

**CANADA-NEWFOUNDLAND and LABRADOR OFFSHORE
PETROLEUM BOARD
CEA ACT SCREENING REPORT**

PART A: General Information

CEA Determination Date	<u>November 3, 2010</u>
Project Title	Investcan Energy Corporation Labrador Shelf Seismic Program
Proponent	Investcan Energy Corporation 335 Duckworth St. – 3rd floor St. John's, NL A1C 1G9
Contact	Ali Chaisson
C-NLOPB File No.	7705 I4
CEAR No.	09-01-51352
Location	Labrador Shelf Exploration Licence (EL) 1107 Hopedale & Snorri Significant Discovery Licences (SDLs)
Referral Date	October 29, 2009
EA Start Date	October 30, 2009
CEAA Law List Trigger	Paragraph 138(1) (b) <i>Canada Newfoundland Atlantic Accord Implementation Act</i> (Accord Act)

Part B: Project Information

On 29 October 2009, Investcan Energy Corporation (Investcan) submitted a project description, *Project Description for Proposed Seismic Program Offshore Labrador* (Investcan 2009), to the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB), describing its plans to conduct 2D and 3D seismic surveys, well site and geohazard surveys, and vertical seismic profiling (VSP) on and around its exploration licence (EL) 1107 and the Hopedale and Snorri significant discovery licences (SDLs) on the Labrador Shelf area offshore Newfoundland and Labrador. Project activities would comprise a multi-survey seismic program to be conducted in the period 2010 to 2017. Investcan submitted the *Environmental Assessment for Proposed Seismic Program Offshore Labrador* (Sikumiut, 2010a) on February 1, 2010. On March 25, 2010, the C-NLOPB requested additional information from Investcan in order to satisfy the requirements of the *Canadian Environmental Assessment Act* (CEAA) and to respond to review comments on the February submission. On May 25, 2010, Investcan responded to the review comments and provided an addendum *Investcan Energy Corporation Environmental Assessment Addendum Proposed Seismic Program Offshore Labrador* (Sikumiut 2010b). This addendum also provided information on a 10% expansion of the Project Area to the south. The

activities within the revised Project Area would not change from those described in the original EA Report.

The remainder of Part B of this report summarizes the proposed project, the related environmental setting and existing human use of the area, based on the abovementioned information.

1 Description of Project

Investcan is proposing to conduct 2D and 3D seismic surveys in the Labrador Shelf area over an eight year (2010 to 2017) period. 2D surveys were planned for 2010 in EL 1107, SDL Hopedale and SDL Snorri, followed by a 3D survey in 2011 in EL 1107. Subsequent surveys, including geohazard and VSP surveys could occur up to 2017. The Project Area encompasses a 17,430 km² area and includes a buffer up to 10 km to accommodate vessel turning. The Project Area's general coordinates (UTM Zone 21, NAD 83) are as follows.

Easting	Northing
EL 1107 and SDL Hopedale Area	
364356.799	6194357.588
379267.567	6212081.708
469857.514	6190981.565
543567.348	6156095.995
601803.743	6084636.843
578171.583	6039341.870
533931.366	6060148.598
533068.242	6072075.400
525535.525	6088003.957
496468.389	6089536.389
452414.730	6135558.522
SDL Snorri Area	
301545.638	6368852.397
314845.818	6334096.267
341069.757	6343883.191
327142.210	6378011.954

Marine seismic airgun array sources for 2D and 3D typically have a total volume of 3000 to 5085 in³ consisting of 20 to 30 airguns operating at 2,000 to 2,500 psi. The total pressure per source for those array source volumes will be between 106 to 165 Bar-meters. The peak-to-peak pressure output will be approximately 255 dB re 1µPa @ 1m. Survey lines for a 2D survey would be approximately 1 km or greater apart and would often run in several different directions as compared to a 3D survey where survey lines are in closer proximity (400 m to 25 m). Typical well site/geohazard survey equipment will include a: side-scan sonar; sub-bottom profiler and echosounder; multichannel seismic; and magnetometer. VSP surveys are typically acquired using a cluster of small to medium size air sources (total volume of 450 to 1500 in³) and a peak pressure of 240 to 250 dB re 1µPa at 1m. No streamers are deployed for "zero offset" surveys and "walk-away" surveys are deployed from a vessel.

The project is scheduled to run between June and November each year between 2010 and 2017, within the Project Area.

2 Description of Environment

The following sections provide a summary of the environmental factors described in the Environmental Assessment (EA) Report and Addendum. A complete description of the biological and physical environment can be found in those reports.

2.1 Physical Environment

The Labrador Current, originating in the Davis Strait, is a combination of the West Greenland Current, the Baffin Island Current and inflow from Hudson Bay. It flows in two streams (inshore and offshore) along the Labrador coast. The most comprehensive physical study of currents offshore Labrador took place during the summer of 1980. The maximum current speed on the slope was measured as 0.94 m/s at a depth of 100m, and the maximum speed on the shelf was measured as 0.79 m/s at a depth of 13 m. The highest waves typically occur from November to March. The maximum significant wave height of 12 m was recorded in January. Water depths within the Project Area range from about < 150m up to 3000 m.

Average air temperatures in July are from 8°C to 10°C along the coast. Typical daytime air temperatures for January are between -10°C and -15°C.

Wind speed and direction data were acquired from the MSC50 data set for grid points 14161 and 13893. Most wind speeds at grid point 14161 during the fall (September-November), winter (December-February) and spring (March-May) are between 6.11 and 10.58 m/s. Most wind speeds at grid point 13893 during the fall (September-November) winter (December-February) and spring (March-May) are between 6.18 and 10.60 m/s.

Precipitation is heaviest in the south and decreases northwards. Typically, 800 mm of precipitation falls per year with approximately 50% of this occurring as snow. In summer, rainfall is quite consistent, with seasonal total seldom less than 175 mm in the north and 275 mm in the south. Snowfall is heavy, ranging from 481 cm in Churchill Falls to 424 cm in Nain. The ground is snow-covered for eight months in the far north and for six months in the south.

Sea surface temperatures in the Labrador Shelf area remain relatively cold in the north (-2°C to 0°C) throughout the year. South temperatures range from 0°C during the winter months to approximately 10°C during the summer.

The average start of the ice season offshore Labrador ranges from mid-November in the north, to December in the south. Ice continues until late spring when the pack ice begins to melt and dissipate through the month of July. The ice season ends, on average, by late June/early July in the south but extends until late July/early August in coastal and northern regions. Icebergs can be present in all seasons.

