



Black Point Quarry Project  
Municipality of the District of Guysborough, NS

Environmental Impact Statement

PART 4 Sections 8-15

Vulcan Materials Company

February 2015

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## **8.0 EFFECTS OF THE ENVIRONMENT ON THE PROJECT**

Although environmental assessments typically focus on project-related impacts to the surrounding environment, assessment must also consider the effects of the environment on the project. This is particularly important given that climate change scenarios predict larger magnitude and more frequent extreme weather events, which in turn may negatively impact the Black Point Quarry Project operations.

The natural environment has the potential to adversely interact with the Project through meteorological, climatological and seismological events. These events may include:

- Drought or extreme precipitation events leading to flooding;
- Extreme (high/low) temperatures;
- Rapid or increasing number of freeze/thaw events;
- Lightning strikes;
- Severe wind storms including hurricanes;
- Extreme marine conditions (high waves plus extreme winds);
- Ice storms and hail events;
- Late season sea ice; and
- Earthquakes.

Project infrastructure will be designed to accommodate the conditions imposed by the natural environment and to accommodate, to the extent possible, expected effects of the climate on the Project. Project activities will include emergency preparedness to ensure rapid, organized response in the event of a severe climate episode.

The sections below describe how these events may impact Project infrastructure and activities and how these effects will be mitigated or managed to ensure worker safety, minimize disruptions to production and limit any environmental repercussions.

### **8.1 Potential Effects of Drought or Flooding**

Flood and drought conditions may occur from time to time during the 50-year life of the Project. These events can be accommodated in the Project design as described in Section 6.2 and in the tables below.

The historical mean annual total precipitation for Guysborough is 1425 mm (NS 2014). Although extreme precipitation events may occur in any month of the year, rainfall in the Project area is generally highest during fall, both on a monthly basis and on a storm-by-storm basis. Snow and freezing precipitation can occur between October and May, with the largest amounts falling between December and March (Table 6.3-2).

The potential effects from drought and flooding on the Project and corresponding mitigation measures are summarized in Table 8-1.

**Table 8-1: Potential Effects from Flooding or Drought on the Project**

Hazard	Potential Effects on the Project	Mitigation through Project Plans	Proposed Adaptive Management Measures	
			Inspection/ Surveillance	Contingency Actions
Drought Conditions	<ul style="list-style-type: none"> <li>Increased dust on site; increased potential for off-site dust transport.</li> <li>Reduced availability of wash water for quarry operations.</li> <li>Reduced availability of on-site potable groundwater</li> </ul>	<ul style="list-style-type: none"> <li>Develop a Water Management Plan that describes pre-determined measures to accumulate, conserve, and manage available water.</li> <li>With the prior approval of NSE, substitute chemical dust suppressants for water and apply to the access roads.</li> <li>Supplement on-site water with bottled water.</li> </ul>	<ul style="list-style-type: none"> <li>Monitor water levels of the retention ponds.</li> </ul>	<ul style="list-style-type: none"> <li>Neutralize and utilize water from onsite freshwater bodies</li> <li>If necessary obtain water supply from off-site</li> </ul>
Flooding	<ul style="list-style-type: none"> <li>Flooding of the pit</li> <li>Overflow of the onsite ponds.</li> <li>Flooding of culverts and roads resulting in road washout.</li> </ul>	<ul style="list-style-type: none"> <li>Design facilities to handle excess water in extreme weather events.</li> <li>Schedule construction of surface water management infrastructure before the start of large excavation and earth works</li> <li>Reduce quarry activities and secure vulnerable mining equipment if pit becomes flooded</li> <li>Onsite ponds and sump systems have been sized to accommodate large storm events (i.e., 100-year 24-hour flood event).</li> </ul>	<ul style="list-style-type: none"> <li>Routinely monitor weather forecasts and water levels in the ponds to assure they continually meet prescribed operating guidelines.</li> <li>Inspect damage from flooding on infrastructure such as roads, spillways and culverts, and repair as necessary.</li> </ul>	<ul style="list-style-type: none"> <li>Add or heighten berms around ponds as needed.</li> <li>Enlarge &amp; deepen culverts; raise roads and other infrastructure above flood levels.</li> <li>Add a contingency factor when designing infrastructure to account for climate change</li> </ul>

**8.2 Potential Effects of Extreme Temperatures**

Air temperatures vary seasonally, and are highest in July when daily extremes can vary from 21.5° C to 13.1° C (Section 6.3). Short term summer extremes can vary from 30.8° C (May) to 33.3° C (June). The minimum average daily temperature occurs in February (-5.1°C) with extremes ranging from -8.6° C to -1.5° C. Short term extremes in the winter months can vary from -18.4° C (March) to -25.6° C (February). The Project’s design and operational procedures can easily accommodate these temperature ranges, which are not considered unusually excessive by the Project team.

In Guysborough County, freeze-thaw cycles predominately occur in the winter months (40.6), with slightly less in the spring (33.2) and a few in the fall (8.7) (NS 2014). These cycles have the potential to damage roads and affect the stability and alignment of Project infrastructure.

The potential effects from extreme heat and cold temperatures on the Project and corresponding mitigation measures are summarized in Table 8-2.

**Table 8-2: Potential Effects of Extreme Temperatures**

Hazard	Potential Effects on the Project	Mitigation through Project Plans	Proposed Adaptive Management Measures	
			Inspection/Surveillance	Contingency Actions
High Temperatures	<ul style="list-style-type: none"> <li>Hazard to worker health and safety.</li> <li>Heat damage to mechanical equipment.</li> </ul>	<ul style="list-style-type: none"> <li>Implement an Occupational Health and Safety Management Plan to ensure worker safety.</li> <li>Staff will be trained in accordance with operating procedures and Management Plans.</li> </ul>	<ul style="list-style-type: none"> <li>Inspect mechanical equipment for damage after extreme temperatures</li> </ul>	<ul style="list-style-type: none"> <li>Upgrade mechanical equipment and worker safety equipment to allow for work in high temperatures.</li> </ul>
Low Temperatures	<ul style="list-style-type: none"> <li>Hazard to worker health and safety.</li> <li>Mechanical equipment problems</li> </ul>	<ul style="list-style-type: none"> <li>Implement an Occupational Health and Safety Management Plan to ensure worker safety.</li> </ul>	<ul style="list-style-type: none"> <li>Monitor weather conditions.</li> <li>Inspect equipment for stress and cold cracks;</li> <li>Inspect work areas for ice buildup, especially near the wash plant</li> </ul>	<ul style="list-style-type: none"> <li>Maintain stockpile of vulnerable parts</li> <li>Replace damaged parts as soon as possible; refrain from using the equipment</li> <li>Maintain stockpiles of salt</li> <li>Upgrade mechanical equipment and worker safety equipment to allow for low temperatures work.</li> </ul>
Freeze/thaw conditions	<ul style="list-style-type: none"> <li>Development of pot holes and/or roads breaking apart making it a hazard to driving.</li> <li>Ice blockage of flow conveyance in ditches.</li> <li>Land access to marine terminal may temporarily be difficult due to thawing ground.</li> <li>Freezing of exposed piping and equipment that carry water (wash plant, dust suppression system, water conveyance and pumping equipment)</li> </ul>	<ul style="list-style-type: none"> <li>Monitor roads for damage and repair before they get too hazardous</li> <li>Routinely inspect and maintain haul and access roads; repair as necessary.</li> <li>Incorporate awareness of the risks of thaws and sudden freezes in Occupational Health and Safety Management Plan to ensure worker safety and effective Project operations.</li> <li>Maintain access roads with quarry equipment to all critical operating and monitoring locations throughout the Project area.</li> <li>Implement freeze protection measures on equipment and pipes containing water</li> </ul>	<ul style="list-style-type: none"> <li>Inspect damage to roadways and other infrastructure after major freeze/thaw events.</li> <li>Inspect work areas for ice buildup, especially near the wash plant.</li> <li>Inspect equipment for positional shifts due to frost heave</li> <li>Inspect equipment to ensure freeze protection measures are employed</li> </ul>	<ul style="list-style-type: none"> <li>If necessary, reconstruct access road to provide improved performance during thaws.</li> <li>If necessary, heat trace or otherwise protect from freezing and above-ground water conveyance piping, equipment and systems.</li> <li>Refrain from using misaligned equipment</li> </ul>

### 8.3 Potential Effects from Storms

The Atlantic coast of Nova Scotia and the south coast of Newfoundland experience more storms over the course of one year than any other region in Canada (EC 2006). These storms bring high winds along the coast, heavy precipitation, storm surges exceeding 1.0 m, freezing rain, and peak waves nearing 14 meters in height (EC 2006). The winds that affect the coast and mainland Nova Scotia can exceed 150 km/h, and may result in extreme wind chills during the winter (Section 6.3.)

The potential effects from storm events on the Project and corresponding mitigation measures are summarized in Table 8-3.

Thunderstorms are not common in the Project area. Burrows and Kochtubajda (2010) note that lightning activity is highly influenced by length of season, proximity to cold water bodies and elevation. In Nova Scotia winter lightning is common as Arctic air masses pass over warmer water. Based on data from 1999 to 2009, Burrows and Kochtubajda (2010) report that cloud to ground lightning occurs on average between five and ten times per year over much of Nova Scotia.

**Table 8-3: Potential Effects from Storms**

Hazard	Potential Effects on the Project	Mitigation through Project Plans	Proposed Adaptive Management Measures	
			Inspection/ Surveillance	Contingency Actions
• Rain Storms	<ul style="list-style-type: none"> <li>• Hazard to worker safety from potential flooding.</li> <li>• Dangerous driving conditions due to reduced visibility and washed out roads.</li> <li>• Project area flooding.</li> </ul>	<ul style="list-style-type: none"> <li>• Incorporate flooding awareness and responses/procedures in the Occupational Health and Safety Management Plan to ensure worker safety.</li> <li>• Include stormwater management in the Environmental Management Plan.</li> <li>• If necessary, curtail quarry activities and secure vulnerable quarry facilities during flooding</li> <li>• Design pit slopes to provide for maximize slope stability during extreme storm events.</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor weather forecasts</li> <li>• Inspect damage from flooding on infrastructure such as roads, foundations, supports spillways and culverts and repair as necessary.</li> <li>• Monitor conditions during storms for the potential for forest fires due to damaged power lines.</li> <li>• Inspect pit walls for potential rock fall hazards.</li> </ul>	<ul style="list-style-type: none"> <li>• Add or increase the height of berms around ponds.</li> <li>• Enlarge &amp; deepen culverts and raise roads and other infrastructure above flood levels.</li> <li>• Remove loose rock from pit walls if deemed a hazard or secure area to control access.</li> </ul>
• Ice Storm	<ul style="list-style-type: none"> <li>• Hazard to workers safety due to slippery conditions.</li> <li>• Dangerous driving conditions due to reduced visibility and icy roads.</li> <li>• Chance of power outages due to ice on hydro lines or ice laden trees falling on the hydro lines.</li> <li>• Dangerous quarry conditions due to ice covered operational areas in the pit.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide a description of ice storm hazards and required responses/procedures in management plans to ensure worker safety including hazardous weather driving.</li> <li>• Incorporate emergency response procedures in the Project's Emergency Response plan.</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor weather forecasts</li> <li>• Inspect damage to power lines and trees surrounding power lines after an ice storm to prevent the possibility of power loss.</li> <li>• Inspect conditions of roads and infrastructure to ensure it is safe to continue work.</li> </ul>	<ul style="list-style-type: none"> <li>• Keep trees trimmed along power lines</li> <li>• Have de-icing equipment on site for de-icing roads on site but also for de-icing quarry equipment.</li> <li>• Provide backup power sources in case of loss of power.</li> <li>• Reduce quarry operations in severe weather conditions.</li> </ul>
• High Winds and Waves	<ul style="list-style-type: none"> <li>• Delay in construction schedules</li> <li>• Impact to vessel berthing/loading procedures and schedules</li> <li>• High waves crashing into marina causing damage</li> </ul>	<ul style="list-style-type: none"> <li>• Design marine terminal to withstand waves higher than normal and for extreme events</li> <li>• Schedule loading/unloading to accommodate anticipated storms</li> </ul>	<ul style="list-style-type: none"> <li>• Inspect damage to power lines and trees surrounding power lines after an ice storm to prevent the possibility of power loss.</li> <li>• Monitor marine conditions to predict</li> </ul>	<ul style="list-style-type: none"> <li>• Consider building a jetty to reduce the effects of the waves at the marine terminal</li> <li>• Contingency planning to include emergency evacuation and securing the quarry site</li> </ul>

Hazard	Potential Effects on the Project	Mitigation through Project Plans	Proposed Adaptive Management Measures	
			Inspection/ Surveillance	Contingency Actions
	<ul style="list-style-type: none"> <li>• Chance of power outages due to trees falling on the hydro lines.</li> </ul>	<ul style="list-style-type: none"> <li>• Install backup power sources in case of loss of power.</li> </ul>	when conditions may be favorable for higher waves	<ul style="list-style-type: none"> <li>• Reduce or curtail quarry operations in severe weather conditions.</li> </ul>
<ul style="list-style-type: none"> <li>• Lightning Strikes</li> </ul>	<ul style="list-style-type: none"> <li>• Damage to processing plant components</li> <li>• Worker injury or death</li> <li>• Power surges / power outages</li> </ul>	<ul style="list-style-type: none"> <li>• Design plant equipment with grounding circuits (standard practice)</li> <li>• Comply with provisions in the National Electric Code.</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct annual continuity checks at the plant;</li> <li>• Monitor weather patterns.</li> <li>• Inspect equipment following severe storms and lightning strikes</li> </ul>	<ul style="list-style-type: none"> <li>• Use warning siren to warn workers of severe weather events;</li> <li>• Cease operations in severe thunderstorm conditions; shut down processing plant; direct employees to a designated location</li> </ul>

#### 8.4 Potential Effects of Extreme Marine Conditions

Extreme weather events can develop more quickly on water than on land and are hazardous to the Project due to their sudden onset and intensity, potentially catching workers off guard. Storms can affect vessel berthing and loading, and increases the hazards to people working near water.

Freezing spray occurs when ocean spray generated from winds and heavy seas spreads over the ship and freezes on point of contact. The typical seasonal range for freezing spray occurs between November and April; however, it is highest in February (JWEL 2004). Land fast ice in Chedabucto Bay can persist into April, but the central Bay remains ice-free all year round.

A reduction of visibility due to fog can affect both land and sea operations of the Project. In Canso, 115 days of fog persisting for at least 1 hour were recorded in 2013 (EC 2006). Visibility of one-half nautical mile or less is common for the Chedabucto Bay area in all seasons.

