that they cannot be assimilated; or
- Impacts of one activity which combine with the activities of another in a synergistic manner.

Other agencies and authors give more exhaustive lists and definitions<sup>65</sup>.

Cumulative (environmental) effects are not necessarily limited to the cumulative biophysical effects of an activity. They may include effects of biophysical changes on health and socio-economic conditions (not likely to be triggered by seismic) and on physical and cultural heritage (more likely triggered by seismic).

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<sup>62</sup> Schneider, R. The Oil and Gas Industry in Alberta: Practices, Regulations, and Environmental Impact – Draft Report. November, 2001: Alberta Centre for Boreal Research.

<sup>63</sup> *Supine*, supra

<sup>64</sup> As part of the land use permit process under the MVRMA, the approval process under the *Yukon Oil and Gas Act*. and the Inuvialuit Land Administration process.

<sup>65</sup> For example: Peterson, E. *et al* “Cumulative Effects Assessment in Canada”, 1987 Ottawa: Supply and Services. The Environment Directorate of the Yukon has published “Guidelines for Major Mining Projects: Environmental Assessment Information Requirements” and in that document says that a cumulative environmental effects assessment is:

“an assessment of the incremental effects of a project on the environment, when the effects are combined with those from other existing and future projects.”

Environmental assessments under the CEAA must consider the cumulative effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out<sup>66</sup>. The intention is that only projects that are certain or reasonably foreseeable should be included in the cumulative effects assessment process.<sup>67</sup>

In the Mackenzie Valley, the cumulative effects assessment that is carried out by the MVLWB and MVEIRB is limited to an assessment of the cumulative impacts that are likely to result from the development for which approval is sought, with impacts from other developments within the Mackenzie Valley. In the case where a development itself extends beyond the Mackenzie Valley or may have effects which extend beyond the Mackenzie Valley, then the matter would have to be reviewed under the CEAA process.

A review of recent land use approvals issued for seismic programs in the Mackenzie Valley indicates that the MVLWB appears to consider the potential for a seismic program to lead to additional seismic or the drilling of wells as a cumulative effect<sup>68</sup>. It is not clear from those decisions what degree of probability was assessed to the likelihood of the additional developments taking place; however, unless the applicable legislation or regulation specifically requires it, any assessment of cumulative effects of a proposed seismic program ought to be limited to an assessment of the effects of that program with existing activities or activities which will take place (rather than activities which may take place).

None of the relevant legislation in Alberta or British Columbia provides a definition of cumulative effects and an applicant for approvals for a seismic program will have to work closely with the relevant agency to ensure that the scope of any cumulative effects review is appropriate.

### 2.3.2 Traditional Knowledge

The land and water boards in the Northwest Territories, including those in the Inuvialuit settlement area, require and consider traditional ecological knowledge as part of their review processes. Such knowledge is considered to be separate and distinct from scientific information which is also considered. Similarly, in the Yukon, the *Yukon Environment Act*<sup>69</sup> recognizes the value and requires the use of traditional, ecological knowledge.

In any jurisdiction companies that consult with Indian Bands prior to conducting seismic may make use of traditional knowledge for the purposes of forming successful working relationships with those Bands and may be required to provide it as part of the application process.

Traditional knowledge may also come into play in respect of lands which are not subject to a treaty settlement or land claim but are recognized as having a special value, such as native prairie grasslands. Traditional knowledge may provide a means of planning for activity and reclamation on such lands.

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<sup>66</sup> CEAA RSC 1992, c.37, s.16(1)(a).

<sup>67</sup> Canadian Environmental Assessment Agency March 1999, *Operational Policy Statement*, OPS-EPO/3-1999; Addressing Cumulative Effects under the *Canadian Environmental Assessment Act*.

<sup>68</sup> e.g. Paramount Resources Ltd. Land Use Permit Application No. MV2001B0088, Anadarko Canada Corporation Land Use Permit Application No. MV2001B0091.

<sup>69</sup> S.Y. 1991 c. 5, s.5(f) and (g)

“Traditional Knowledge” is a term which does not have a single universally accepted definition. In the laws which specifically require its use there are no definitions of the phrase. Traditional knowledge<sup>70</sup> has been described as:

“... knowledge that derives from, or is rooted in the traditional way of life of the aboriginal people. Traditional knowledge is the accumulated knowledge and understanding of the human place in relation to the universe. This encompasses spiritual relationships, relationships with the natural environment and the use of natural resources, relationships between people, and is reflected in language, social organizations, values, institutions and laws.”<sup>71</sup> and

“...a body of knowledge built up by a group of people through generations of living in close contact with nature. It includes a system of classification, a set of empirical observations about the local environment, a system of self-management that covers resource use ... With its roots firmly in the past, traditional knowledge is both cumulative and dynamic, building upon the experience of earlier generations and adapting to the new technological and socio-economic changes of the present.”<sup>72</sup>

It may be said to be the knowledge of the traditional ways in which people related to the land and the ecosystems supported by it and the ways in which people used the lands. Typically, traditional knowledge is not book learned but is handed down orally from generation to generation.