2.2 Biological Environment

2.2.1 Fish and Fish Habitat

A detailed description of the plankton community can be found in the EA Report (Sikumiut 2010a). The phytoplankton spring blooms on the Labrador Shelf occur earlier in both the north and south Labrador Sea areas as compared to the central Labrador Sea where the Project Area lies. Like phytoplankton, zooplankton may show both spring and lesser fall blooms (Huntley et. al. 1983 in Sikumiut 2010a). Zooplankton reproduction on the central Labrador Sea can be expected to occur in or around June.

Marine fish species known to occur in the Project Area are described in the EA Report. There are three main types of marine fish present: pelagic fish are those that live and feed close to

the surface; demersal or groundfish are those that live and feed close to the bottom; and shellfish, which include crustaceans and bivalves. Groundfish such as Atlantic cod (*Gadus morguies*), winter flounder (*Pseudopleuronectes americanus*), and Greenland halibut (*Reinhardtius hippoglossoides*) are known to occur. Pelagic fish, such as Atlantic herring (*Clupea harengus*) and Atlantic mackerel (*Scomber scombrus*) migrate and feed in the middle of the water column and in surface waters. Common marine shellfish occurring within the Project Area include: whelk (*Buccinum undatum*); Iceland scallop (*Chlamys islandica*); snow crab (*Chionoecetes opilio*); toad crab (*Hyas araneus* and *H. coarctatus*); porcupine crab (*Neolithodes grimaldii*); and northern shrimp (*Pandalus borealis*).

2.2.2 Commercial Fisheries

The Project Area overlaps with portions of Northwest Atlantic Fisheries Organization (NAFO) Subarea 2, Unit Areas 2H and 2J. The main commercial species are: turbot (Greenland halibut) (*Reinhardtius hippoglossoides*); snow crab (*Chionoecetes opilio*); and shrimp (*Pandalus borealis* and *P. montagui*). Snow crab and turbot fisheries are generally from June to the end of August while the shrimp fishery occurs year round. Atlantic cod (*Gadus morhua*), rock cod (*Gadus ogac*), Iceland scallop (*Chlamys islandica*), Atlantic salmon (*Salmo salar*) and Arctic charr (*Salvelinus alpinus*) are also locally important species.

Greenland halibut (turbot) is the most important groundfish species harvested in the Project Area making up approximately 7 percent of the total landed weight in 2008 (Sikumiut 2010a). NAFO division 2J has more landings by weight than 2H, with turbot consisting of approximately 13 percent of the total landings in 2J, an approximately 5 percent in 2H. It is harvested primarily from June to October with both fixed (gill nets, longlines) and mobile gear (otter trawlers). In the Northwest Atlantic, most are harvested from depths greater than 450 m.

Snow crab is a very important fishery in 2J waters. In 2008, snow crab comprised approximately 14 percent of the landed weight within the Project Area. In 2J, it was the third largest fishery and accounted for approximately 13 percent of the landed weight. Crab is harvested using fixed gear – crab pots – from May through to September. Harvesting occurs primarily between the 200 m and 1000 m contours and is concentrated in the southern portion of the Study Area. Snow crab occurs over broad depths (70 to 280 m). They mate in late winter and spring, and the females carry the egg masses for up to two years prior to larval hatch. Hatching typically occurs in late spring or early summer.

Northern Shrimp is a major fishery on the Labrador Shelf with landings within the Project Area of approximately 79% of total landed weight. Approximately 1% of the commercial harvest is striped pink shrimp (*Pandalus montagui*). They typically occur in soft muddy substrates in depths up to 600 m and at a temperature range of 1°C to 8°C with larger individuals occurring in deeper waters. Catches in the Project Area are taken using mobile shrimp trawls.

2.2.3 Species at Risk

There are several Species at Risk (SAR) listed under Schedule 1 of the *Species at Risk Act* (SARA) that may occur in the Affected Area. The EA Report and Addendum discusses SAR and COSEWIC listed species, which may occur in the Affected Area. The following table provides a list of these species followed by a brief discussion of the endangered and threatened SARA listed species.

SPECIES	SARA Status	COSEWIC Status
Blue Whale (<i>Balaenoptera musculus</i>)	Schedule 1 – Endangered	Endangered (May

Atlantic Ocean population		2006)
Leatherback sea turtle (<i>Dermochelys coriacea</i>) Atlantic Ocean population	Schedule 1 - Endangered	Endangered (May 2001)
Ivory Gull (<i>Pagophila eburnea</i>)	Schedule 1 – Endangered	Endangered (April 2006)
Northern Wolffish (<i>Anarhichas denticulatus</i>)	Schedule 1 – Threatened	Threatened (May 2001)
Spotted Wolffish (<i>Anarhichas minor</i>)	Schedule 1 – Threatened	Threatened (May 2001)
Atlantic Wolffish (<i>Anarhichas lupus</i>)	Schedule 1 – Special Concern	Special Concern (November 2000)
Harlequin Duck (<i>Histrionicus histrionicus</i>) Eastern population	Schedule 1 – Special Concern	Special Concern (May 2001)
Fin Whale (<i>Balaenoptera physalus</i>) Atlantic Ocean population	Schedule 1 – Special Concern	Special Concern (May 2005)

The Blue Whale is the largest and one of the rarest marine mammals in the North Atlantic. A recently proposed Recovery Strategy (DFO 2009) for blue whales is available with a long-term recovery goal to reach a total of 1000 mature individuals through the achievement of three 5-year objectives. A Recovery Action Plan will be developed by 2014.

Leatherback turtles may range as far as northern Labrador since they travel extensively during migration. They have been observed offshore Newfoundland and Labrador from May to December. The Recovery Strategy (Atlantic Leatherback Turtle Recovery Team 2006) contains supporting objectives for the Leatherback Turtle.

The Ivory Gull is associated with polar pack ice at all time of the year. They are found in the Labrador Sea in winter months but the abundance and seasonal use is unknown.

Three species of wolffish are found in the Labrador Shelf Area: northern wolffish, spotted wolffish; and Atlantic (striped) wolffish. They typically are found in highest concentrations over sand, but occur over all observed bottoms. There is a Recovery Strategy (Kulka *et al.* 2007) for northern and spotted wolffish and Management Plan for Atlantic wolffish to achieve long-term viability of the species.