The potential effects of extreme marine conditions on the Project and corresponding mitigation measures are summarized in Table 8-4.

**Table 8-4: Potential Effects of Extreme Marine Conditions**

Hazard	Potential Effects on the Project	Mitigation through Project Plans	Proposed Adaptive Management Measures	
			Inspection/ Surveillance	Contingency Actions
Ice	<ul style="list-style-type: none"> <li>• Delay in construction schedule</li> <li>• Change in shipping routes; shipping delays</li> <li>• Vessel and terminal icing due to freezing sea spray</li> <li>• Icing of the processing plant causing delays</li> </ul>	<ul style="list-style-type: none"> <li>• De-icing procedures</li> <li>• Design heated plant or conveyor components if warranted, or add them later if justified</li> </ul>	<ul style="list-style-type: none"> <li>• Inspection procedures for vessels and quarry machinery</li> <li>• Inspect work areas and equipment for ice buildup</li> </ul>	<ul style="list-style-type: none"> <li>• Stockpile sand and salt abrasives before winter</li> </ul>
Fog	<ul style="list-style-type: none"> <li>• Delay in construction schedule</li> <li>• Change in shipping</li> </ul>	<ul style="list-style-type: none"> <li>• Installation of appropriate navigational devices on the marine terminal</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor weather and marine conditions</li> <li>• Communicate routinely</li> </ul>	<ul style="list-style-type: none"> <li>• Use fog-adapted lights where needed</li> </ul>

routes resulting in delay • Delay in quarry operations	between approaching vessels and land operations with briefing on site-specific weather / marine conditions.
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### 8.5 Seismic Activity

Seismic activity in eastern Canada is associated with regional stress fields and sediment slumping at the edge of the continental shelf, rather than with plate boundaries as in western North America (Section 6.1). Although earthquakes of magnitude 4-5 have occasionally been reported in Nova Scotia, only two have been recorded in the western half of Nova Scotia; most occur offshore. Because of the low frequency of earthquakes and low magnitude of those that do occur, Guysborough County and by extension the Project site is considered to have very low level of seismic activity (NRCan 2014). Considering this, no adverse effects from earthquakes or tsunamis are expected on the Project. Moreover, the simply designed and robust Project infrastructure (conveyors, crushers, screening equipment, etc.) are not particularly vulnerable to earthquakes. Similarly, the durable rock faces of the quarry itself and the low buildings used as administrative offices are not vulnerable to seismic activity.

The potential effects from seismic on the Project and corresponding mitigation measures are summarized in Table 8-5.

**Table 8-5: Potential Effects from Seismic Activity**

Hazard	Potential Effects on the Project	Mitigation through Project Plans	Proposed Adaptive Management Measures	
			Inspection/ Surveillance	Contingency Actions
Earthquakes and Tsunamis	<ul style="list-style-type: none"> <li>• Damage to processing plant and marine terminal infrastructure.</li> <li>• Rock slides in the pit</li> <li>• Potential worker safety impacts from above events.</li> </ul>	<ul style="list-style-type: none"> <li>• All infrastructures will be built to the National Building Code of Canada.</li> <li>• Pit walls have been designed to perform stably under the design earthquake.</li> </ul>	<ul style="list-style-type: none"> <li>• Inspect damage to roads, equipment, buildings, and other quarry infrastructure and repair as necessary.</li> <li>• Regularly monitor stability of pit walls and rock stockpiles</li> </ul>	<ul style="list-style-type: none"> <li>• Upgrade building and road structures to withstand larger earthquakes.</li> <li>• Provide for backup power for critical infrastructure</li> </ul>

### 8.6 Implications of Climate Change Trends

The interaction of the Project with weather events caused by climate change over time is assessed because the Project duration is long enough to experience climate change-induced extreme weather events. The increased annual precipitation predicted by climate change scenarios (10-20 % over the next 100 years [Richards and Daigle 2011]) can be accommodated in the design of the Project, but preparing for and adapting to regular, extreme weather events is more challenging.

Extreme weather, such as high winds and precipitation events, is predicted to increase in both frequency and intensity due to climate change (NS 2014). This could increase the risk from potential winter and spring flooding as well as flash flooding resulting from intense, single event rainfalls. As the frequency and intensity of storms increase, sea-level rise increases the baseline for flooding. Given this, storm surges for any given storm will reach further inland in the future than they would today (Wrightman 2012). With the predicted warmer springs and milder winters,

the frequency of ice storms such as the one experienced in Guysborough County in early 2014 will likely increase.

Air temperatures are expected to increase but extreme warming events are not anticipated to increase significantly (NS 2014). Most of the warming is expected to take place in the winter; however, the number of days with snow is expected to increase in the 2020s but then decline for the 2050s (NS 2014).

Over the duration of this Project, it is projected that the number of freeze-thaw events will remain relatively stable during the winter months, but these events are expected to decline in frequency during the spring and autumn (NS 2014).

Despite an increase in summer temperatures, the potential for forest fires is low because the Project site will be mostly cleared of trees. Forest fires are described in more detail in Section 7.18.

Both peak wind speeds and mean significant waves are predicted to increase in the future (NSE 2011).

Combining global sea-level rise projected for Canso Harbour to the year 2100 with crustal subsidence to the year 2100, Richards and Daigle (2011) calculate total sea level change at 0.45 m +/- 0.15 m to the year 2055 and 0.83 m +/- 0.36 m to the year 2085. They go on to estimate the storm surge for the 100-year return period is on the order of 0.8 m in the Canso-Chedabucto Bay area.

These total sea levels do not include the possibility of a rare historical event such as the Saxby Gale (1869), the Groundhog Day Storm (1976) or of a direct hit by a hurricane. From a design perspective it is prudent to consider the impacts of a plausible upper water level that would result from maximum estimated sea-level rise combined with crustal subsidence and the highest storm-surge factor previously recorded by a tide gauge. Taking these factors into account Richards and Daigle (2011) estimate that by 2085, the Extreme Total Sea Level will range from 3.42 m +/- 0.56 m (10 year return period) to 3.66 m +/- 0.56 m (100 year return period) at the Deming climate station in Guysborough County. These scenarios will be considered during the final design of the marine terminal and processing plant.

The Proponent has considered the risk of sea level rise and storm surge in the preliminary design of the operation. The surface elevation of the processing plant area will be increased to over 20 masl. This elevates the foundations of processing plant and loadout equipment above the level where future storm surges are expected to occur.

To prepare for extreme weather events, including sea level rise and anticipated storm surges over the lifetime of the Project, the Proponent will implement an Emergency Action Plan (EAP) prior to the start of construction. The EAP will describe the steps to be taken to prepare for the impacts of anticipated significant weather events such as hurricanes, wind storms, ice storms and blizzards. The measures that will be implemented will depend largely on the anticipated impacts. These measures may include for example:

- moving mobile equipment to a safe location and elevation;
- reinforcing the anchoring of stationary equipment;
- bringing down conveyors or securing them and filling belts that cannot be dropped by loading with stone;

- transferring fuel and other products stored in bulk to a secure location and/or anchoring tanks and closing and securing all connection valves and drain/fill lines;
- modifying or suspending marine operations to ensure that vessels are safely out of the area prior to storm impacts;
- de-energizing electrical equipment and disconnecting plant power; and
- draining water management systems including ponds, piping and ditches to ensure there is adequate free board to accept anticipated precipitation.

The Proponent will engage operations, environmental and safety, and risk management staff as well as local, Provincial and Canadian government agencies as appropriate in determining criteria used to activate the Emergency Action Plan and the specific measures taken in preparation for a storm.

Taking into account the mitigation included in the Project design and the adaptive management measures proposed above, Table 8-6 summarizes the key climate change trends and assesses their effects on the Project infrastructure and operations.

**Table 8-6: Overall Implications of Climate Change Trends**

Climate Factor Description	Climate Trend	Implication of Climate Change Trends		
		For Project Design	For Project Operations	For the Environmental Assessment
Drought	Decreasing	<ul style="list-style-type: none"> <li>The water needs of the Project are driven by aggregate washing requirements and will not increase due to drought conditions.</li> </ul>	<ul style="list-style-type: none"> <li>This is not expected result in any changes to the Project operations.</li> </ul>	<ul style="list-style-type: none"> <li>This trend does not change the conclusions of the environmental assessment: water can be conserved and proactively managed during drought times</li> </ul>
Rain	Amount of Rain	<ul style="list-style-type: none"> <li>The potential increases in rainfall are readily accommodated by the design floods used to size ditches, culverts, ponds, spillways, etc.</li> <li>These facilities are designed for extremely intense rainfalls that may only occur once every 100 years.</li> </ul>	<ul style="list-style-type: none"> <li>This is not expected to result in any changes to the Project operations</li> <li>Increases in rainfall amounts may increase requirements for maintenance and erosion control measures.</li> </ul>	<ul style="list-style-type: none"> <li>This trend does not change the conclusions of the environmental assessment that the Project design will accommodate these water volumes.</li> </ul>
	Frequency	<ul style="list-style-type: none"> <li>This will not affect the Project since plant designs accommodate for rain events irrespective of their frequency.</li> </ul>	<ul style="list-style-type: none"> <li>This is not expected to result in any changes to the Project operations</li> </ul>	<ul style="list-style-type: none"> <li>This trend does not change the conclusions of the environmental assessment</li> </ul>
	Rainfall Per Event	<ul style="list-style-type: none"> <li>As described under "amounts of rain" the Project will be designed to accommodate extreme high rainfall events.</li> </ul>	<ul style="list-style-type: none"> <li>Increases in rainfall per event may increase requirements for maintenance and erosion control measures.</li> </ul>	<ul style="list-style-type: none"> <li>This trend does not change the conclusions of the environmental assessment</li> <li>Project facilities will be designed for extreme rainfall in any events, i.e., of the order of the one in 100 year events.</li> </ul>
Snow	Snowfall Amount	<ul style="list-style-type: none"> <li>Decreasing snowfall amounts will not impact design</li> </ul>	<ul style="list-style-type: none"> <li>This may reduce the requirement for snow removal at the Project facilities.</li> </ul>	<ul style="list-style-type: none"> <li>This trend does not change the conclusions of the environmental assessment</li> </ul>
Temperature	Freeze-Thaw Events	<ul style="list-style-type: none"> <li>This trend will not likely affect the design, since the facilities will be design to accommodate any number of freeze thaw events.</li> </ul>	<ul style="list-style-type: none"> <li>Less frequent freeze-thaw cycles may reduce repairs and equipment strain.</li> </ul>	<ul style="list-style-type: none"> <li>This trend does not change the conclusions of the environmental assessment</li> </ul>
	High Temperatures	<ul style="list-style-type: none"> <li>Project facilities will be designed to accommodate a temperature range that includes the projected effects of climate change.</li> </ul>	<ul style="list-style-type: none"> <li>There may be an increased need to provide measures such a shading, fluids, work breaks, etc. for outdoor workers.</li> </ul>	<ul style="list-style-type: none"> <li>This trend does not change the conclusions of the environmental assessment</li> </ul>

Climate Factor Description	Climate Trend	Implication of Climate Change Trends			
		For Project Design	For Project Operations	For the Environmental Assessment	
Warmer Winters	Increasing	<ul style="list-style-type: none"> <li>No special considerations are required.</li> </ul>	<ul style="list-style-type: none"> <li>Winter operations may become slightly easier, resulting in production efficiencies and cost savings.</li> </ul>	<ul style="list-style-type: none"> <li>This trend does not change the conclusions of the environmental assessment.</li> </ul>	
Heat Waves	No change	<ul style="list-style-type: none"> <li>No special considerations are required.</li> </ul>	<ul style="list-style-type: none"> <li>There may be an increased need to provide measures such as shading, fluids, work breaks, etc. for outdoor workers.</li> </ul>	<ul style="list-style-type: none"> <li>This trend does not change the conclusions of the environmental assessment</li> </ul>	
Other Events	Waves Intensity	Increasing	<ul style="list-style-type: none"> <li>The marine terminal has been designed to accommodate these changes</li> </ul>	<ul style="list-style-type: none"> <li>For safety, operations may be temporarily restricted during high wave periods</li> </ul>	<ul style="list-style-type: none"> <li>This trend does not change the conclusions of the environmental assessment</li> </ul>
	Ice Storm Frequency	Decrease in Fall and Increasing in Winter	<ul style="list-style-type: none"> <li>Project facilities will be designed for ice conditions, especially at the marine terminal</li> </ul>	<ul style="list-style-type: none"> <li>Project will incorporate operational procedures to address with icing conditions</li> </ul>	<ul style="list-style-type: none"> <li>This trend does not change the conclusions of the environmental assessment</li> </ul>
	Sea Level Rise/Storm Surges	Increasing	<ul style="list-style-type: none"> <li>The marine terminal and processing plant will be designed to accommodate the predicted rise in sea level</li> </ul>	<ul style="list-style-type: none"> <li>An Emergency Action Plan will be developed to prepare for and react to severe weather events.</li> </ul>	<ul style="list-style-type: none"> <li>This trend does not change the conclusions of the environmental assessment</li> </ul>
Wind	Speeds	Increasing	<ul style="list-style-type: none"> <li>Project facilities will be designed for high wind velocities, especially at the marine terminal</li> </ul>	<ul style="list-style-type: none"> <li>For safety, operations at the marine terminal may be temporarily restricted during high wind periods</li> </ul>	<ul style="list-style-type: none"> <li>This trend does not change the conclusions of the environmental assessment</li> </ul>

## 8.7 Conclusion

The Project is located on a relatively exposed southern coastline exposed to northerly winds and considerable wave action. Initial designs have considered prevailing historical conditions, including extreme events, as well the anticipated effects of climate change on key weather variables. As the Project moves into the detailed design stage, additional consideration will be given to the effects of the environment on the Project.

In addition to design factors, potential adverse effects on the Project due to the environment will be mitigated through the monitoring and/or contingency planning described above. Therefore, the effects of the environment on the Project are anticipated to be not significant.

## 9.0 CUMULATIVE ENVIRONMENTAL EFFECTS

Cumulative environmental effects are residual Project effects combined with the environmental effects of past, present, and future projects. For the Black Point Quarry environmental assessment, the descriptions of the existing environment and of the current condition of each VC already include the effects of current projects occurring within or outside of the Project Area. This assessment also assumes that these existing projects will continue in the future and will have similar effects as are currently observed. The assessment has, therefore, integrated the cumulative effects of these ongoing projects and activities. The cumulative effects assessment presented in Section 9.0 thus focuses on the effects of other future projects and activities.