Clearly, regardless of the specific definition of “traditional knowledge” that is used, in order to incorporate traditional knowledge in an application, the applicant will have to have consulted with and, more particularly, listened to the people, particularly elders, in the community that has traditionally used the lands on which the seismic survey is to be conducted. For each seismic program where it is required, traditional knowledge information that is provided must be current, it must be specific to the location of the particular program, it must be relevant and it must reflect the traditional knowledge of those people most likely to be affected.<sup>73</sup>

### 2.3.3 Proposed Changes to the *Exploration Regulation* (Alberta)

The Alberta Department of Energy has been working on revisions to the *Exploration Regulation*<sup>74</sup>. Many of the revisions deal with environmental protection. At this time, the Department is looking at Spring 2003 for a revised regulation. The following is a discussion of some of the key proposals relating to the environment at the time of writing.

#### ***Letter of Clearance***

The proposed revisions would amend the definition so that a letter of clearance will not be issued until the surface of public lands have been “restored or reclaimed to the satisfaction of the Minister”. A permittee or licensee has two years from the date of completion of the

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<sup>70</sup> Also “indigenous knowledge” and “local knowledge”. Bielawski, E. *Inuit Indigenous Knowledge and Science in the Arctic*, Canadian Arctic Institute.

<sup>71</sup> Legat, A. (ed.) 1991 *Report of the Traditional Knowledge Working Group*, Government of the Northwest Territories, Yellowknife.

<sup>72</sup> Johnson, M. (ed.) 1992. *LORE: Capturing Traditional Environmental Knowledge*. Dene Cultural Institute and IDRC, Ottawa.

<sup>73</sup> Sahtu land and Water Board: Land Use Permits, FAQs

<sup>74</sup> AR 214/98

seismic program (the recording of it) to obtain a letter of clearance, and with the revised definition of “letter of clearance” by implication, two years to restore or reclaim the surface of the public lands to the satisfaction of the Minister.

If the proposed amendment is implemented, it would mean that seismic will receive the same or similar treatment as other oil and gas activity. Having said that, the very general requirement that the surface be restored or reclaimed to the satisfaction of the Minister is troubling without any more objective standard and without a right of appeal. For example, in some legislation requiring reclamation, that term is defined to mean returned to an equivalent productive capacity or other similar standard.

### *Directives*

The draft amendments contain a provision which would allow the Minister, or his authorized representative, to issue or modify directives respecting any of the matters or things in the Regulation “or **any other things that the Minister or his authorized representative consider appropriate**”<sup>75</sup>. This would allow the Minister or an authorized representative to issue directives relating to environmental protection. Program permittees and licensees must comply with all applicable or relevant provisions and requirements of exploration directives<sup>76</sup>.

This provision gives the Minister extremely broad powers. Such a broad power as set out in the Draft Discussion Document should be exercised in such a way as to ensure procedural fairness to those who are or may be subject to the Directives; however, it is not clear from the Draft Discussion Document how notice of Directives is to be brought to the attention of those potentially affected by them.

### *Deposit*

The proposed amendments would allow the Minister to expend all or a portion of the permit or licence deposit held by the Minister in connection with any matter related to a breach of Part 10 of the *Mines and Minerals Act*, a breach of the Regulation, a breach of a Directive or a failure to comply with the terms or conditions of an exploration approval. There is no right to appeal a decision by the Minister to expend deposit monies included in the Exploration Regulation Discussion Document. This is not an uncommon provision in environmental protection statutes such as the Alberta *Environmental Protection and Enhancement Act*; however, the lack of a right to appeal is troublesome.

If such a provision were to become law, permittees and licensees would want to take care to ensure that in their contractual arrangements with contractors and sub-contractors, they consider including provisions which would allow the recovery from the contractor or sub-contractor of amounts of deposit money expended by the Minister as a result of actions by the contractor or sub-contractor or their employees.

#### 2.3.4 Is there a Best Practice?

“Best practice”, “best available technique” or “best available technology” are phrases that are often used in the context of environmental regulation. They typically refer to practices, processes or

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<sup>75</sup> Exploration Regulation Discussion Document, s.5.1

<sup>76</sup> Exploration Regulation Discussion Document, s.5.2 and s.34(1)

technology which are implemented with a view to protecting the environment and ensuring sustainable use of resources and the environment.

While there is no legislated “best practice” for seismic exploration in Western Canada, there are suggestions of what might comprise a best practice<sup>77</sup>. In addition, there are many low impact techniques which could form part of a “best practice” tool set.

At this time it is probably safe to say that the “best practice” for seismic is to conduct seismic operations that, given the specific surface conditions in the area of the program, the ecological characteristics of the area of the program and the time of year, will result in a minimum impact and leave little or no footprint behind.

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<sup>77</sup> The Alberta Energy and Utilities Board has said in IL 2002-1 that: “the guidelines ‘Petroleum Industry Activity in Native Prairie and Parkland Areas: Guidelines for Minimizing Surface Disturbance’ (Native Prairie Guidelines Working Group, 2001)...provides the best practices for geophysical operations in native prairie areas.”

*Schnieder, R.* supra, volunteers a “best practice” approach to seismic activity in forested areas.

Where a seismic program will require the installation of a permanent or semi-permanent water crossing structure, there is an applicable “best practice” in the form of a Code of Conduct.



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