Harlequin Duck could occur in the Project Area. One of the largest known moulting sites for Harlequin Ducks is on the Gannett islands Ecological Reserve. Harlequin Ducks often breed on rivers, streams near the ocean, and are sometimes observed in bays and estuaries throughout the northern areas of their breeding grounds.

Based on the presence of their common prey, it has been inferred that fin whales commonly aggregate near ocean fronts and areas of upwelling, such as shelf breaks. The best available population estimate for the Western North Atlantic population of Fin Whales is 2,800 individuals between Georges Bank and the mouth of the Gulf of St. Lawrence.

2.2.4 Marine Birds

There are approximately 25 seabirds in the Labrador Shelf area. The area is used for breeding in summer, as well as for migration, moulting and overwintering. Most of the seabirds in the

Labrador Shelf area, including the Project Areas are colonial nesters, sharing breeding space with others of their own species and often with other species. Razorbill (*Alca torda*), Atlantic Puffin (*Fratercula arctica*), Common Murres (*Uria aalge*) and Thick-billed Murres (*Uria lomvia*), and Black Guillemot (*Cepphus grille*) nest along islands along the Coast of Labrador. The most common seabirds include: Northern Fulmar (*Fulmarus glacialis*); Sooty Shearwater (*Puffinus griseus*); Leach's Storm-Petrel (*Oceanodroma leucorhoa*); Wilson's Storm-Petrel (*Oceanites oceanicus*); Double-crested Cormorant (*Phalacrocorax aurilus*); Great Cormorant (*Phalacrocorax carbo*); Black-legged Kittiwake (*Rissa tridactyla*); Glaucous Gull (*Larus hyperboreus*); Great Black-backed Gull (*Larus marinus*); Herring Gull (*Larus argentatus*); Ring-billed Gull (*Larus delawarensis*); Iceland Gull (*Larus glaucoides*); Ivory Gull (*Pagophila eburnean*); Long-tailed Jaeger (*Stercorarius longicaudus*); Parasitic Jaeger (*Stercorarius parasiticus*); Pomarine Jaeger (*Stercorarius pomarinus*); Great Skua (*Stercorarius skua*); Red-necked Phalarope (*Phalaropus lobatus*); Terns (*Sterna spp.*); Atlantic Puffin; Black Guillemot; Dovekie (*Alle alle*); Common Murre; Thick-billed Murre; and Razorbill. The Labrador Sea is a key wintering area for fulmars from the high Arctic, as they are known to remain at sea from December to March. The Great Cormorant is known to winter along the coast of southern Labrador while the Double-crested Cormorant summers there. Terns and gulls nest in small colonies along the coast in the Labrador Shelf. The primary diet of seabirds off the coast of Labrador includes fish, crustaceans, cephalopods, copepods, amphipods and offal, with fish being the primary food source for almost all of the seabirds in this area.

There are approximately 15 waterfowl and 2 loons in the Labrador Shelf area. Waterfowl often use the Labrador Shelf as a staging area for migratory purposes – while migrating south from northern climes, or migrating from inland freshwater areas to open water for winter. Species that use this area for migratory purposes include: the Canada Goose (*Branta canadensis*); American Black Duck (*Anas rubripes*); Harlequin Duck (*Histrionicus histrionicus*); White-winged Scoter (*Melanitta fusca*); Black Scoter (*Melanitta nigra*); Surf Scoter (*Melanitta perspicillata*); Long-tailed Duck (*Clangula hyemalis*); Common Goldeneye (*Bucephala clangula*); Barrow's Goldeneye (*Bucephala islandica*); Red-breasted Merganser (*Mergus serrator*); Common Merganser (*Mergus merganser*); Hooded Merganser (*Lophodytes cucullatus*); Red-throated Loon (*Gavia stellata*); and Common Loon (*Gavia immer*).

2.2.5 Marine Mammals and Sea Turtles

A total of 21 species of marine mammals and sea turtles can be found near the proposed Project Area. Marine mammal species off the coast of Labrador mainly consist of cetacea (whales, dolphins, porpoises) and pinnipeds (seals and walruses).

Both baleen whales (*Mysticetes*) and toothed whales (*Odontocetes*) have been spotted in the Affected Area and off the coast of Labrador. Humpback whale (*Myaptera novaeangliae*), minke whale (*Balaenoptera acutorostrata*) and sei whale (*Balaenoptera borealis*) are the three most common baleen whales that use the Affected Area for migrating, feeding, or breeding.

The most common toothed-whale species that can be found within and around the Affected Area include: the long-finned pilot whale (*Globicephala macrorhynchus*); Atlantic white-sided dolphin (*Lagenorhynchus acutus*); Atlantic white-beaked dolphin (*Lagenorhynchus albirostris*); Harbour porpoise (*Phocoena phocoena*); north Atlantic bottlenose whale (*Hyperoodon ampullatus*); and killer whales (*Orcinus orca*).

Species of pinnipeds commonly present around or near the Affected Area include several species of seals that breed, pup or moult on the ice offshore (i.e., harp seals (*Phoca groenlandic*)), as well, those that are found near the coastline year round (i.e., harbour seals (*Phoca vitulina*)). Harbour seals are common off the coast of Newfoundland and Labrador, and

can be found year round along the coast in all of Labrador, including the Affected Area. Harp seals on the other hand, spend their summers in Canadian Arctic and Greenland but in fall, they migrate southward, to the Gulf of St. Lawrence, an area off southern Labrador and northern Newfoundland. Hooded seals also pup in the area between the southern Labrador shelf and northern Newfoundland in mid to late March. Moulting occurs in the summer off Greenland. They are widespread in winter and spring in the North Atlantic and often remain there year-round.

Sea turtles are uncommon in the northern offshore waters of Labrador; however, they may be present in summer and fall. The Atlantic loggerhead (*Caretta caretta*) turtle is the most common turtle in North American waters and in this area, loggerhead captures correspond closely with fishing effort, as the oceanographic features near the 200-m isobath result in a concentration of loggerhead prey species, such as jellyfish and crustaceans.

2.2.6 Sensitive Areas

Potential sensitive areas include: important bird areas (IBA); important coral areas; Marine Protected Areas (MPAs) and MPA Area of Interest (AOI) identified pursuant to the *Oceans Act*, and National Marine Conservation Areas (NMCAs) identified pursuant to the *Canada National Marine Conservation Areas Act*.