This is consistent with guidance documentation developed by the CEA Agency: “temporal boundaries...should take into account future physical activities that are certain and reasonably foreseeable, and the degree to which the environmental effects of these physical activities will overlap those predicted from the designated project” (CEAA 2013).

With respect to identifying potential cumulative effects, guidance provided during the review of previous environmental assessments in other jurisdictions has indicated that

1. there must be a measurable environmental effect of the project being proposed;
2. the environmental effect must be demonstrated to interact cumulatively with the environmental effects from other projects or activities; and
3. it must be known that the other projects or activities have been, or will be, carried out and are not hypothetical. That is, there must be some *probability* the cumulative environmental effect will occur rather than simply a *possibility*.

## 9.1 Project Identification

Information regarding upcoming projects was obtained from a review of new projects listed on the NSE Environmental Assessment Division website and well as the CEA Agency’s online registry. In addition, a generalized internet search was used to identify other anticipated projects. From these information sources, the following projects were identified.

### **9.1.1 *Planned and Reasonably Certain***

#### Chedabucto Aggregates Quarry Expansion (Halfway Cove, Guysborough Co.)

Chedabucto Aggregates Limited in September 2014 registered the Chedabucto Aggregates Quarry Expansion for environmental assessment. Approval was granted in November 2014. The project is located approximately 13 km southeast of Guysborough. The proposed expansion is scheduled for 2015; production levels and operations are not expected to increase as a result of the proposed expansion.

#### Goldboro Liquefied Natural Gas Project (Goldboro, Guysborough Co.)

Pieridae Energy proposes to construct a natural gas liquefaction plant and marine terminal in Goldboro, Guysborough County. On March 21, 2014 the project was approved with conditions and the project is currently in the Front End Engineering and Design phase. On-going land and marine based studies are currently underway at the project site.

#### Maher Melford Container Terminal (Melford, Guysborough Co)

Melford International Terminal is proposing to develop a 315-acre container terminal and intermodal rail facility in Melford on the Strait of Canso. Construction timelines are uncertain but the terminal may be operating by late 2015 or early 2016 (reported November 2013). In late 2014 the Nova Scotia Minister of the Environment authorized an extension for the commencement of project work: the Proponent must, on or before October 23, 2016, commence work on the project unless granted an extension by the Minister.

#### Bear Head Liquefied Natural Gas Project (Port Hawkesbury, Cape Breton)

The Bear Head project near Port Hawkesbury received EA approval in 2004. Construction on the LNG facility began in 2005, but ceased when Texas-based Anadarko could not find a natural gas supply to import to the terminal. In July 2014, the company Liquefied Natural Gas Ltd. announced it has purchased the project (reported July 2014). In November 2014, Liquefied Natural Gas Ltd. announced plans to double the capacity of the proposed liquefaction and export terminal from 4 mtpa to 8 mtpa. A final investment decision on the Bear Head project is expected in late 2015 to 2016, and the facility could be in commercial operation in late 2018 to 2019 (reported November 2014).

### **9.1.2 *Announced and Uncertain***

#### H-Energy Liquefied Natural Gas Project (Melford, Guysborough Co)

H-Energy has announced its intention to develop a liquefied natural gas export facility at Melford. The development will be located within the Melford Industrial Land Reserve. A final decision on whether to proceed with the venture will be made by mid-2016 (reported July 2014).

Given the uncertainty associated with Maher Melford Terminal, the Bear Head and the H-Energy LNG proposals, these projects were not considered in the cumulative effects assessment.

## **9.2 Cumulative Assessment Methodology**

In order to identify potential overlapping projects and systematically assess the likely cumulative effects for each VC, the Project team:

1. Researched the status of future planned or anticipated projects that could overlap in time or space with the Project; and
2. Defined the spatial and temporal boundaries that would be used to assess the degree and significance of the overlap (i.e., the cumulative effect) for each VC.

## **9.3 Spatial and Temporal Boundaries**

Residual effects are predicted for almost all VCs, even following the application of mitigation measures to limit or eliminate these effects. Given this, all VCs were examined for the potential to contribute to cumulative effects. At the same time, the spatial and temporal boundaries applied for each Black Point VC are maintained, since the use of these boundaries for the cumulative effects assessment provides consistency to the analysis.

Once future projects were identified, the infrastructure and activities associated with these projects were reviewed to determine the likelihood that potential effects on VCs at these projects would overlap in space with the VCs assessed for the Black Point Project. If an effect was likely, then these effects were further examined as to their potential to overlap in time (temporal overlap) with Black Point effects. Where an overlap of temporal boundaries was noted, the assessment determined if type of effects would be similar or different in nature or magnitude.

## **9.4 Cumulative Effects Assessment**

### **9.4.1 Projects Retained**

#### Chedabucto Aggregates Quarry Expansion

Chedabucto Aggregates quarry is located near Halfway Cove approximately 17 km west of Black Point. The quarry produces aggregate for the local building and paving industries, and transports its aggregate to these markets by truck. Given the distance from the Project Area, and the limited scale of quarrying activities associated with the expansion, no overlap in space between the environmental effects produced at Chedabucto Aggregates and the Black Point Project is expected. Therefore, no cumulative effects are anticipated.

#### Goldboro Liquefied Natural Gas Project

The Goldboro LNG project is located on Nova Scotia's eastern shore, approximately 45 km southwest the Black Point Project. The project is associated with a number of residual environmental effects but most of these effects are not considered to be significant. The project's GHG emissions could be regionally significant when combined with other large, regional GHG emitters, but the Black Point Project is not a significant GHG producer. Vessel traffic to the Goldboro marine terminal will remain many kilometres from Chedabucto Bay. Under these circumstances, there is no overlap in space between the effects produced at Goldboro and those expected at Black Point. Given this, no cumulative effects are anticipated.

## Maher Melford Container Terminal and Bear Head Liquefied Natural Gas Projects

The proposed Melford International Terminal (MIT) will be located 23 km from Black Point within the Strait of Canso and will include a wharf and container storage area. The 950 m long wharf will be large enough to berth three post-Panamax container ships or two super post-Panamax ships at one time (AMEC 2008). As noted, construction is currently expected to begin no later than October 2016. Initially 95-150 ships will visit the terminal each year depending on vessel size, increasing to 260 vessels per year at full capacity, again depending on the size of each vessel time (AMEC 2008).

The Bear Head Liquefied Natural Gas Project is located within the Strait of Canso in the Point Tupper/Bear Head Industrial Park, approximately 30 km northwest of the Black Point Project. Initial phases of the project, which may begin in late 2016 or 2017, involve the construction and operation of a 7.5 mtpa capacity LNG terminal with a natural gas send out capacity of 1,000 million standard cubic feet per day, later expanding to 1,500 million standard cubic feet per day. Pier and berthing facilities would be designed to accommodate LNG carriers up to 250,000 m<sup>3</sup> in capacity with a ship draft of approximately 13.5 m (JWEL 2004).

There will be approximately 75-135 ships per year (JWEL 2004). A vessel will be delivering to the terminal every 5 days if the project employs 70 vessels per year, and every 2 or 3 days if 135 vessels are employed per year.

### **9.4.2 Interacting or Overlapping VCs**

Given their relative proximity and location with respect to the Black Point Project site, certain aspects (i.e., valued components or VCs) of the Bear Head LNG and the Mahe Melford Container Terminal projects are expected to overlap in space and time with VCs retained for the Black Point Project. These VCs include:

**Shipping and Navigation:** Black Point Project vessels will share space within the traffic separation scheme east and north of the Canso Ledges and in addition, may require anchorage sites within Chedabucto Bay during periods of adverse weather. This may result in a potential cumulative adverse effect on navigational safety. At the same time, the Black Point Project will employ the same tug boats and pilots that will be needed to serve vessels calling at Bear Head LNG and the Mahe Melford Container Terminal projects, resulting in positive economic benefits to these services.

**Local Economy, Land and Resource Use:** the Black Point project will draw from the same general labour pool that will serve for construction of the Bear Head LNG and the Mahe Melford Container Terminal projects. This will result in increased economic activity within the region but may also result in short term labour shortage in specialized trades. As noted, positive economic benefits may accrue to tug boat operators, their suppliers and the pilots needed during the construction and operation of these three projects.

### **9.4.3 Mitigation Measures**

With respect to **Shipping and Navigation**, the vessels used to transport aggregate will not be operated by Proponent crews and so mitigation of potential vessel collisions is, to a large extent, outside of the control of the Proponent. Nevertheless, the Proponent will review the safety and environmental records of shipping contractors prior to engaging them, with the aim of employing only the most reputable firms. As a cargo transported by sea, aggregate would not cause

significant adverse effects to the marine environment in the event of a vessel collision or sinking.

Marine traffic within Chedabucto Bay managed by the Canadian Coast Guard and the Proponent will communicate with the MCTS to the extent requested or required during adverse weather conditions. To the extent applicable, the Proponent will also

- Comply with the Eastern Canada Vessel Traffic Services Zone Regulations of the *Canada Shipping Act*;
- Comply with navigational and operational requirements of Atlantic Pilotage Authority and Coast Guard; and
- As needed, provide marine vessel volumes and schedules to marine management operators responsible for traffic movement; and

With respect to **Local Economy, Land and Resource Use** the Proponent is committed to meeting with local schools, trade unions and other organizations to describe labour and skill requirements, and to employ a procurement policy that favours local labour markets and suppliers.

#### **9.4.4 Residual Cumulative Effects and Significance**

Taking into account the basic mitigation measures described above, the residual adverse cumulative effects expected with respect to Shipping and Navigation are predicted to be insignificant. Cumulative effects to the Local Economy, Land and Resource Use are expected to be positive and potentially significant over the medium to long term.

### **10.0 PROPOSED COMPLIANCE AND EFFECTS MONITORING PROGRAMS**

As the Project moves forward into detailed design, a number of existing monitoring programs will continue so that additional pre-construction baseline data can be gathered. Supplemental monitoring programs will be initiated as needed during construction and operation, primarily to verify the impacts predicted in the EIS. Table 10.0-1 summarizes the mitigation measures presented in Chapter 7 on a VC by VC basis, and lists the monitoring programs designed to verify the predictions made in the assessment. Table 10-2 further elaborates the follow up and monitoring programs for each VC. The precise details of each monitoring program (e.g., monitoring frequency/duration, specific locations, parameters, and reporting) will be determined in consultation with regulatory agencies, but Table 10-2 provides a summary of each program's objectives and methods. All monitoring programs will be described in the Project EMP.

The objectives of the monitoring programs are to:

1. Verify effects predicted in the EIS;
2. Confirm the continuing effectiveness of the proposed mitigation measures;
3. Identify the need for new mitigation measures in response to unanticipated adverse effects; and
4. Ensure compliance with regulatory permits, approvals, and requirements.

Finally, Table 10-3 summarizes the issues raised by the public and the Mi'kmaq over the course of the environmental assessment, describes where the mitigation measures regarding each issue can be found, lists commitments made by the Proponent to address these issues, and summarizes the follow up and monitoring program associated with the concern raised. More

information regarding issues raised during the environmental assessment is presented in Section 11 Consultation and Engagement below.

**Table 10-1:  
 Proposed Mitigation and Monitoring by VC**

VC	Mitigation	Monitoring (please see <a href="#">Table 10-2</a> for Monitoring Program Details)
Air Quality and Climate Change (7.1)	<ul style="list-style-type: none"> <li>• Regular maintenance of all equipment and emission control devices.</li> <li>• The use of wet suppression on crushers, screens, and conveyor transfer points. Due to high moisture content of the stone, some parts of the process will not need water sprays or additional dust control.</li> <li>• The application of water to the access and haul roads and aggregate stockpiles as needed.</li> <li>• Use of qualified blasting contractors with blast design plans that incorporate dust controls.</li> <li>• Construction of the haul roads using material with low silt content.</li> <li>• Use of a binder substance within the dust suppression application (e.g. calcium chloride) during drier periods to aid in keeping the roads moist for longer periods of time, when necessary..</li> <li>• Use adaptive management to adjust dust control measures and/or operating conditions to account for changing conditions that affect dust control. Some of the control measures that will be implemented will include:                         <ul style="list-style-type: none"> <li>○ Increase in watering frequency of haul roads and stock piles.</li> <li>○ Application of dust suppressants to the haul and access roads.</li> <li>○ Reduction in allowable speed on haul and access roads.</li> <li>○ Restriction or suspension of operation of part or all of the processing plant until dust can be controlled.</li> <li>○ Suspension or modification of overburden handling activities.</li> <li>○ Addition or modification of dust suppression systems to address specific points where dust is being generated, including spray nozzle additions and/or modifications.</li> <li>○ Modify operation and dust controls during high wind events (&gt;30 km/h) to control dust, if it cannot be controlled suspend operation until it can.</li> </ul> </li> <li>• Utilize multi-passenger vehicles to transport crew when possible.</li> <li>• Use high quality, ultra-low sulphur diesel fuels or standard unleaded gasoline for mobile equipment at the operation. (Note: Ships will not be refuelled at the site; vessel fuel type is not within the Proponent's control).</li> <li>• Reduce idling and shut off equipment when parked unless it is required to operate due to safety considerations, inspection requirements or maintenance activity.</li> <li>• Turn off equipment that is idling and not in use.</li> <li>• Utilize drill rig that has dust suppression incorporated into its design.</li> <li>• Apply water to shot rock pile as needed to reduce emissions from loading and conveyance of material to the process.</li> <li>• Ships must comply with International Marine Organization limits on NO<sub>x</sub>, VOC, and SO<sub>2</sub> but enforcement is the responsibility of Transport Canada.</li> <li>• Optimize load times to limit auxiliary engine idling on ships at dock.</li> </ul>	<ul style="list-style-type: none"> <li>• Daily dust and weather monitoring as described in the <a href="#">Environmental Management Plan</a>.</li> <li>• Regular individual worker / workplace health and safety testing.</li> <li>• Agency-requested ambient air quality testing or monitoring as required.</li> <li>• Implementation of a complaints log / response protocol at the site office.</li> </ul>

VC	Mitigation	Monitoring (please see <a href="#">Table 10-2</a> for Monitoring Program Details)
Noise and Vibration (7.2)	<ul style="list-style-type: none"> <li>• Include noise specifications in equipment procurement practices</li> <li>• Place as much distance as possible between the plant or equipment and residences.</li> <li>• Maximize shielding from quarry walls, buildings and stockpiles as noise barriers.</li> <li>• Use natural landforms as noise barriers.</li> <li>• Include in tenders, subcontractor agreements and work method statements clauses that assure the minimization of noise and compliance with directions from management to minimize noise.</li> <li>• Regularly train workers and contractors to use equipment in ways that minimize noise.</li> <li>• Ensure that site managers periodically check the site, nearby residences and other sensitive receptors for noise problems.</li> <li>• Procure equipment that meets US EPA Category IV air emission standards for off-road diesel equipment which tend to generate less noise than older equipment.</li> <li>• Equipment that operates in the quarry pit should stay in the pit to the extent possible so that the pit walls attenuate the noise levels.</li> <li>• Locate product stockpiles and other structures to the extent possible to attenuate the noise from the processing equipment.</li> <li>• Restrict operating hours for the quarry and processing plants to 16-hours per day so that noise levels are reduced during night time. Additional 8-hours per day maintenance shift will be part of normal operations.</li> <li>• Restrict blasting to daytime hours and weekdays.</li> <li>• Keep truck drivers informed of designated vehicle routes, parking locations, acceptable delivery hours and other relevant practices (e.g. minimizing the use of engine brakes and engine idling).</li> <li>• Minimize the use of reversing alarms by designing the site layout to avoid reversing.</li> <li>• Provide information/advance notification to neighbors before and during construction through media such as letterbox drops or meetings;</li> <li>• Upon request, residents will be alerted to upcoming production shots (blasts) via automated telephone notifications ("robo-calls").</li> </ul> <p><u>Night-time Mitigation Measures</u></p> <ul style="list-style-type: none"> <li>• Minimize the need for reversing alarms.</li> <li>• Avoid metal-to-metal contact on equipment.</li> <li>• Ensure that periods of respite are provided in the case of unavoidable maximum noise level events.</li> </ul>	<ul style="list-style-type: none"> <li>• As required by the NSE Pit and Quarry Guidelines, all blasts will be monitored to establish concussion and vibration levels. This is consistent with the Proponent's standard operating practices at all quarries.</li> <li>• As required by NSE, sound level monitoring will be undertaken at the property boundary or elsewhere as directed during daytime, evening and night-time to verify compliance with the Pit and Quarry guidelines.</li> <li>• As part of the workplace health and safety program, noise monitors will be attached to workers on a regular basis to measure and monitor noise exposure over an eight hour shift.</li> </ul>
Ambient Light (7.3)	<ul style="list-style-type: none"> <li>• Use full cut off luminaires where no light is emitted above the horizontal plane, where practical and where they don't compromise worker safety.</li> <li>• Use only the lights needed to meet local lighting objectives.</li> <li>• Where practical Minimize glare by keeping the main beam angle less than 70 degrees.</li> <li>• Use floodlights with asymmetric beams where possible.</li> <li>• Direct the site lighting away from residential properties.</li> <li>• Where possible position lights as far away from site boundaries as practical.</li> </ul>	<ul style="list-style-type: none"> <li>• Routine site monitoring as described in the <a href="#">Environmental Management Plan</a> will include maintaining records of bird mortality so developing issues related to lighting can be identified.</li> <li>• The Environmental Management Plan will include instructions on implementing the protocol "<i>Best practices for stranded birds encountered offshore Atlantic Canada</i>" (EC 2014e) for responding to avian strandings related to activities in the marine environment.</li> </ul>

VC	Mitigation	Monitoring (please see <a href="#">Table 10-2</a> for Monitoring Program Details)
	<ul style="list-style-type: none"> <li>• Where possible, keep lighting at low heights to reduce the chance of illuminating migrating birds.</li> <li>• Pole mounted lighting will be pointed downward and shielded from the top and sides.</li> <li>• To the extent possible, low intensity lighting will be used rather than high intensity lighting.</li> <li>• Lights placed on the outside of the quarry work areas will be kept as low as possible and correctly aimed to prevent lighting non-essential areas.</li> <li>• Lights for the marine terminal will be chosen and aimed to prevent where possible light shining directly into the water.</li> <li>• Marine terminal lighting will be controlled so that minimal lighting will be used when the terminal is not in operation.</li> <li>• If lighting is required at the perimeter of the site it will be aimed inward to prevent off site light trespass.</li> <li>• Temporary lighting used during construction will be focussed on the intended work area and will be shielded to minimize spillage.</li> <li>• To reduce night time ambient lighting effects, operations will be routinely monitored so that lighting can be switched off by work area when it is not needed.</li> <li>• Consideration will be given to using light sources such as directional LEDs to give a better spread of lighting and reduce the overall intensity of the lighting systems.</li> <li>• Consideration will be given to selecting lights that have a lesser effect on the wildlife to help reduce lighting effects on nocturnal species.</li> </ul>	<ul style="list-style-type: none"> <li>• Nightly site inspections will reveal opportunities for light reduction.</li> </ul>
Geology, Soil & Sediment Quality (7.4)	<ul style="list-style-type: none"> <li>• Standard mitigation measures to manage acid generating rock, including the control and containment of drainage and the management of excavated rock as per NSE regulation.</li> <li>• Sloping of the processing plant area to the south to collect surface water within the sedimentation ponds, prevent discharge to the ocean.</li> <li>• <a href="#">Environmental Management Plan</a> that describes standard ARD control measures. The Environmental Management Plan will incorporate an <a href="#">Erosion and Sediment Control Plan</a> to ensure drainage is properly managed and control structures inspected and a <a href="#">Stormwater Management Plan</a> that describes the construction and operation drainage swales and stormwater management ponds.</li> </ul>	<ul style="list-style-type: none"> <li>• The acid generating potential of bedrock will be assessed at the beginning of construction as per the Nova Scotia <i>Sulphide Bearing Material Disposal Regulations</i>.</li> <li>• Discharge will be monitored through a <a href="#">Surface Water Monitoring Program</a> elaborated within the Environmental Management Plan.</li> </ul>
Groundwater Resources (7.5)	<ul style="list-style-type: none"> <li>• Since no impacts to groundwater users are expected, no mitigation is proposed</li> <li>• To mitigate reductions in groundwater flows that supply nearby wetlands, implement a <a href="#">Wetland Compensation Plan</a> for wetlands damaged due to the Project.</li> </ul>	<ul style="list-style-type: none"> <li>• The groundwater wells will be monitored as part of the <a href="#">Groundwater Monitoring Program</a> elaborated within the Environmental Management Plan.</li> </ul>
Marine and Surface Water Resources (7.6)	<ul style="list-style-type: none"> <li>• Sedimentation ponds will be used near the processing plant while the quarry pit will employ sumps to collect water inflows.</li> <li>• Topographic controls (sloping the ground to the south) will ensure that overflow, should it occur, will collect against the south cliff and in the pit, rather than be permitted to discharge directly to the ocean.</li> <li>• Double walled and or/fully contained fuel and chemical storage reservoirs will be used.</li> <li>• The <a href="#">Environmental Management Plan</a> will include a discrete <a href="#">Erosion and Sediment Control Plan</a> to ensure drainage is properly managed and control structures inspected and a <a href="#">Stormwater</a></li> </ul>	<ul style="list-style-type: none"> <li>• Discharge will be monitored through a <a href="#">Surface Water Monitoring Program</a> elaborated within the Environmental Management Plan.</li> <li>• The success of the <a href="#">Wetland Compensation Plan</a> will be monitored over time as determined in collaboration with NSE; other water features not directly included in the Plan will be inspected to detect hydrological changes potentially caused by the Project – these inspections will be outlined in the Plan.</li> </ul>

VC	Mitigation	Monitoring (please see <a href="#">Table 10-2</a> for Monitoring Program Details)
	<p><a href="#">Management Plan</a> that describes the construction and operation drainage swales and stormwater management ponds.</p> <ul style="list-style-type: none"> <li>The EMP will also include an <a href="#">Emergency Response and Spill Contingency Plan</a> combined with incident prevention and emergency response training to minimize the risk of accidental spills and to rapidly react to any incident that may occur. The Emergency Response and Spill Contingency Plan will include spill dispersion modelling in the marine environment to aid in rapid and effect emergency response.</li> <li>The Proponent will contract with a local emergency response consultant to ensure that additional resources and expertise are available in the event of an accidental spill in the marine environment.</li> <li>To mitigate reductions in surface water flows that supply nearby wetlands, implement a <a href="#">Wetland Compensation Plan</a> for wetlands damaged due to the Project.</li> </ul>	
Terrestrial Ecosystems, Habitat and Vegetation (7.7)	<ul style="list-style-type: none"> <li>A general set of environmental mitigation measures will be defined in the <a href="#">Environmental Management Plan</a> which will include an <a href="#">Erosion and Sediment Control Plan</a>, a <a href="#">Stormwater Management Plan</a> and an <a href="#">Emergency Response and Spill Contingency Plan</a>.</li> <li>Minimize the Project footprint.</li> <li>Mark Project boundaries to prevent accidental impacts outside the work area.</li> <li>Remove/ and salvage topsoil; store separately and reuse for site restoration.</li> <li>Dust-prevention and abatement measures outlined above will also protect local flora and habitats.</li> <li>Stabilize and rehabilitate areas of disturbance.</li> <li>Use local native vegetation in restoration; consideration will be given to the preferential use of vegetation types of interest to the Mi'kmaq.</li> <li>Vegetation management will be conducted by mechanical cutting (e.g., mower, brush cutter);</li> <li>Mitigation measures for the protection of watercourses (see Section 7.6 and 7.10) will help to protect terrestrial and freshwater aquatic vegetation and habitats.</li> </ul>	<ul style="list-style-type: none"> <li>The <a href="#">Environmental Management Plan</a> will establish monitoring/inspection plans to ensure protective mitigation measures are implemented and effective.</li> <li>Daily inspection and record keeping will be described in the EMP.</li> <li>A <a href="#">Rehabilitation Plan</a> will be prepared to guide habitat restoration following closure</li> </ul>
Wetlands (7.8)	<ul style="list-style-type: none"> <li>Mitigation developed for surface water quality will also protect wetlands (Sections 7.6).</li> <li>Mitigation against the potential effects of spills, malfunctions and accidents are described in Section 7.18.</li> <li>Wetlands will be avoided to the extent feasible during Project planning.</li> <li>Where wetlands cannot be avoided, the Project footprint in the wetland area will be minimized.</li> <li>A wetland alteration permit will be obtained from NSE prior to construction.</li> <li>Where a permanent loss of wetland function is identified, a <a href="#">Wetland Compensation Plan</a> will be developed, subject to approval by NSE.</li> <li>Maintain a 30 m buffer around all undisturbed wetlands.</li> <li>Where the access road cuts across diffuse natural drainage paths culverts or drainage swales of sufficient size will be installed to maintain water flow at pre-construction levels.</li> <li>To the extent feasible, clean site runoff will be managed so that the amount of water entering adjacent wetlands is similar to pre-construction levels.</li> <li>Runoff collected along the roads will not be allowed to enter directly into wetlands, but shall be directed into vegetation buffers around wetlands.</li> </ul>	<ul style="list-style-type: none"> <li>Efficacy of the erosion and sediment control measures will be monitored as outlined in the <a href="#">Environmental Management Plan</a>.</li> <li>Monitoring of new or enhanced wetlands will be undertaken as per the <a href="#">Wetland Compensation Plan</a>.</li> <li>Other water features not directly included in the Plan will be inspected to detect hydrological changes potentially caused by the Project – these inspections will be outlined in the Plan.</li> </ul>

VC	Mitigation	Monitoring (please see <a href="#">Table 10-2</a> for Monitoring Program Details)
	<ul style="list-style-type: none"> <li>Integration of existing/remnant wetlands into the quarry's stormwater management system will be considered in the <a href="#">Stormwater Management Plan</a> and in the <a href="#">Environmental Management Plan</a>.</li> <li>Implement <a href="#">Erosion and Sediment Control Plan</a>.</li> <li>Uncontaminated drainage will be directed away from areas under construction.</li> <li>Vegetation management in or near wetlands will be conducted by cutting (i.e., no use of herbicides).</li> <li>Dust-prevention and abatement measures outlined above will also protect wetlands.</li> </ul>	
Terrestrial Wildlife (7.9)	<ul style="list-style-type: none"> <li>Minimize the Project footprint.</li> <li>Implement dust-prevention and dust abatement measures described above.</li> <li>Implement a <a href="#">Wetland Compensation Plan</a>.</li> <li>Instruct workers to maintain good housekeeping practices and not leave out any food or garbage to avoid attracting wildlife.</li> <li>To minimize impacts on nesting landbirds, clearing will take place outside of the breeding season for most bird species (April 1 to September 1). If some clearing is necessary during the breeding season the Proponent will assess if the work can be undertaken without contravention of the <i>Migratory Birds Convention Act</i> and a contingency plan developed in consultation with CWS in order to maintain compliance with the <i>Act</i>.</li> <li>If an Osprey, Bald Eagle or Northern Goshawk nest is found, even outside of the breeding season, a buffer zone will be placed around the nest and clearing will only occur outside of the buffer zone.</li> <li>To discourage ground-nesting or burrow-nesting species, no large piles or patches of bare soil will be left uncovered or un-vegetated during the breeding season.</li> <li>Should any ground- or burrow-nesting species initiate breeding activities on stockpiles or exposed areas, the Proponent will establish a 20 m buffer around the nest location and contact EC-CWS for further advice.</li> <li>Noise suppression equipment such as mufflers on mobile equipment and fixed/portable engines will be maintained in original OEM working condition</li> <li>The duration of noise disturbance will be minimized.</li> <li>Lighting will be restricted to areas where it is necessary.</li> <li>To minimize interference of nesting activities, workers will be asked to refrain from entering undisturbed habitat areas where no work is done.</li> <li>In the event that impacts on migratory birds are detected during construction, further mitigation will be developed in consultation with NSDNR and EC.</li> <li>Standard mitigation measures for noise (including blasting), as outlined in Section 7.2, will minimize impacts on terrestrial fauna.</li> <li>As recommended by EC, ships en route will maintain a minimum distance of at least 300 m from any colony or island occupied by seabirds and waterbirds.</li> <li>To minimize the risk to migrant birds, the minimum amount of pilot warning and obstruction avoidance lighting will be used on tall structures. . The use of solid-burning or slow pulsing warning lights at night will be avoided.</li> </ul>	<ul style="list-style-type: none"> <li>Routine site monitoring as described in the Environmental Management Plan will include maintaining records of bird mortality so developing issues related to lighting can be identified.</li> <li>The <a href="#">Environmental Management Plan</a> will include provisions describing specific management actions for at risk species (e.g., Mainland Moose, ground- or burrow-nesting species)</li> </ul>