Gilbert Bay, on the southeast coast of Labrador, was designated in 2000 as an Area of Interest (AOI) under the Fisheries and Oceans Canada (DFO) MPA Program because of its wide range of marine resources. In October 2005, it was designated the Gilbert Bay MPA. This area is about 210 km southwest of the nearest proposed survey line.

There are two recognized sensitive areas near the Project Area. Two areas have been identified as representative marine areas under the NMCA program administered by Parks Canada. Hamilton Inlet, east of Lake Melville, extends offshore to include representation of the Hamilton Bank, and Nain Bank to the north of the Project Area. Both are located within the Affected Area.

The Gannet Islands Ecological Reserve (established 1983), which is located approximately 60 km southeast of the Project Area, is an archipelago of seven islands and surrounding marine component at the mouth of Sandwich Bay. It is the largest seabird colony in Labrador and has the largest Razorbill colony in North America. It also hosts important breeding populations of Atlantic Puffins and Common Murres. It is the largest known moult site for Harlequin Ducks in eastern North America.

There are 10 Important Bird Areas (IBAs) outside the Project Area along the coast. An IBA is a site that provides essential habitat for one or more species of breeding or non-breeding birds.

Cold-water corals are considered an important component of marine ecosystems (Gilkinson and Edinger, 2009). The Project Area is not located within a protected zone, however, the following corals have been documented in the Project Area:

- Antipatharian spp.
- Large gorgonians – Order Alcyonacea (*Paragorgia arborea*, *Paramuricea* spp. and *Primnoa resedaeformis*);
- Small gorgonians – Order Alcyonacea (*Acanthogorgis armata*, and *Acanella arbuscula*);
- Soft corals – Order Alcyonacea (*Gersemia rubiformis*, *Duva florida*, *Nephtheid* spp., *Anthomastus grandiflorus*); and

- Sea pens – Order Pennatulacea (*Anthoptilum grandiflorum*, *Halipteris finmarchica*, unidentified sea pen species).

2.2.7 Research Surveys and Vessel Traffic

DFO carries out stock assessment surveys and research activities throughout the marine environment. The DFO Science Advisory Schedule can be accessed on-line to view activities scheduled in Canada at <http://www.isdm-gdsi.gc.ca/csas-sccs/applications/events-evenements/index-eng.asp>. The Canadian Association of Prawn Producers in conjunction with DFO carries out surveys for shrimp from water depths between 100 to 750m in 2G. This annual survey runs from July 15 through the first week of September. DFO also conducts a multi-species survey (groundfish, shellfish, benthos and oceanography) between late October to mid December annually in divisions 2J and 3K, while NAFO division 2H is surveyed every second year.

There is a shipping service along the coast of Labrador, outside the Project Area. Cruise ship routing in Labrador is mainly from south to north but routing east to west from European ports via Iceland, Greenland, Baffin and south to Labrador is being developed. There were a total of 65 Labrador cruise ship ports of call in 2008.

Husky Energy and Chevron Canada Resources are both proposing seismic programs on recently acquired exploration acreage on the Labrador Shelf. Both programs are proposed from 2010 through to 2017.

Part C: Environmental Assessment Process

3. Review Process

On 29 October 2009, Investcan submitted a project description “*Project Description for Proposed Seismic Program Offshore Labrador*” (Investcan 2009). The Project requires an authorization pursuant to Paragraph 138 (1) (b) of the *Canada-Newfoundland Atlantic Accord Implementation Act* and Paragraph 134(1) (a) of the *Canada-Newfoundland and Labrador Atlantic Accord Implementation Newfoundland and Labrador Act*. The C-NLOPB, as Responsible Authority (RA) forwarded the *CEAA Federal Coordination Regulations (FCR)* Section 5 Notification on 29 October 2009 to: DFO; Environment Canada (EC); Transport Canada (TC); Health Canada (HC); Natural Resources Canada (NRCan); Department of National Defence (DND); Nunatsiavut Government (NG) and the Newfoundland and Labrador Departments of Environment and Conservation, Fisheries and Aquaculture, and Natural Resources.

On November 16, 2009, Investcan were notified that a screening level of assessment was required and a Scoping Document was provided.

Pursuant to paragraph 12.4(2) of the *Canadian Environmental Assessment Act (CEA Act)*, and the *Regulations Respecting the Coordination by Federal Authorities of Environmental Assessment Procedures and Requirements*, the C-NLOPB assumed the role of the Federal Environmental Assessment Coordinator (FEAC) for the screening and in this role was responsible for coordinating the review activities by the expert government departments and agencies that participated in the review.

On February 1, 2010, Investcan submitted the *Environmental Assessment for Proposed Seismic Program Offshore Labrador*” (Sikumiut, 2010a). The C-NLOPB forwarded the EA Report on February 2, 2010 to DFO, EC, DND, NG, and the provincial Departments of Environmental and Conservation, Fisheries and Aquaculture, and Natural Resources. The Fish, Food, and Allied

Workers Union (FFAW) and One Ocean (OO) were also provided a copy of the EA Report for review.

Comments on the EA Report were received from DFO, EC, NG, and the FFAW. In order to address deficiencies in the EA Report, Investcan was required to provide a response to the EA Report comments. Investcan responded with the *Investcan Energy Corporation Environmental Assessment Addendum Proposed Seismic Program Offshore Labrador* (Sikumiut 2010b) on May 25, 2010 and the C-NLOPB forwarded the responses to DFO, EC, NG, and the FFAW. This addendum also provided information on a 10% expansion of the Project Area to the south. The activities within the revised Project Area did not change from those described in the original EA Report.

It is the obligation of the RAs to consider which physical works and undertakings, in relation to the proposed Project, fall within the scope of the Project. First, there are no associated physical works that should be included in the scope of the Project. Second, if the proposed Project were to proceed, as set out in the application, it would constitute a single Project for the purposes of subsection 15(2) of CEEA. For the purposes of subsection 15(3) of CEEA, the scoping exercise is complete because an assessment was conducted in respect of every construction, operation, modification, decommissioning, abandonment, or other undertaking proposed by Investcan that is likely to be carried out in relation to their proposed Project.