VC	Mitigation	Monitoring (please see <a href="#">Table 10-2</a> for Monitoring Program Details)
	<ul style="list-style-type: none"> <li>• Lighting for the safety of the employees should be shielded to shine down and only to where it is needed, without compromising safety.</li> <li>• Street and parking lot lighting should also be shielded so that little escapes into the sky and it falls where it is required.</li> <li>• The protocol "<i>Best practices for stranded birds encountered offshore Atlantic Canada</i>" (EC 2014e) will be used for stranded seabirds.</li> <li>• White lights will be preferred for use on towers or high structures at night, as recommended by the US Fish and Wildlife Service (2003). Solid red or flashing red lights will be avoided as they appear to attract nocturnal migrants more than white flashing lights.</li> <li>• The operation of exterior decorative lights such as spotlights and floodlights, whose function are to highlight features of buildings or to illuminate an entire building, will be avoided unless safety is a factor.</li> <li>• High intensity lights, including floodlights, will be turned off at night outside of working hours, if possible, especially during the spring and fall migration period.</li> <li>• Where feasible, tinted or frosted glass windows will be used in buildings to reduce bird mortality from collisions.</li> </ul>	
Freshwater Species and Habitat (7.10)	<ul style="list-style-type: none"> <li>• As described in the <a href="#">Erosion and Sediment Control Plan</a>, erosion control measures will be implemented to ensure that discharge water quality meets all relevant regulatory standards prior to discharge to receiving environment.</li> <li>• As described in the <a href="#">Stormwater Management Plan</a>, stormwater will be collected in the pit and in ponds near the processing plant to ensure that uncontrolled runoff will not occur.</li> <li>• Overburden stockpiles, fuel and chemical storage facilities, and construction equipment will be located a minimum of 30 m from any pre-development water body.</li> <li>• Flagging tape will be used to delineate temporary work areas and control construction access near retained wetlands and water bodies to protect natural substrates and vegetation contributing to habitat and bank stability;</li> <li>• An <a href="#">Emergency Response Spill Contingency Plan</a> will be prepared to prevent and manage the effects of any malfunctions and accidents.</li> <li>• Creation of a 30 ha freshwater lake within the pit following cessation of quarrying activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Fish habitat assessment and determination of presence/absence is proposed for Reynolds Brook above Hendsbee Lake. If fish are present, then a modest monitoring program is proposed for such time as quarry development begins to divert water away from its natural drainage to the south. This is not expected to occur before year 10 of quarry development.</li> <li>• A <a href="#">Rehabilitation Plan</a> will be prepared to guide habitat restoration following closure</li> </ul> During construction and operation monitoring will focus on: <ul style="list-style-type: none"> <li>• Condition and location of erosion and sediment control structures;</li> <li>• Water quality testing of stormwater discharge as outlined in the <a href="#">Surface Water Monitoring Program</a>; and</li> <li>• Ensuring overburden stockpiles, fuel and chemical storage facilities, and construction equipment are a minimum of 30m from any natural water body.</li> </ul>
Marine Species and Habitat (7.11)	<ul style="list-style-type: none"> <li>• An <a href="#">Environmental Management Plan</a> will describe the following preventative and mitigation measures:                             <ul style="list-style-type: none"> <li>○ Application of appropriate timing windows for all in-water work.</li> <li>○ Implementation of terrestrial erosion and sediment control measures.</li> <li>○ Use of surface water monitoring to ensure that quality meets all relevant regulatory standards prior to discharge to receiving environment.</li> </ul> </li> <li>• Install overburden stockpiles, fuel and chemical storage facilities a minimum of 30 m from Chedabucto Bay.</li> <li>• Implement an Emergency Response and Spill Contingency Plan for Accidents and Malfunctions.</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Fisheries Offset Program</a> and associated monitoring for effectiveness.</li> <li>• Concussion and ground vibration monitoring during each blast to ensure limits established by DFO for the marine environment are respected.</li> </ul>

VC	Mitigation	Monitoring (please see <a href="#">Table 10-2</a> for Monitoring Program Details)
	<ul style="list-style-type: none"> <li>• If effects from blasting vibrations exceed the DFO thresholds, then a site specific standard to protect fish and an appropriately scaled fish and fish habitat offset plan will be implemented.</li> <li>• Control ballast water release via "<i>Ballast Water Control and Management Regulations</i>" and the requirements as per the International Convention for the control and Management of Ship's Ballast Water and Sediments.</li> <li>• Implement a <a href="#">Fisheries Offset Program</a> to recreate fish habitat that has suffered "serious harm".</li> </ul>	
Species at Risk (SAR) and of Conservation Concern (SOCC) (7.12)	<ul style="list-style-type: none"> <li>• Mitigation for potential effects on SAR and SOCC are similar to recommendations for terrestrial or marine fauna as a whole. Standard mitigation measures such as minimization of Project footprint, dust control, emissions control, and monitoring of air quality targets as detailed in Sections 7.7 and 7.1 will be sufficient to protect many SAR and SOCC, if present.</li> <li>• Standard handling and storage procedures for hazardous material, as well as procedures for handling and disposal of contaminated soils (outlined in Section 7.18), will adequately mitigate the potential for exposure of Moose and bird SAR/SOCC to any hazardous materials or contaminated soils.</li> <li>• Strict reporting policies for any suspected hunting activities will help to minimize any potential Moose poaching in the Project area.</li> <li>• Imposing a 50 km/hr speed limit will reduce the potential for vehicle-moose collisions. It will also decrease encounters between humans and Moose.</li> <li>• Exposed soils and soil stockpiles will be adequately covered or vegetated to deter Common Nighthawks from nesting on them.</li> <li>• Should Common Nighthawks initiate breeding, the Proponent will establish a 20 m buffer around the location once identified, and contact CWS for further advice.</li> </ul>	<ul style="list-style-type: none"> <li>• Mainland Moose surveys (presence/absence and use) will be performed annually for up to three years after construction is initiated.</li> <li>• Regular inspections for Common Nighthawk nests.</li> </ul>
Local Economy, Land and Resource Use (7.13)	<ul style="list-style-type: none"> <li>• Recreational users will be notified of restricted access by signage at the entrance to the construction site.</li> <li>• Vessels will not be refuelled at the marine terminal and fuel used at the quarry will be kept in double hulled reservoirs or will be placed within secondary containment and will be protected against collision. This helps to minimize the risk of accidents at the terminal.</li> <li>• Navigational safety mitigation measures and emergency response planning measures are presented in Section 7.18.3.</li> <li>• As part of the Environmental Management Plan, implement an <a href="#">Emergency Response and Spill Contingency Plan</a> in advance of any accident or malfunction causing a spill in the marine environment.</li> <li>• The Proponent will contract with a local emergency response organisation to ensure supplementary emergency resources are available if needed.</li> </ul>	<ul style="list-style-type: none"> <li>• None proposed</li> </ul>
Tourism and Recreation (7.14)	<ul style="list-style-type: none"> <li>• Recreational users will be notified of restricted access by signage at the entrance to the construction site.</li> <li>• Vessels will not be refuelled at the marine terminal and fuel used at the quarry will be kept in double hulled reservoirs protected against collision. This helps to minimize the risk of accidents at the terminal.</li> </ul>	<ul style="list-style-type: none"> <li>• None proposed</li> </ul>

VC	Mitigation	Monitoring (please see <a href="#">Table 10-2</a> for Monitoring Program Details)
	<ul style="list-style-type: none"> <li>• Navigational safety mitigation measures and emergency response planning measures are presented in Section 7.18.3.</li> <li>• As part of the Environmental Management Plan, implement an <a href="#">Emergency Response and Spill Contingency Plan</a> in advance of any accident or malfunction causing a spill in the marine environment.</li> <li>• The Proponent will contract with a local emergency response organisation to ensure supplementary emergency resources are available if needed.</li> </ul>	
Commercial Fisheries (7.15)	<ul style="list-style-type: none"> <li>• Minimize the impact of construction in the marine environment during and after lobster fishing season to the extent possible. For example: standard construction best management practices and mitigation measures to control onshore sediment release to the marine environment will be implemented (Section 7.6 and Section 7.11).</li> <li>• The quarry site office will be manned 24 hrs/day so that fishermen can telephone to receive information regarding vessel arrival and departures. The phone number can also be used to report loss or damage to gear caused by Project-related vessel traffic.</li> <li>• Construction and regular use of the marine terminal will require a safety exclusion zone around the terminal. Loss of these fishing grounds will be mitigated through the creation of new lobster habitat as described in the <a href="#">Fisheries Offset Program</a> to be established in collaboration with local fishermen and DFO.</li> <li>• Routine communication with potentially affected Mi'kmaq will occur through the CLC or through other means as established by both parties.</li> </ul>	<ul style="list-style-type: none"> <li>• Monitoring terminal operations and fishing access in response to concerns expressed by local fishing community, as needed;</li> <li>• Monitoring of the effectiveness of the marine <a href="#">Fisheries Offset Program</a> for a minimum of three years during and after marine terminal construction until it can be demonstrated that the program objectives have been met.</li> </ul>
Archaeological/ Heritage Resources (7.16)	<ul style="list-style-type: none"> <li>• Prior to construction, implement a <a href="#">Cultural Resource Management Plan</a> to guide site personnel in the event that archaeological and heritage resources are identified during construction. The Plan specifies a notification procedure if remains are found, and will describe specific preservation measures as needed.</li> <li>• These mitigation measures would be approved by the Minister of the Department of Communities, Culture and Heritage before site construction could begin.</li> <li>• Exploratory excavation will likely be required in those areas that may be disturbed during Project construction.</li> </ul>	<ul style="list-style-type: none"> <li>• Follow up pre-construction excavation to investigate heritage resources that will be lost during project construction</li> <li>• Monitor construction activities near known or suspected cultural resources.</li> </ul>
Mi'kmaq Land and Resource Use (7.17)	<ul style="list-style-type: none"> <li>• While there is currently no Mi'kmaq harvesting on the site or in waters immediately adjacent, it is intended that the non-hazardous portions of the Project site and adjacent waters will be accessible to Mi'kmaq for harvesting for flora and fauna for food, social and ceremonial purposes, to the extent this is not precluded by safety consideration</li> <li>• Any future potential Project impacts (environmental, social and economic) on these harvesting activities will be a matter of the formal and regular meetings with the Mi'kmaq community representatives.</li> <li>• In the event that archaeological remains are excavated, recommended guidelines as directed by the Nova Scotia Communities, Culture, and Heritage Coordinator of Special Places will be employed. Should evidence of aboriginal archeological remains be uncovered all activity will cease until Mi'kmaq archaeological experts have had an opportunity to examine the site and determine appropriate action.</li> </ul>	<ul style="list-style-type: none"> <li>• Monitoring of progress and implementation of MOU and any other agreements reached with other First Nation communities.</li> <li>• Mi'kmaq resource harvesting activities will be reviewed with Mi'kmaq representatives at the Community Liaison Committee meetings.</li> </ul>

**Table 10-2:  
 Monitoring Commitments by VC**

Valued Component (EIS Section)	Follow Up and Monitoring Programs	Monitoring Locations	Program Objective	Methods and Frequency
Air Quality and Climate Change (7.1)	1. Dust and weather monitoring as described in the Environmental Management Plan	At the property boundary and elsewhere as needed where dust is produced.	<ul style="list-style-type: none"> <li>To ensure that on-site dust abatement is effective.</li> <li>To identify activities that may require modification to reduce dust emissions.</li> <li>To document daily conditions that may affect operations and to help respond to reported concerns or complaints.</li> </ul>	<ul style="list-style-type: none"> <li>Visual observations of dust, wind and weather conditions (i.e., inversions, high winds, dry periods) will be recorded daily by site supervisors.</li> <li>Observations entered into a log sheet that is part of the Environmental Management Plan documentation.</li> </ul>
	2. Regular individual worker / workplace health and safety testing for dust exposure	Monitoring devices are attached to individual site workers.	<ul style="list-style-type: none"> <li>To monitor exposure to dust in the work environment and ensure worker exposure is below maximum regulated limits at all times.</li> </ul>	<ul style="list-style-type: none"> <li>As part of the workplace health and safety program, a dust dosimeter with air pump is attached to an employee over a typical eight hour shift. Dust collected on the dosimeter's filter paper is weighed to assess worker exposure over time.</li> </ul>
	3. Agency-requested ambient air quality testing or monitoring as required.	At the property boundary or elsewhere as directed by the regulatory authority.	<ul style="list-style-type: none"> <li>To ensure that contaminant concentrations are within provincial and federal Air Quality objectives and/or operating permit conditions.</li> </ul>	<ul style="list-style-type: none"> <li>Sampling equipment, methods and frequency as directed by the regulatory authority.</li> </ul>
	4. Complaints Log / Response Protocol	At the quarry office	<ul style="list-style-type: none"> <li>To ensure complaints are registered (logged), forwarded to a knowledgeable, and addressed in a timely fashion.</li> </ul>	<ul style="list-style-type: none"> <li>The quarry office telephone number will be manned 24-hours per day. Complaints will be logged and return telephone calls will be made by quarry staff to discuss and address any issues raised.</li> </ul>
Noise and Vibration (7.2)	1. Concussion (air blast) and Ground Vibration peak particle velocity monitoring during each blast.	<ul style="list-style-type: none"> <li>Within the property boundary or</li> <li>Concussion: within 7.0 m of the nearest structure not on the property or elsewhere as directed by NSE.</li> <li>Vibration: measured below grade or less than 1.0 m above grade in any part of the nearest structure not located on the property or elsewhere as directed by NSE.</li> </ul>	<ul style="list-style-type: none"> <li>Compliance with the Pit and Quarry Guidelines</li> </ul>	<ul style="list-style-type: none"> <li>All blasts will be monitored as required by the Pit and Quarry Guidelines. This is consistent with the Proponent's standard practices at all quarries.</li> <li>Weather conditions will be observed and recorded on a daily basis to ensure no blasting occurs during a thermal inversion, as required in the Pit and Quarry Guidelines.</li> <li>Monitoring results will be sent to NSE on a monthly basis unless otherwise directed by NSE.</li> </ul>
	2. Preparation of a technical blast design	For quarry operations (blasting)	<ul style="list-style-type: none"> <li>Compliance with the Pit and Quarry Guidelines</li> </ul>	<ul style="list-style-type: none"> <li>The blast design must demonstrate the concussion and ground vibration criteria in the Pit and Quarry Guidelines</li> </ul>

Valued Component (EIS Section)	Follow Up and Monitoring Programs	Monitoring Locations	Program Objective	Methods and Frequency
				can be met.
	3. Regular individual worker / workplace health and safety testing for noise exposure	Monitoring devices are attached to individual site workers.	<ul style="list-style-type: none"> <li>To monitor exposure to noise in the work environment and ensure worker exposure is below maximum regulated noise limits at all times.</li> </ul>	<ul style="list-style-type: none"> <li>As part of the workplace health and safety program, noise monitors will be attached to workers on a regular basis to measure and monitor noise exposure over an eight hour shift.</li> </ul>
	4. Daily monitoring of Sound Level Limits (night, evening, day) as directed by NSE	At the property boundary or at other locations as directed by NSE	<ul style="list-style-type: none"> <li>Compliance with the Pit and Quarry Guidelines</li> </ul>	<ul style="list-style-type: none"> <li>Methodologies will comply with NSEL's Guidelines for Environmental Noise Measurement and Assessment or other methods as directed by NSE.</li> </ul>
	5. Complaints Log / Response Protocol	At the quarry office	<ul style="list-style-type: none"> <li>To ensure complaints are registered (logged), forwarded to a knowledgeable employee, and addressed in a timely fashion</li> </ul>	<ul style="list-style-type: none"> <li>The quarry office telephone number will be manned 24-hours per day. Complaints will be logged and return telephone calls will be made by quarry staff to discuss and address any issues raised.</li> </ul>
Ambient Light (7.3)	1. Routine monitoring for dead or injured birds as described in the Environmental Management Plan.	Site wide	<ul style="list-style-type: none"> <li>To verify the effectiveness of mitigation measures related to lighting</li> </ul>	<ul style="list-style-type: none"> <li>Daily inspections and record keeping.</li> <li>In the event of the mortality or injury of ten or more migratory birds in a single event, or of any number of species at risk birds, EC-CWS will be notified within 24 hours.</li> <li>Notification will include the name and location of the facility, number and species of birds affected, meteorological conditions during the previous night(s), status of lights, and details of any other factor which may have influenced the event.</li> <li>If the need arises and dead birds are found on routine inspection and documentation as described in the EMP then EC-CWS will be contacted to help develop additional mitigation measures.</li> <li>The Environmental Management Plan will include instructions for implementing the protocol "Best practices for stranded birds encountered offshore Atlantic Canada" (EC 2014e) for responding to avian strandings related to activities in the marine environment.</li> </ul>
	2. Routine site inspections to look for light reduction opportunities	Site wide	<ul style="list-style-type: none"> <li>Routine site inspections identify light reduction opportunities, especially reduction of light levels in non-active work areas, and/or redirection of lighting installation.</li> </ul>	<ul style="list-style-type: none"> <li>Nightly Inspections and record keeping will be described in the Environmental Management Plan.</li> </ul>
	3. Complaints Log / Response Protocol	At the quarry office	<ul style="list-style-type: none"> <li>To ensure complaints are registered (logged), forwarded to a</li> </ul>	<ul style="list-style-type: none"> <li>The quarry office telephone number will be manned 24-hours per day. Complaints will be logged and return</li> </ul>

Valued Component (EIS Section)	Follow Up and Monitoring Programs	Monitoring Locations	Program Objective	Methods and Frequency
			knowledgeable employee, and addressed in a timely fashion	telephone calls will be made by quarry staff to discuss and address any issues raised.
Geology, Soil & Sediment Quality (7.4)	1. Erosion and Sediment Control Plan, Stormwater Management Plan.	Site wide	<ul style="list-style-type: none"> <li>To ensure compliance with discharge water quality objectives and to protect sensitive marine and terrestrial habitats and species.</li> </ul>	<ul style="list-style-type: none"> <li>Details of the Erosion and Sediment Control Plan and Stormwater Management Plan will be included in the Environmental Management Plan.</li> </ul>
	2. Surface Water Quality Monitoring Program	Discharge from the sedimentation ponds	<ul style="list-style-type: none"> <li>To prevent discharge of sediment laden, low pH water and ensure compliance with discharge water quality objectives as listed in the operating permit.</li> </ul>	<ul style="list-style-type: none"> <li>Water sampling will be undertaken as described in the operating permit conditions. Samples will be taken using standard water sampling methods such as found in, for example, Protocols Manual for Water Quality Sampling in Canada (CCME 2011).</li> </ul>
	3. Assessment of acid generation potential of bedrock in the processing plant area	All bedrock that will be disturbed during construction of the processing plant	<ul style="list-style-type: none"> <li>To ensure potentially acid generating rocks are identified and if present, managed according to provincial regulation.</li> </ul>	<ul style="list-style-type: none"> <li>The acid generating potential of bedrock will be assessed at the beginning of construction through a sampling and analytical program as per the Nova Scotia <i>Sulphide Bearing Material Disposal Regulations</i>.</li> </ul>
Groundwater Resources (7.5)	1. Groundwater Monitoring Program	Adaptive monitoring program employing up to ten well pairs located within property boundaries and on adjacent lands up to 400 m from the quarry boundary.	<ul style="list-style-type: none"> <li>To verify drawdown and water quality predications made in the assessment.</li> </ul>	<ul style="list-style-type: none"> <li>The Groundwater Monitoring Program (Appendix A) proposes the progressive installation over time of up to 10 monitoring well pairs (deep and shallow), each to be monitored quarterly for a minimum of two years. Two baseline water quality samples will be taken per year in each well, for a minimum of two years. As an adaptive program, initial results will inform the location and monitoring activities at new wells, and initial results will determine whether continued monitoring is required after two years.</li> </ul>
Marine and Surface Water Resources (7.6)	2. Surface Water Quality Monitoring Program	Discharge from the sedimentation ponds.	<ul style="list-style-type: none"> <li>To prevent discharge of sediment laden, low pH water and ensure compliance with discharge water quality objectives as listed in the operating permit.</li> </ul>	<ul style="list-style-type: none"> <li>Water sampling will be undertaken as described in the operating permit conditions. Samples will be taken using standard water sampling methods such as found in, for example, Protocols Manual for Water Quality Sampling in Canada (CCME 2011).</li> </ul>
	3. Emergency Response and Spill Contingency Plan, Erosion and Sediment Control Plan, Stormwater Management Plan.	Site wide	<ul style="list-style-type: none"> <li>To ensure compliance with discharge water quality objectives and to protect sensitive marine and terrestrial habitats and species.</li> </ul>	<ul style="list-style-type: none"> <li>Details of the Emergency Response and Spill Contingency Plan, Erosion and Sediment Control Plan and Stormwater Management Plan will be included in the Environmental Management Plan.</li> </ul>
	3. Wetland Compensation Plan	Site wide and Affected Area	<ul style="list-style-type: none"> <li>To replace wetlands damaged or destroyed during the course of the Project.</li> <li>To monitor indirect Project effects on nearby watercourses and</li> </ul>	<ul style="list-style-type: none"> <li>The Wetland Compensation Plan based on a signed Letter of Understanding between the Proponent and NSE will be developed in collaboration with NSE and other stakeholders. The Plan will be based on the NS Wetland Conservation Policy and other guidance</li> </ul>

Valued Component (EIS Section)	Follow Up and Monitoring Programs	Monitoring Locations	Program Objective	Methods and Frequency
			wetlands	documents and implemented over the life of the Project as the quarry gradually expands. <ul style="list-style-type: none"> <li>The Wetland Compensation Plan will include follow up monitoring of newly created or restored wetlands.</li> <li>As part of the Wetland Compensation Plan a wetland and surface water feature inspection program will be implemented to confirm hydrological predictions made in the environmental assessment and to identify any unforeseen wetland or watercourse impacts so these impacts can be addressed or compensated.</li> </ul>
Terrestrial Ecosystems, Habitat and Vegetation (7.7)	1. Erosion and Sediment Control Plan, Stormwater Management Plan.	Site wide	<ul style="list-style-type: none"> <li>To protect sensitive marine and terrestrial habitats and species.</li> </ul>	<ul style="list-style-type: none"> <li>Details of the Erosion and Sediment Control Plan and Stormwater Management Plan will be included in the Environmental Management Plan.</li> </ul>
Wetlands (7.8)	1. Wetland Compensation Plan	Site wide and Affected Area	<ul style="list-style-type: none"> <li>To replace wetlands damaged or destroyed during the course of the Project.</li> <li>To monitor indirect Project effects on nearby watercourses and wetlands</li> </ul>	<ul style="list-style-type: none"> <li>The Wetland Compensation Plan, based on a signed Letter of Understanding between the Proponent and NSE, will be developed in collaboration with NSE and other stakeholders. The Plan will be based on the NS Wetland Conservation Policy and other guidance documents and implemented over the life of the Project as the quarry gradually expands.</li> <li>The Wetland Compensation Plan will include follow up monitoring of newly created or restored wetlands.</li> <li>As part of the Wetland Compensation Plan a wetland and surface water feature inspection program will be implemented to confirm hydrological predictions made in the environmental assessment and to identify any unforeseen wetland or watercourse impacts so these impacts can be addressed or compensated. Any unforeseen wetland or watercourse impacts.</li> </ul>
	2. Erosion and Sediment Control Plan, Stormwater Management Plan.	Site wide	<ul style="list-style-type: none"> <li>To protect sensitive marine and terrestrial habitats and species.</li> </ul>	<ul style="list-style-type: none"> <li>Details of the Erosion and Sediment Control Plan and Stormwater Management Plan will be included in the Environmental Management Plan.</li> </ul>
Terrestrial Wildlife (7.9)	1. Routine monitoring for dead or injured birds as wells as ground- or burrow-nesting species, as described in the Environmental Management Plan.	Daily	<ul style="list-style-type: none"> <li>To verify the effectiveness of mitigation measures related to lighting and at-risk species</li> </ul>	<ul style="list-style-type: none"> <li>Routine site monitoring as described in the Environmental Management Plan will include maintaining records of bird mortality so developing issues related to lighting can be identified.</li> <li>The Environmental Management Plan will include for</li> </ul>

Valued Component (EIS Section)	Follow Up and Monitoring Programs	Monitoring Locations	Program Objective	Methods and Frequency
				ground- or burrow-nesting species. Should these species initiate breeding on stockpiles or exposed areas, periodic monitoring of the nest(s) will be undertaken until the chicks have fledged and left the area and the nest site is found to be inactive.
	2. Emergency Response and Spill Contingency Plan, Erosion and Sediment Control Plan, Stormwater Management Plan.	Site wide	<ul style="list-style-type: none"> <li>To ensure compliance with discharge water quality objectives and to protect sensitive marine and terrestrial habitats and species.</li> </ul>	<ul style="list-style-type: none"> <li>Details of the Emergency Response and Spill Contingency Plan, Erosion and Sediment Control Plan and Stormwater Management Plan will be included in the Environmental Management Plan.</li> </ul>
Freshwater Species and Habitat (7.10)	1. Fish habitat assessment and determination of fish presence/absence	Reynolds Brook above Hendsbee Lake.	<ul style="list-style-type: none"> <li>To determine if fish are present and by extension, if follow up monitoring is required.</li> </ul>	<ul style="list-style-type: none"> <li>Determination of fish presence/absence; characterisation of fish habitat. If present, then:</li> <li>Obtain seasonal water quality samples (spring, fall, winter) as baseline for future comparisons.</li> <li>Establish stage/discharge conditions to determine if future quarry operations that will potentially reduce flow can in fact be detected in Reynolds Brook.</li> </ul>
	2. Surface Water Quality Monitoring Program	Discharge from the sedimentation ponds.	<ul style="list-style-type: none"> <li>To prevent discharge of sediment laden, low pH water and ensure compliance with discharge water quality objectives as listed in the operating permit.</li> </ul>	<ul style="list-style-type: none"> <li>Water sampling will be undertaken as described in the operating permit conditions. Samples will be taken using standard water sampling methods such as found in, for example, Protocols Manual for Water Quality Sampling in Canada (CCME 2011).</li> </ul>
	3. Emergency Response and Spill Contingency Plan, Erosion and Sediment Control Plan, Stormwater Management Plan.	Site wide	<ul style="list-style-type: none"> <li>To ensure compliance with discharge water quality objectives and to protect sensitive marine and terrestrial habitats and species.</li> </ul>	<ul style="list-style-type: none"> <li>Details of the Emergency Response and Spill Contingency Plan, Erosion and Sediment Control Plan and Stormwater Management Plan will be included in the Environmental Management Plan.</li> </ul>
Marine Species and Habitat (7.11)	1. Marine Fisheries Offset Program	Following discussions with DFO and local fishermen, offset projects will likely be established immediately east or west of the Project site.	<ul style="list-style-type: none"> <li>To recreate fisheries habitat lost or damaged due to construction of the marine terminal</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring of the success of the marine Fisheries Offset Program for a minimum of three years during and after marine terminal construction until it can be demonstrated that the program objectives have been met.</li> </ul>
	2. Concussion and ground vibration monitoring during each blast..	Within the property boundary	<ul style="list-style-type: none"> <li>Ensure noise limits established by DFO for the marine environment are respected.</li> </ul>	<ul style="list-style-type: none"> <li>Continuous-operation seismographs designed to record blast vibrations</li> </ul>
	3. Emergency Response and Spill Contingency Plan, Erosion and Sediment Control Plan, Stormwater Management Plan.	Site wide	<ul style="list-style-type: none"> <li>To ensure compliance with discharge water quality objectives and to protect sensitive marine and terrestrial habitats and species.</li> </ul>	<ul style="list-style-type: none"> <li>Details of the Emergency Response and Spill Contingency Plan, Erosion and Sediment Control Plan and Stormwater Management Plan will be included in the Environmental Management Plan.</li> </ul>
	4. Surface Water Quality Monitoring	Discharge from the sedimentation	<ul style="list-style-type: none"> <li>To prevent discharge of sediment</li> </ul>	<ul style="list-style-type: none"> <li>Water sampling will be undertaken as described in the</li> </ul>