3.1 Scope of Project

Data will be collected on and around EL 1107, Hopedale SDL, and Snorri SDL offshore Labrador, as described in *Project Description for Proposed Seismic Program Offshore Labrador* (Investcan 2009) and in Investcan's Addendum (May 21, 2010). The seismic program will consist of: 2D and 3D seismic surveys; well site and geohazard surveys that include side-scan sonar; sub-bottom profiler and echosounder; multichannel seismic, and magnetometer; and VSP surveys. The Project Area includes a 10 km area to accommodate the survey vessel turning radius.

For the 2D survey, vessels tow a single source array 100 to 200m behind the vessel. Each source array is about 20m long and 24m wide. Following 100 to 200m behind the source array is a single streamer, between 8 and 12km long. A tail buoy with radar reflectors is attached at the end of each streamer. The survey pattern requires the ship to follow a prescribed track for 12 to 20 hours depending on the size of the survey area. At the end of the track, the ship will take two to three hours to turn around and start along another track. There is no active survey activity during the turning maneuver. Spacing between tracks is approximately two kilometres.

A conventional 3D seismic vessel usually tows two source arrays at equal distance, 100 to 200 m behind the vessel. Following at greater distance are the 6 to 12 streamer cables each 3 to 8 km long and spread out over a width of 600 to 1,500m. The streamers are normally towed at a depth of 7 or 8m, about 100m apart. Vessel speed will be approximately 4.5 knots when the survey equipment is deployed. The airguns are discharged every 25m, or about once every 10 to 16 seconds. During the survey, the ship follows a set track for 12 to 20 hours depending on the size of the survey area.

Each seismic survey will require approximately 20 to 75 days to complete. A typical well site survey will require approximately 36 to 48 hours to complete and a VSP survey would be confined to a radius of 2.5 km around the well site and take approximately one day. Project activities will occur from June to November of each year over an eight year period from 2010 to

2017.

3.2 Boundaries

The boundaries of the Project are defined in the seismic EA as follows and are acceptable to the C-NLOPB.

Boundary	Description
<i>Temporal</i>	June to November 2010-2017.
<i>Project Area</i>	Defined as a 17,430 km ² area in which seismic survey activities will occur within and outside EL 1107, SDL Hopedale, and SDL Snorri including a 10 km buffer to accommodate vessel turning.
<i>Affected Area</i>	The area that could potentially be affected by project activities beyond the Project Area. Varies according to specific vertical and horizontal distributions and sensitivities of each VEC and with the project component.
<i>Regional Area</i>	NAFO Unit Areas 2H and 2J.

There may also be an area of influence from the sound array. However, depending on the marine species present, this area of influence will vary in size. Hearing thresholds have been determined for a number of species (seals and odontocetes), but the threshold is not known for others (baleen whales). The sound that is actually received by the marine species depends on the energy released from the source and its propagation (and loss) through the water column. Therefore, the hearing ability of the species and background noise will affect the amount of noise from an airgun array detected.

3.3 Scope of Assessment

For the purpose of meeting the requirements of the CEAA, the factors that were considered to be within the scope of the environmental assessment are those set out in paragraphs 16(1) (a) through 16(1) (d) of the CEAA, and those listed in the “*Investcan Energy Corporation Labrador Seismic Program Scoping Document*” (C-NLOPB 2009).

4. Consultation

4.1 Consultation carried out by Investcan

Investcan participated in introductory consultations with stakeholders and regulatory agencies in Labrador. Meetings were conducted September 21-24, 2009 with the NG, the Labrador Métis Nation, Combined Councils of Labrador, the Innu Nation and other stakeholders. At each meeting, proposed exploratory programs for the Labrador Shelf were described and initial steps taken to establish community links so that concerns and suggestions could be exchanged. Some of the topics and issues raised at these meetings include: timing of exploration activities; environmental and fishing impacts; benefits to the communities; training opportunities for future employment; compensation in the case of fishing gear damage and loss of access to fishery resources; and type of technology to develop potential resources.

Investcan conducted community consultations in Labrador in November 2009 with visits to Cartwright, Mary’s Harbour, Happy Valley – Goose Bay, Nain, Hopedale, Postville, Makkovik and Rigolet. Notices were issued prior to each meeting, and the public were invited to attend. A range of media was employed to ensure a high level of awareness of the meetings. All consultations were held to inform the stakeholders about the survey, to gather information about fishing plans or interests in the area, and to identify issues or concerns, which should be

considered in the EA. The results of those consultation sessions, and issues identified are documented in Appendix C of the EA Report. A summary of the issues/observations from these consultations can be found in the EA Report.

In addition to the consultations conducted in Labrador, meetings were held with OO and the FFAW in November 2009 in St. John's. It was advised that the Union Forum and the Navigator are two magazines that would be effective media to advertise to fishers and that the main communications link with the fishing Industry should be through the FFAW. Investcan suggested that any further communications/meetings between fishers should be scheduled later in the planning process when specific details of the program are available.

The C-NLOPB are satisfied that the consultations carried out by Investcan, and reported on in the EA Report, during the preparation of the EA included all elements of the Project, and that Investcan has addressed concerns about the proposed project. The C-NLOPB is not aware of any public concerns with respect to the environmental effects of the project, and does not require that further consultations be undertaken.

4.2 Review of the EA Report

The C-NLOPB forwarded the EA Report on February 2, 2010 to DFO, EC, DND, NG, and the provincial Departments of Environment and Conservation, Fisheries and Aquaculture, and Natural Resources. The FFAW and OO were also provided a copy of the EA Report to review.

DFO provided comments on the EA Report on 16 March 2010. They expressed concern regarding the discussion on sub-lethal effects on eggs larvae, commercial fisheries, assessment of new SAR over the length of the proposed program and SAR assessments.

Comments on the EA Report were received from EC on 04 March 2010. They provided information regarding the collection of seabird data during the surveys the transfer of raw data from these surveys to EC.

Comments were received from DND on 28 June 2010. DND has determined that the Unexploded Ordinate (UXO) risk in the exploration area is low, but emphasized using extreme caution if a suspected UXO is encountered. They identified that DND will be transiting through the area in August 2010 for Op Nanook. Notice of this exercise will be promulgated through Notices to Shipping (NOTSHIPS) and Investcan should promulgate their actual work locations as per NOTSHIPS. Investcan should also confirm the status of operational activities during each season of this program to DND.

The NG responded on 16 March 2010. Concerns were expressed with the spatial boundaries of the proposed program, effects on the aboriginal fishery, cumulative effects (short and long term), economic benefits and the integration of Inuit knowledge.