Valued Component (EIS Section)	Follow Up and Monitoring Programs	Monitoring Locations	Program Objective	Methods and Frequency
	Program	ponds.	laden, low pH water and ensure compliance with discharge water quality objectives as listed in the operating permit.	operating permit conditions. Samples will be taken using standard water sampling methods such as found in, for example, Protocols Manual for Water Quality Sampling in Canada (CCME 2011).
Species at Risk (SAR) and of Conservation Concern (SOCC) (7.12)	1. Mainland Moose monitoring program establish as part of the Environmental Management Plan	Within the property boundary extending into adjacent moose habitats	<ul style="list-style-type: none"> <li>To supplement current understanding of moose use of the Project area.</li> </ul>	<ul style="list-style-type: none"> <li>Mainland Moose Surveys will be performed annually for up to three years after construction is initiated.</li> <li>Moose survey methodologies will be based on established NSDNR protocols and elaborated within the Environmental Management Plan.</li> </ul>
	2. Inspection of Common Nighthawk nests, if nesting birds are present	Within the site where nests are found.	<ul style="list-style-type: none"> <li>To ensure nesting birds remain undisturbed until chicks have fledged.</li> </ul>	<ul style="list-style-type: none"> <li>Should Common Nighthawks initiate breeding, daily monitoring of the nest(s) will be undertaken until the chicks have fledged and left the area.</li> <li>Inspection and other protective measures will be described within the Environmental Management Plan.</li> </ul>
Local Economy and Land Use (7.13)	1. Emergency Response and Spill Contingency Plan / emergency response training	Site wide	<ul style="list-style-type: none"> <li>To ensure the necessary resources are in place in effectively respond to an emergency event.</li> </ul>	<ul style="list-style-type: none"> <li>Details of the Emergency Response and Spill Contingency Plan (which will include marine spill dispersion modelling) will be included in the Environmental Management Plan.</li> <li>The Proponent will contract with a local emergency response organisation to ensure supplementary emergency resources are available if needed.</li> </ul>
Tourism and Recreation (7.14)	1. Emergency Response and Spill Contingency Plan / emergency response training	Site wide	<ul style="list-style-type: none"> <li>To ensure the necessary resources are in place in effectively respond to an emergency event.</li> </ul>	<ul style="list-style-type: none"> <li>Details of the Emergency Response and Spill Contingency Plan (which will include marine spill dispersion modelling) will be included in the Environmental Management Plan.</li> <li>The Proponent will contract with a local emergency response organisation to ensure supplementary emergency resources are available if needed.</li> </ul>
Commercial Fisheries (7.15)	1. Marine Fisheries Offset Program	Following discussions with DFO and local fishermen, offset projects will likely be established immediately east or west of the Project site.	<ul style="list-style-type: none"> <li>To recreate fisheries habitat lost or damaged due to construction of the marine terminal</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring of the success of the marine Fisheries Offset Program for a minimum of three years during and after marine terminal construction until it can be demonstrated that the program objectives have been met.</li> </ul>
	2. Help Line / Complaints Log / Response Protocol	At the quarry office	<ul style="list-style-type: none"> <li>To ensure shipping schedules and marine terminal operations are known to fishermen.</li> <li>To address concerns or complaints associated with operations and damage or loss of fishing gear.</li> </ul>	<ul style="list-style-type: none"> <li>The quarry office telephone number will be manned 24-hours per day. Fishermen can contact the quarry supervisor to learn shipping schedules.</li> <li>Any concerns expressed with respect to terminal or shipping operations, including damage to gear, will be logged and return telephone calls will be made by quarry</li> </ul>

Valued Component (EIS Section)	Follow Up and Monitoring Programs	Monitoring Locations	Program Objective	Methods and Frequency
				staff to discuss and address any issues raised.
Archaeological/ Heritage Resources (7.16)	1. Pre-construction archaeological excavation	At those archaeological sites in the processing plant area that will be disturbed/destroyed during construction.	<ul style="list-style-type: none"> <li>To investigate and preserve heritage resources that will be lost during Project construction.</li> <li>To ensure the long term protection and preservation of heritage resources not directly affected by the Project.</li> </ul>	<ul style="list-style-type: none"> <li>The methods used for the archaeological excavations will require approval by Minister of the Department of Communities, Culture and Heritage prior to initiation.</li> </ul>
	2. Cultural Resources Management Plan	Site wide	<ul style="list-style-type: none"> <li>To ensure that any additional cultural heritage resources found during construction are managed according to provincial regulation.</li> </ul>	<ul style="list-style-type: none"> <li>The Cultural Resources Management Plan will be elaborated within the Environmental Management Plan and will following guidance provided by the Minister of the Department of Communities, Culture and Heritage.</li> </ul>
Mi'kmaq Land and Resource Use (7.17)	1. Ongoing dialogue with Mi'kmaq representatives	Not applicable	<ul style="list-style-type: none"> <li>To ensure that traditional land and resource practices, including those in the marine environment, can continue on the property and marine waters to the extent this can be done safely.</li> </ul>	<ul style="list-style-type: none"> <li>Discussions to occur through the presence of Mi'kmaq representatives on the Community Liaison Committee or other forums established between the Proponent and Mi'kmaq representatives.</li> </ul>

**Table 10-3:  
 Issues Raised During the Assessment and Proponent Commitments**

Issue or Concern	Mitigation	Proponent Commitments	Follow Up Program
<b>Raised by the Public</b>			
<b>Biophysical Subjects</b>			
1. Effects of the quarry on groundwater quality, including potable water wells	<ul style="list-style-type: none"> <li>Section 7.5 and Table 10-1</li> </ul>	<ul style="list-style-type: none"> <li>Proponent presented groundwater findings at a Community Liaison Committee meeting.</li> <li>Groundwater discharge to surface waterbodies will meet Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life for all parameters meeting these standards prior to development.</li> <li>Potable groundwater will meet the criteria listed in Guidelines for Canadian Drinking Water Quality for all parameters meeting the Guidelines prior to development.</li> <li>Reductions to groundwater flow in the Affected Area will not exceed 20%.</li> </ul>	<ul style="list-style-type: none"> <li>Groundwater Monitoring Program (Hydrogeology Technical Report, Appendix A)</li> </ul>
2. Changes in ambient noise levels	<ul style="list-style-type: none"> <li>Section 3.3.9, Section 7.2 and Table 10-1.</li> </ul>	<ul style="list-style-type: none"> <li>Maximum noise and vibration limits listed in the <i>Pit and Quarry Guidelines</i> will be met at the property boundary.</li> <li>The Proponent will respect all provisions in the provincial <i>Workplace Health and Safety Regulations</i> made under the Occupational Health and Safety Act.</li> <li>The Proponent will provide the telephone number of the on-site quarry office and document all complaints within a Complaints Log. All callers will receive a return phone call to ensure issues are documented and addressed.</li> </ul>	<ul style="list-style-type: none"> <li>Concussion (air blast) and Ground Vibration peak particle velocity monitoring during each blast.</li> <li>Preparation of a technical blast design</li> <li>Regular individual worker / workplace health and safety testing for noise exposure</li> <li>Daily monitoring of Sound Level Limits (night, evening, day) as directed by NSE</li> <li>Complaints Log / Response Protocol</li> </ul>
3. Changes in ambient air quality	<ul style="list-style-type: none"> <li>Section 7.1 and Table 10-1.</li> </ul>	<ul style="list-style-type: none"> <li>Air emissions will comply with the Nova Scotia <i>Air Quality Regulations</i> and meet the National Ambient Air Quality Objectives under CEPA, 1999.</li> <li>The Proponent will respect all provisions in the provincial <i>Workplace Health and Safety Regulations</i> made under the Occupational Health and Safety Act.</li> <li>The Proponent will provide the telephone number of the on-site quarry office and document all complaints within a Complaints Log. All callers will receive a return phone call to ensure issues are documented and addressed.</li> </ul>	<ul style="list-style-type: none"> <li>Dust and weather monitoring as described in the Environmental Management Plan</li> <li>Regular individual worker / workplace health and safety testing for dust exposure</li> <li>Agency-requested ambient air quality testing or monitoring as required.</li> <li>Complaints Log / Response Protocol</li> </ul>
4. Changes in ambient light levels	<ul style="list-style-type: none"> <li>Section 3.3.9, Section 7.3 and Table 10-1.</li> </ul>	<ul style="list-style-type: none"> <li>Lighting will be restricted to that necessary to ensure worker safety.</li> <li>Light will not interfere with the use and enjoyment of nearby</li> </ul>	<ul style="list-style-type: none"> <li>Subject to be discussed at Community Liaison Committee meetings.</li> </ul>

		<p>residential properties on a permanent basis.</p> <ul style="list-style-type: none"> <li>The Proponent will provide the telephone number of the on-site quarry office and document all complaints within a Complaints Log. All callers will receive a return phone call to ensure issues are documented and addressed.</li> </ul>	
5. Potential for siltation in the marine environment	<ul style="list-style-type: none"> <li>Section 7.4 and Table 10-1.</li> </ul>	<ul style="list-style-type: none"> <li>Total suspended solids in water released from the site will respect maximum values listed in the CCME Water Quality Guidelines for the Protection of Aquatic Life (Marine) and the Nova Scotia Pit and Quarry Guidelines.</li> </ul>	<ul style="list-style-type: none"> <li>Surface Water Quality Monitoring Program</li> </ul>
6. Introduction of invasive species through ballast water	<ul style="list-style-type: none"> <li>Section 6.11.4</li> </ul>	<ul style="list-style-type: none"> <li>Illegal ballast exchange is a criminal act. The Proponent will investigate and employ a reputable shipping firm for aggregate transport.</li> </ul>	<ul style="list-style-type: none"> <li>Observations regarding shipping access to the marine terminal, including ballast water discharge will be discussed at the Community Liaison Committee meetings.</li> </ul>
7. Radon monitoring	<ul style="list-style-type: none"> <li>Radon is not expected to accumulate in the open air quarry</li> </ul>	<ul style="list-style-type: none"> <li>The Proponent will respect all provisions in the provincial <i>Workplace Health and Safety Regulations</i> made under the Occupational Health and Safety Act.</li> </ul>	<ul style="list-style-type: none"> <li>Radon monitoring will be undertaken if/when requested by NSE or other regulatory agency.</li> </ul>
8. Changes to surface water quality and baseflow	<ul style="list-style-type: none"> <li>Section 7.6 and Table 10-1.</li> </ul>	<ul style="list-style-type: none"> <li>Surface water discharged from site will comply with quality criteria in the Pit and Quarry Guidelines, CCME Guidelines for suspended solids, and provisions in the operating permit.</li> <li>Changes in peak flow of water discharged from the site will not measurably increase the risk of flooding to downstream watercourses.</li> <li>Reductions to means annual runoff to off-site watercourses will not exceed 20%.</li> </ul>	<ul style="list-style-type: none"> <li>Surface Water Quality Monitoring Program</li> </ul>
9. Effective surface and groundwater management prior to discharge	<ul style="list-style-type: none"> <li>Section 3.3.7 and Table 10-1.</li> </ul>	<ul style="list-style-type: none"> <li>The Proponent will prepare a Stormwater Management Plan prior to construction.</li> </ul>	<ul style="list-style-type: none"> <li>Surface Water Quality Monitoring Program</li> </ul>
10. Management of archaeological resources including human remains	<ul style="list-style-type: none"> <li>Section 7.16 and Table 10-1.</li> </ul>	<ul style="list-style-type: none"> <li>The Proponent will prepare a Cultural Resources Management Plan prior to construction to guide response to any additional finds, including human remains.</li> <li>Area near Fogerty Head identified as having potential to contain human remains will be marked off to prevent future disturbance.</li> </ul>	<ul style="list-style-type: none"> <li>Archaeological investigations will be undertaken to address 19<sup>th</sup> century building foundations identified on site.</li> <li>Report on the pre-construction archaeological investigation, including recommendations if applicable, will be made to the Nova Scotia Department of Communities, Culture and Heritage</li> </ul>
11. Project effects on protected species	<ul style="list-style-type: none"> <li>Section 7.12 and Table 10-1.</li> </ul>	<ul style="list-style-type: none"> <li>Should Common Nighthawks initiate breeding activities on stockpiles or exposed areas on site despite efforts to deter them, the Proponent will establish a 20 m buffer around the location once identified, and contact CWS for further advice.</li> <li>Please see #12 for measures to address Mainland Moose.</li> <li>In the event of the mortality or injury of ten or more migratory birds in a single event, or of any number of species at risk birds, EC-CWS will be notified within 24 hours.</li> </ul>	<ul style="list-style-type: none"> <li>Mainland Moose Surveys will be performed annually for a period of three years after construction is initiated.</li> <li>Should Common Nighthawks initiate breeding, daily monitoring of the nest(s) will be undertaken until the chicks have fledged and left the area.</li> <li>Inspection and other protective measures will be described within the Environmental Management Plan</li> </ul>

12. Concern regarding wildlife, vegetation and wetlands loss	<ul style="list-style-type: none"> <li>Section 7.7, 7.8 and 7.9 and Table 10-1.</li> </ul>	<ul style="list-style-type: none"> <li>Mainland Moose studies would be performed annually for a period of three years after construction was initiated.</li> <li>A Wetland Compensation Plan will be developed in consultation with NSE.</li> </ul>	<ul style="list-style-type: none"> <li>Mainland Moose survey methods would be based on NSDNR's Protocol for Mainland Moose Snow Tracking Survey and Pellet Group Inventory Data Collection Period.</li> <li>Survey transects and timing would be discussed with NSDNR prior to undertaking the work.</li> </ul>
13. Effects of extreme weather	<ul style="list-style-type: none"> <li>Section 8.6; Table 8-6</li> </ul>	<ul style="list-style-type: none"> <li>At the detailed design phase the Proponent will again consider climate change, crustal subsidence and storm surge projections to inform marine terminal design.</li> <li>An Emergency Action Plan and Mooring Plan will be used to ensure appropriate measures are taken before and in reaction to severe weather events</li> </ul>	<ul style="list-style-type: none"> <li>No follow up program is proposed</li> </ul>
14. Effects on migratory birds	<ul style="list-style-type: none"> <li>Section 7.3, Section 7.9; Table 10-1.</li> </ul>	<ul style="list-style-type: none"> <li>In the event of the mortality or injury of ten or more migratory birds in a single event, or of any number of species at risk birds, EC-CWS will be notified within 24 hours.</li> <li>Clearing activities will take place outside of the breeding season for most bird species (April 1 to September 1) to prevent the disturbance of migratory birds or their nests. If some clearing is necessary during the breeding season the feasibility of maintaining compliance with the <i>Migratory Birds Convention Act</i> will be assessed and a contingency plan developed in consultation with CWS</li> </ul>	<ul style="list-style-type: none"> <li>Routine site monitoring as described in the Environmental Management Plan will include maintaining records of bird mortality so developing issues related to lighting can be identified.</li> <li>The Environmental Management Plan will include for ground- or burrow-nesting species. Should these species initiate breeding on stockpiles or exposed areas, periodic monitoring of the nest(s) will be undertaken until the chicks have fledged and left the area and the nest site is found to be inactive.</li> <li>EC-CWS will be consulted in order to verify the effectiveness of mitigation measures related to lighting, including implementation of the protocol "<i>Best practices for stranded birds encountered offshore Atlantic Canada</i>" (EC 2014e) for responding to avian strandings in the marine environment.</li> </ul>
15. Traditional use of the land by Mi'kmaq people	<ul style="list-style-type: none"> <li>These lands are not currently used for traditional resource harvesting.</li> </ul>	<ul style="list-style-type: none"> <li>The site will remain available for traditional harvesting to the extent this is not precluded by safety considerations.</li> </ul>	<ul style="list-style-type: none"> <li>Subject to be discussed at Community Liaison Meetings and directly with Mi'kmaq representatives</li> </ul>
16. Effects on marine and coastal ecosystems	<ul style="list-style-type: none"> <li>Sections 7.6, 7.11, 7.12, 7.15 and Table 10-1.</li> </ul>	<ul style="list-style-type: none"> <li>Total suspended solids in water released from the site will respect maximum values listed in the CCME Water Quality Guidelines for the Protection of Aquatic Life (Marine) and the Nova Scotia Pit and Quarry Guidelines.</li> <li>A Fisheries Offset Program will be undertaken to restore habitat lost or damaged with the construction of the marine terminal</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring of the effectiveness of the marine Fisheries Offset Program would be undertaken for at least three years until it can be demonstrated that the program objectives have been met.</li> <li>Monitoring objectives and methodology will be established in consultation with DFO</li> </ul>
17. Effects on marine life, fish; existing and	<ul style="list-style-type: none"> <li>Sections 7.6, 7.11, 7.12,</li> </ul>	<ul style="list-style-type: none"> <li>Avoid construction during lobster fishing season to the extent</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring of the effectiveness of the marine</li> </ul>