The FFAW replied on the EA Report on 19 March 2010 with comments concerning the importance of the fishery and its dynamic nature, particularly in light of the multi-year proposed seismic program, the unknown nature of long-term effects, cumulative effects, program timing and the use of Fisheries Liaison Officers (FLO). For clarity, the FFAW would like Investcan to understand that a FLO is used to mitigate conflicts at sea during seismic programs. However, Investcan should maintain regular communications with the Petroleum Industry Liaison in the St. John's office of the FFAW organization.

The consolidated review comments were provided to Investcan on March 25, 2010. Investcan

responded on May 25, 2010 with the “*Investcan Energy Corporation Environmental Assessment Addendum Proposed Seismic Program Offshore Labrador*” (Sikumiut 2010b). This addendum also provided information and assessment on a 10% expansion of the Project Area to the south. This was forwarded to reviewers on May 27, 2010 to determine if EA Report comments were satisfactorily addressed. After reviewing the addendum, the NG requested further information regarding the expansion of the Project Area. It was also suggested that Investcan employ Inuit marine mammal observers (or trainees) as well as fishery liaison officers (or trainees). Investcan provided a response on August 10, 2010 to NG’s comments. The C-NLOPB believes that all substantive comments within the scope of the EA have been satisfactorily addressed.

5. Environmental Effects Analysis

5.1 Methodology

The C-NLOPB reviewed the environmental effects analysis presented by Investcan in its EA Report. A Valued Ecosystem Component (VEC) based assessment, based on the interaction of project activities with VECs, was used in assessing environmental effects, including cumulative effects and effects due to accidental events. The environmental assessment methodology and approach used by the Proponent is acceptable to the C-NLOPB.

Potential adverse environmental effects, including cumulative effects, were assessed with respect to:

- magnitude of impact;
- geographic extent;
- duration, likelihood, and frequency;
- reversibility;
- ecological, socio-cultural and economic context; and
- significance of residual effects following implementation of mitigation measures.

The potential effect significance of residual effects, including cumulative effects, for each VEC was rated in this environmental screening report as follows.

- 0 = No Detectable Adverse Effect*
- 1 = Detectable Effect, Not Significant*
- 2 = Detectable Effect, Significant*
- 3 = Detectable Effect, Unknown*

These ratings, along with the likelihood of the effect, were considered in determining overall significance of residual effects.

In the EA Report, Investcan presented information regarding the potential effects of the seismic survey program activities on marine fish, shellfish and habitat, marine mammals and sea turtles, marine birds, commercial fisheries and other users, species at risk, and sensitive areas. A summary of the effects assessment follows.

5.2 Valued Ecosystem Components/Potential Environmental Effects

5.2.1 Fish and Invertebrates

1

The potential effects of exposure to sound on fish and marine invertebrates can be either physical or behavioural. In the natural environment, fish show avoidance responses and swim away as an airgun array ramps up or as the survey slowly approaches. The airgun will be ramped-up, thereby allowing fish in the area to leave. Other studies referenced in the EA Report indicated that fish mortality did not result from exposure to seismic sound sources. Stress

responses to seismic exposure occur in fish, but are temporary. The temporary nature of these responses varies depending on the fish species and the sound source. Behavioural responses to seismic have been documented in a number of studies and reported in the 2D and 3D Seismic EA Report. To date, there have been no documented cases of acute mortality of juvenile or adult fish exposed to seismic sound characteristic of typical 2D and 3D seismic surveys. Limited data regarding physiological effects on fish indicate that they are both short-term and most obvious after exposure at close range

Taking avoidance behaviour into account, any potential physical impact to finfish is considered to be low in magnitude, immediate in geographic extent, immediate in duration, and intermittent in frequency of occurrence. The likelihood of effects (behavioural and physical) on fish is low and therefore **not significant**.

There is less knowledge of the effects of seismic sound on marine invertebrates, although some studies have been conducted on the sensitivity of certain invertebrate species to underwater sound. They may be capable of detecting vibrations but they do not appear to be capable of detecting pressure fluctuations. The limited studies done to date involving the effects on marine invertebrates have not demonstrated any serious pathological or physiological effects. The results from an Environmental Studies Research Fund (ESRF) sponsored study (Christian *et al.* 2004), indicate that there was no pathological (acute or chronic mortality) effects on caged male or female snow crab from an airgun array passing over at close range. The available experimental data suggest that there may be physical impacts on the fertilized eggs of snow crab. There were no significant differences in stress indicators between exposed and non-exposed adult male snow crab. The EA Report provides a summary of a study conducted by DFO in 2003 on caged egg-bearing female snow crabs exposed to a commercial seismic survey. Observations from the study show that there were no acute or chronic mortality to the crab or to feeding activity of treated crabs held in a laboratory. For egg-bearing females exposed to seismic energy, the survival of the embryos being carried by the female, nor the locomotion of the larvae after hatch were affected. In general, the results of studies completed to date indicate that effects are short-term and most obvious after exposure at close range.

Spatial and temporal avoidance of critical life history times (e.g. spawning aggregations) should mitigate the behavioural effects of exposure to airgun sound. Any potential physical or behavioural effects to invertebrate species are considered to be low in magnitude, immediate in geographic extent, immediate in duration, and intermittent in frequency of occurrence. The likelihood of effects (behavioural and physical) is low and therefore **not significant**.

5.2.2 Commercial Fishing and DFO Research Surveys

1

Potential interactions with this VEC include potential for a decrease in catch rates, interference with fish gear and potential impact on DFO research surveys. Seismic activity can result in a dispersion of fish species, and subsequently reduced catch rates for a short duration. In general, fish show startle response and change in direction and speed of swimming. In some studies looking at the effects on commercial catch rates, the change in swimming direction accounted for a decreased catch rate. However, some studies show that this effect was temporary, whereas other studies report that fish behaviour was altered for a number of days (Sikumiut 2010a). As indicated in Section 2.2.2, the most important commercial species are northern shrimp, snow crab and Greenland halibut. It is expected that some fishing may be occurring during seismic activities in the Project Area. There is potential therefore for interaction between seismic operations (streamers) and fishing gear, especially fixed gear such as gillnets and crab pots. The potential for impacts on fish harvesting will depend on the location of the surveying activities in relation to fishing areas in any given season. If the survey

work is situated away from fishing areas, the likelihood of any effects on commercial harvesting will be greatly reduced.

Commercial fisheries within the revised Project Area to the south will include more fixed gear fisheries (snow crab). Communications with the snow crab fishers through the FLO and other mitigation measures described in the EA Report will reduce the effect upon commercial fisheries.

Investcan has indicated that a number of mitigations, consistent with those outlined in the *Geophysical, Geological, Environmental and Geotechnical Program Guidelines* (C-NLOPB 2008), will be implemented. A FLO and an NG representative familiar with the survey area's fisheries will be on the vessel to facilitate at-sea communications with fishers in the area and to inform them of survey activities. In addition, the survey will be scheduled, to the extent possible, to avoid concentrated fishing areas, and Investcan will provide Notice to Mariners via the Canadian Coast Guard (CCG) and CBC Fisheries Broadcast. In the event of gear damage, Investcan will implement a gear loss damage compensation plan.

There is potential for seismic activities to overlap with DFO research surveys. To reduce the potential for conflict, Investcan will maintain communications with DFO to keep up-to-date on the timing of planned research surveys. In addition, a temporal and spatial buffer zone will be implemented, in consultation with DFO, to reduce any potential interference with fish behavioural patterns.

Given the application of mitigation measures, it is predicted that the effects of seismic activity, including vessel movement, will be moderate in magnitude, of immediate duration, immediate geographic extent, and a low likelihood of occurrence. Therefore, effects to the commercial fishery are not likely and **not significant**.

5.2.3 Marine Mammals and Turtles

1

A potential effect of the proposed operation upon marine mammals and sea turtles, which may be present in the area, is that of sound pulses from the survey equipment. The EA Report describes in more detail the species of cetaceans which have been observed in, or which are considered likely, to frequent the Affected Area. Marine mammals and sea turtles could likely exhibit certain behavioural reactions, including displacement from an area around an airgun array. The size of the displacement area will likely vary amongst species, during different times of the year, and even amongst individuals within a given species. There is also a risk that marine mammals and sea turtles that are very close to the seismic array may incur hearing impairment. Data is lacking concerning the potential for sub-lethal effects, with the exception of avoidance behaviour. There are no documented cases of marine mammal mortality from exposure to seismic sounds. Extended periods of moderate noise levels under water can cause a temporary threshold shift (TTS) in some marine mammals, resulting in a reduction in hearing sensitivity and a small degree of permanent loss. Several different surveys in other marine areas indicate that avoidance behaviour is usually exhibited in response to airgun seismic surveying. Thus, species that show behavioural avoidance of seismic vessels, including most baleen whales, some toothed whales and some pinnipeds, would not likely experience threshold shifts or other physical effects.

Sea turtles may exhibit avoidance behaviour during seismic surveys. An industrial sound source will reduce the effective communication or echolocation distance only if its frequency is close to that of the cetacean signal. Sea turtles might experience temporary hearing loss if the turtles are close to the airguns. While the impacts of the arrays would likely not be lethal, the

impulses might disrupt foraging patterns and have other behavioural consequences. However, if sea turtles were present, the mitigation measures applied should reduce the effect. Sea turtles in the Project Area would attempt to avoid the operating seismic vessel, thereby limiting their exposure to increased noise levels.

There are a number of mitigations, which when applied, can reduce impacts to marine mammals and sea turtles in the vicinity of a seismic survey (e.g. ramping-up of airguns, use of observers, start-up and shut-down procedures). The 2010 EA Report and Addendum lists a number of mitigations that will be implemented during the seismic program, some of which are consistent with the mitigations recommended in Appendix 2 of the *Geophysical, Geological, Environmental and Geotechnical Program Guidelines* (C-NLOPB 2008).

The effects on marine mammals are predicted to be of low magnitude, intermediate to regional in geographic extent, intermediate duration, and continuous for VSP to intermittent for seismic and well site frequency, and reversible. With the application of mitigation measures, the likelihood of effects occurring is low and **not significant**.

The effects on sea turtles are predicted to be of low magnitude, local to regional geographic extent, continuous for VSP to intermittent for seismic and well site frequency and reversible. With the application of mitigation measures, the overall likelihood of effects occurring is low, and **not significant**.

5.2.4 Marine Birds

1

The sound created by airguns is focused downward below the surface of the water. Above the water, the sound is reduced to a muffled shot that should have little or no effect on birds that have their heads above water or are in flight. Most species of seabirds that may be present in the Project Area spend only a short time underwater during foraging so there would be minimal opportunity for exposure to noise from the seismic shooting associated with the survey. The EA Report states that noise produced from these seismic surveys might only affect birds in the Alcidae family that spend considerable amounts of time underwater, swimming or plunging for food. Northern Gannets dive briefly to depths of 10 metres but other birds, such as Dovekies and murrelets (Common and Thick-billed), Razorbill, Black Guillemot, and Atlantic Puffin spend longer periods of time underwater diving for food, and can reach great depths (up to 100 m below water). There have been studies on the effects of air source-based seismic surveys on seabirds, however, there are no data showing that effects occur. In general, the small impact of seismic sounds in the air, the brief time the survey vessel will be in specific areas, and the presence of the survey vessel should pose little risk of either direct effects (physiological), or indirect effects (foraging behaviour or prey species).

The extension of the Project Area south does mean that the Gannet Islands Ecological Reserve is closer (approximately 40 km). Investcan will ensure that the vessel will remain offshore to avoid any potential disruption to migrating, moulting, or reproducing birds in the Gannet Island area.

Sound emissions, as a result of the proposed Project activities, are predicted to have low environmental effects on Marine Birds. With the implementation of all mitigation measures outlined in the EA Report and Addendum, and the *Geophysical, Geological, Environmental and Geotechnical Program Guidelines* (C-NLOPB 2008), the effects of sound emissions on Marine Birds are deemed **not significant**.

On-board lights are known to attract birds. Leach's Storm-Petrels are common offshore and are often attracted to lights at night, including those of ships (Sikumiut 2010a). Experience has shown that Storm-Petrels may be confused by lights from ships and crash into lighted areas, particularly on foggy nights. The survey vessel will only be in specific areas for a brief time. Since lighting is required at night for safety purposes, mitigations will include routine checks for stranded birds and implementation of appropriate procedures for release (e.g. Canadian Wildlife Service (CWS) handling instructions) that will minimize the effects of vessel lighting on birds in the Project Area. Therefore, the effect of vessel lighting on Marine Birds is deemed **not significant**.

5.2.5 Species at Risk

1

The EA Report indicates that the area for potential surveys has no unique habitat or spawning areas required by fish SAR. The area contains no known critical habitat for these species. Mitigation measures include a gradual increase in intensity of air gun discharge to allow fish to avoid the source of sound, and avoidance of seismic activities during known sensitive areas and timeframes. As indicated above, effects on fish are likely to be not significant; and with the implementation of mitigations, effects on the fish SAR are likely to be **not significant**.

The EA Report indicates that leatherback sea turtles may be occasional or infrequent visitors to the Project Area and that the area contains no known critical habitat. A recovery strategy for leatherback sea turtles is available. With the implementation of mitigations as indicated above, effects on sea turtles are likely to be not significant. Therefore, effects on the Leatherback sea turtle are not likely to be adverse and therefore **not significant**.

Blue whales and Fin whales are reported to be uncommon in the Project Area, therefore, the potential for interaction with project activities is unlikely. However, if any of the SAR were in the Project Area, the mitigations described above would reduce the effect. A dedicated Marine Mammal Observer (MMO) will be onboard the seismic vessel. With the implementation of mitigations, including those outlined in the *Geophysical, Geological, Environmental and Geotechnical Program Guidelines* (C-NLOPB 2008), effects on marine mammal SAR are likely to be **not significant**.

Harlequin Duck and the Ivory Gull could potentially be found within the Project Area. Interactions of the Ivory Gull with the seismic vessel will be minimal given that activities will occur between June and November when the Ivory Gull is normally found to the north. One of the largest known moulting sites for Harlequin Ducks is on the Gannett islands Ecological Reserve. Vessel traffic will be mostly taking place in the offshore region and will avoid this reserve where possible. As indicated above, effects on marine birds are likely to be not significant; therefore, effects on the marine bird SAR are not likely to be adverse and therefore **not significant**.

5.2.6 Water Quality/Discharges

0

Routine discharges, which are likely to occur during operation, are similar to those associated with many typical vessel operations. The vessels proposed for the survey will meet all Canadian regulations and standards to work in Canadian waters. Ship operations will adhere to Annex I of the *International Convention for the Prevention of Pollution from Ships* (MARPOL 73/78). Hydrocarbon concentrations associated with ship discharges are not generally associated with formation of a surface slick. They are therefore not likely to have a measurable effect on the marine environment. The solid waste generated will be transferred to shore and

disposed of at an approved facility. Any hazardous materials (e.g., oil rags) will be handled separately in hazardous materials containers. Sanitary and food wastes will be macerated to a particle size of 6 mm or less and then discharged as per the Offshore Waste Treatment Guidelines (OWTG). All routine discharges will meet the *Pollution Prevention Regulations* of the *Canada Shipping Act*. The effect of the seismic program operation on marine water quality should be undetectable and **not significant**.

5.3 Cumulative Environmental Effects 1

Potential cumulative environmental effects external to the project include seismic program(s) by other operators, commercial and traditional fishing, marine transportation and tourism/recreation. The potential exists that other seismic survey(s) could occur concurrently, resulting in a temporal overlap with the Project. Therefore, there is some potential for cumulative environmental effects with the seismic program in this context. If other seismic surveys are conducted offshore Labrador within the same timeframe, a spatial separation between surveys will be necessary to prevent both operational conflict and acoustical interference. This will reduce or eliminate the likelihood that the sound levels from two surveys will be additive in a particular area. Vessels not associated with the seismic program are restricted from being close to the seismic vessel during the seismic survey, the residual cumulative environmental effect with noise and traffic external to the seismic program will be negligible. Compared to existing vessel traffic in the area, the incremental amount of vessel traffic, because of this seismic program, will be negligible. Cumulative environmental effects resulting from any of the seismic program activities will not be additive or cumulative because the seismic program activities are transitory. With the implementation of mitigative measures, the cumulative environmental effect of the seismic program, in conjunction with other projects, and activities is predicted to be **not significant**.

5.4 Accidents and Malfunctions 0

Accidental discharge of oil into the marine environment may result from improper operational procedures (e.g., improper draining of streamer reel trunks), loss of streamer fluid due to breakage, or, as a worst case, as a result of total vessel loss.

The vessel is required to carry a "Shipboard Oil Pollution Emergency Plan" pursuant to MARPOL 73/78. The Plan contains a description of procedures and checklists that govern operations involving hydrocarbons, adherence to which should prevent unintended releases. The vessel will also carry a copy of Investcan's "Spill Response Plan". Inspections of seismic equipment will be conducted regularly.

Effects due to accidental spills associated with the proposed operation, therefore are considered, overall, to be detectable if they occur, but neither significant nor likely.

5.5 Follow-up Monitoring Required Yes No

The C-NLOPB does not require follow-up monitoring, as defined in the CEA Act, to be undertaken for this Project.

6. Other Considerations

The C-NLOPB is satisfied with the environmental information provided by Investcan regarding the potential adverse environmental effects, which may result from the proposed project, and is satisfied with the operator's proposed monitoring and mitigative measures.

The C-NLOPB is of the view that the environmental effects from the Project, in combination with

other projects or activities that have been or will be carried out, are **not likely** to cause significant adverse cumulative environmental effects.

6.1 Recommended Conditions and/or Mitigations

The C-NLOPB recommends that the following conditions be included in the authorization if the seismic project is approved.

- *Investcan Energy Corp. shall implement or cause to be implemented all the policies, practices, recommendations and procedures for the protection of the environment included in or referred to in the “Environmental Assessment for Proposed Seismic Program Offshore Labrador” (Sikumiut 2010a) and “Investcan Energy Corporation Environmental Assessment Addendum Proposed Seismic Program Offshore Labrador” (Sikumiut 2010b).*
- *Investcan Energy Corp., or its contractors, shall shut down the seismic airgun array if a marine mammal or sea turtle listed as **Endangered** or **Threatened** (as per Schedule 1 of SARA) is observed in the safety zone during ramp-up procedures and when the array is active. The safety zone shall have a radius of at least 500 m, as measured from the centre of the air source array(s),*

Part D: Screening Decision

7. Decision/Decision Date

The C-NLOPB is of the opinion that, taking into account the implementation of the mitigations set out in the conditions above and those committed to by Investcan, the Project **is not likely to cause significant adverse environmental effects**. This represents a decision pursuant to Section 20(1) (a) of the CEAA.

Responsible Officer Original signed by E. Young
Elizabeth Young
Environmental Assessment Officer

Date: November 3, 2010

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