emerging fisheries	7.15 and Table 10-1.	possible. <ul style="list-style-type: none"> <li>• A Fisheries Offset Program will be undertaken to restore habitat lost or damaged with the construction of the marine terminal</li> <li>• A Marine Communication Strategy is proposed to help ensure efficient and timely communication between the Proponent and local fishermen.</li> </ul>	Fisheries Offset Program would be undertaken for at least three years until it can be demonstrated that the program objectives have been met. <ul style="list-style-type: none"> <li>• Monitoring objectives and methodology will be established in consultation with DFO.</li> <li>• Terminal operations and fishing access will be monitored at the Community Liaison Committee meetings in response to concerns expressed by the local fishing community, as needed.</li> </ul>
<b>Socio-Economic Subjects</b>			
1. Perceived effects of the quarry on property values	<ul style="list-style-type: none"> <li>• Section 7.13; all mitigation measures in Table 10-1 are applied to reduce actual and perceived project impacts that may directly or indirectly affect property values.</li> </ul>	<ul style="list-style-type: none"> <li>• The Proponent commits to the mitigation and monitoring measures presented in the EIS.</li> </ul>	<ul style="list-style-type: none"> <li>• Subject to be discussed at Community Liaison Meetings</li> </ul>
2. Transparency/due process during expropriation	<ul style="list-style-type: none"> <li>• Expropriation was undertaken by the MODG and is not part of the environmental assessment.</li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>
3. Commitment hire locally and employ union members	<ul style="list-style-type: none"> <li>• Ongoing dialogue at the Community Liaison Committee meetings</li> </ul>	<ul style="list-style-type: none"> <li>• The Proponent is committed to ongoing communication with labour unions and other labour sources with the aim of employing locally sourced, skilled workers, both union and non-union, to the extent they are available when needed at the site.</li> <li>• The Proponent has and will again in the future present skills requirements at local high schools and community colleges.</li> <li>• The Proponent will solicit and interview local workers for employment vacancies.</li> </ul>	<ul style="list-style-type: none"> <li>• Subject to be discussed at Community Liaison Committee Meetings</li> </ul>
4. Inflated job estimates / use of temporary foreign workers	<ul style="list-style-type: none"> <li>• Ongoing dialogue at the Community Liaison Committee meetings</li> </ul>	<ul style="list-style-type: none"> <li>• The Proponent reiterates job estimates presented in the EIS.</li> <li>• No temporary foreign workers will be used unless employment vacancies cannot be filled otherwise.</li> </ul>	<ul style="list-style-type: none"> <li>• Subject to be discussed at Community Liaison Committee Meetings</li> </ul>
5. Continued use of the site for trapping	<ul style="list-style-type: none"> <li>• Safety restrictions may limit but not eliminate trapping on certain areas of the property at least in the near future.</li> <li>• Ongoing dialogue at the Community Liaison Committee meetings</li> </ul>	<ul style="list-style-type: none"> <li>• The Proponent will endeavour to accommodate trapping to the extent that safety considerations are not compromised.</li> </ul>	<ul style="list-style-type: none"> <li>• Subject to be discussed at Community Liaison Committee Meetings</li> </ul>
6. Concern regarding changes to tourism	<ul style="list-style-type: none"> <li>• Section 7.14 and Table 10-1</li> </ul>	<ul style="list-style-type: none"> <li>• Ongoing dialogue at the Community Liaison Committee</li> </ul>	<ul style="list-style-type: none"> <li>• Subject to be discussed at Community</li> </ul>

and recreational land and water use patterns		meetings.	Liaison Meetings.
7. Concern regarding lack of local benefits	<ul style="list-style-type: none"> <li>Ongoing dialogue at the Community Liaison Committee meetings</li> </ul>	<ul style="list-style-type: none"> <li>The Proponent reiterates job estimates and local benefit calculations presented in the EIS.</li> </ul>	<ul style="list-style-type: none"> <li>Subject to be discussed at Community Liaison Committee Meetings</li> </ul>
8. Potential for tax payer funded clean up upon closure	<ul style="list-style-type: none"> <li>Section 3.4</li> </ul>	<ul style="list-style-type: none"> <li>A Site Rehabilitation Plan is required by the Nova Scotia Pit and Quarry Guidelines. As part of the Plan, a security bond to pay for rehabilitation in the case of default is required.</li> </ul>	<ul style="list-style-type: none"> <li>No follow up is proposed.</li> </ul>
9. Concern regarding physical appearance of quarry	<ul style="list-style-type: none"> <li>Section 3.1.1, Section 3.3.9</li> </ul>	<ul style="list-style-type: none"> <li>A 30 m wide wooded buffer will be left along the coastline. The quarry will not be visible from Marine Drive (Route 16).</li> </ul>	<ul style="list-style-type: none"> <li>Subject to be discussed at Community Liaison Committee Meetings</li> </ul>
10. Concern regarding the permanent change in land use	<ul style="list-style-type: none"> <li>Section 7.13, Table 10-1</li> </ul>	<ul style="list-style-type: none"> <li>Recreational users will be notified of restricted access by signage at the entrance to the construction site.</li> </ul>	<ul style="list-style-type: none"> <li>Subject to be discussed at Community Liaison Committee Meetings</li> </ul>
11. Proponent commitment to sustainability and the community	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>Proponent provided information regarding its community outreach programs and sustainability record.</li> </ul>	<ul style="list-style-type: none"> <li>No additional follow up is proposed.</li> </ul>
<b>Raised by the Mi'kmaq</b>			
1. Employment/training opportunities; expectations regarding an impact benefits agreement	<ul style="list-style-type: none"> <li>The Proponent has commenced and will continue to engage Mi'kmaq communities in the planning and development process</li> </ul>	<ul style="list-style-type: none"> <li>Initiated communication with Chiefs and KMK; made commitments in a draft MOU pertaining to development of long-term relationship and provision of Project benefits.</li> <li>The Proponent will monitor the progress and implementation of MOU and any other agreements to ensure that the Aboriginal community is able to participate and benefit from opportunities by the Project."</li> <li>The Proponent will continue to make Project status presentations and offer site visits to interested Mi'kmaq representatives</li> </ul>	<ul style="list-style-type: none"> <li>Subject to be discussed at Community Liaison Committee Meetings. CLC membership includes Mi'kmaq representatives and is open to other interested Mi'kmaq.</li> </ul>
2. Potential for petroglyphs or other Mi'kmaq historic cultural resources on the site	<ul style="list-style-type: none"> <li>Section 7.16 and Table 10-1.</li> </ul>	<ul style="list-style-type: none"> <li>Two archaeological studies undertaken; no evidence in Mi'kmaq historic cultural resources was found.</li> <li>Culture Resource Management Plan to be prepared before construction begins.</li> <li>The Proponent has committed to a separate site visit undertaken with a qualified Mi'kmaq archaeologist prior to project implementation.</li> </ul>	<ul style="list-style-type: none"> <li>Archaeological investigations will be undertaken to address 19<sup>th</sup> century building foundations identified on site.</li> <li>Report on the pre-construction archaeological investigation, including recommendations if applicable, will be made to the Nova Scotia Department of Communities, Culture and Heritage</li> <li>Subject to be discussed at Community Liaison Committee Meetings. CLC membership includes Mi'kmaq representatives and is open to other interested Mi'kmaq.</li> </ul>
3. Potential Effects on Mi'kmaq commercial, recreational and Food/Social/Ceremonial fisheries	<ul style="list-style-type: none"> <li>Section 7.15 and 7.17; Table 10-1.</li> <li>No current commercial, recreational or FSC resource use was identified.</li> </ul>	<ul style="list-style-type: none"> <li>The Proponent is committed to continuing discussion and collaboration on these subjects, ideally through Mi'kmaq participate in the Community Liaison Committee.</li> <li>The Proponent will continue to make Project status presentations and offer site visits to interested Mi'kmaq</li> </ul>	<ul style="list-style-type: none"> <li>Subject to be discussed at Community Liaison Committee Meetings. CLC membership includes Mi'kmaq representatives and is open to other interested Mi'kmaq.</li> </ul>

	<ul style="list-style-type: none"> <li>• Mi'kmaq representatives have been invited to participate as members in the Community Liaison Committee.</li> </ul>	representatives	
4. Status of site-specific Mi'kmaq Ecological Knowledge	<ul style="list-style-type: none"> <li>• MEKS was provided upon request.</li> </ul>	<ul style="list-style-type: none"> <li>• Mi'kmaq Ecological Knowledge Study undertaken</li> </ul>	<ul style="list-style-type: none"> <li>• No follow up is proposed.</li> </ul>
5. Concerns for fish, fish habitat, and Mi'kmaq fisheries	<ul style="list-style-type: none"> <li>• Section 7.11, 7.15 and 7.17; Table 10-1.</li> <li>• Mi'kmaq representatives have been invited to participate as members in the Community Liaison Committee.</li> </ul>	<ul style="list-style-type: none"> <li>• Mi'kmaq Ecological Knowledge Study undertaken</li> <li>• The Proponent's' dialogue with Mi'kmaq communities has addressed potential project-related effects and establishes commitments for effects management and communication.</li> <li>• The Proponent will continue to make Project status presentations and offer site visits to interested Mi'kmaq representatives</li> </ul>	<ul style="list-style-type: none"> <li>• Subject to be discussed at Community Liaison Committee Meetings. CLC membership includes Mi'kmaq representatives and is open to other interested Mi'kmaq.</li> </ul>
6. Consultation and Engagement	<ul style="list-style-type: none"> <li>• The Proponent has engaged the Mi'kmaq since February, 2014. This engagement is ongoing.</li> <li>• Mi'kmaq representatives have been invited to participate as members in the Community Liaison Committee.</li> </ul>	<ul style="list-style-type: none"> <li>• Direct dialogue with Mi'kmaq organizations and communities without prejudice will be maintained.</li> <li>• The Proponent will continue to make Project status presentations and offer site visits to interested Mi'kmaq representatives</li> </ul>	<ul style="list-style-type: none"> <li>• Subject to be discussed at Community Liaison Committee Meetings. CLC membership includes Mi'kmaq representatives and is open to other interested Mi'kmaq.</li> </ul>
7. Project effects on biophysical attributes listed above	<ul style="list-style-type: none"> <li>• Please see Biophysical sections above</li> </ul>	<ul style="list-style-type: none"> <li>• Please see Biophysical sections above</li> </ul>	<ul style="list-style-type: none"> <li>• Please see Biophysical sections above</li> </ul>
8. Changes to current use of land and resources by the Mi'kmaq for traditional purposes	<ul style="list-style-type: none"> <li>• No current traditional resource use was identified.</li> </ul>	<ul style="list-style-type: none"> <li>• The Proponent commits to allowing future access to non-active portions of the site to the extent this does not compromise the safety of the Mi'kmaq visitors or quarry workers.</li> <li>• The Proponent will continue to make Project status presentations and offer site visits to interested Mi'kmaq representatives</li> </ul>	<ul style="list-style-type: none"> <li>• Subject to be discussed at Community Liaison Committee Meetings. CLC membership includes Mi'kmaq representatives and is open to other interested Mi'kmaq.</li> </ul>

## 11.0 CONSULTATION AND ENGAGEMENT

### 11.1 Consultation Strategy and Objectives

The Proponent has developed and implemented a public consultation program that engages stakeholders and satisfies the requirements of the Nova Scotia *Environmental Assessment Regulations* and the Proponent's Guide to Environmental Assessment (NSE 2009). The Proponent has been and remains committed to open and transparent engagement using an approach that fosters collaborative working relationships. The Proponent strives to be the best source of information for stakeholders about the Project.

As part of Project development, the Proponent implemented a comprehensive consultation program with the following key objectives:

- to identify issues and concerns of interest to the affected communities, stakeholder groups and residents;
- to assist in judging the nature and intensity of Project benefits or impacts;
- to solicit local information and expert opinions; and
- to fulfil regulatory requirements.

The consultation program is intended to continue throughout the Project development process. It started in the early planning stages of the Project in 2010, expanded during the formal environmental assessment process, and is scheduled to continue through subsequent approvals, permitting and construction phases. The Proponent also intends to continually engage with all stakeholders during the operation of the facility. A full list of consultation and outreach events is provided in **Appendix M**, Attachment 4.

### 11.2 Public and Agency Consultation

The Proponent, using a variety of public outreach methods, has informed stakeholders of the Project, explained the planning and regulatory processes, advertised consultation and engagement opportunities and solicited input into the Project Description and the EIS report.

Specific engagement tools and techniques that have been applied during the public consultation program include:

1. a Project-specific website – [www.blackpointquarry.ca](http://www.blackpointquarry.ca)
2. a stakeholder database including email and mailing lists used for email outreach to interested residents and others;
3. an open house event, public information sessions, and public presentations;
4. public notices regarding key milestones and CLC membership;
5. interviews with provincial and local media outlets;
6. a Project newsletter distributed via mail drops, newspaper inserts and email;
7. the Community Liaison Committee (CLC);
8. government agency briefings (federal, provincial and local); and
9. other stakeholder group meetings and door-to-door introductions to residents.

These items are described in greater detail below.

### 11.3 Website

A Project website was established early in assessment process, when the Project Description was first being elaborated in February, 2014. The website was created to allow the public easy access to up-to-date information about the Project. The website also functions as the authoritative source of information for all stakeholders. The website address is [www.blackpointquarry.ca](http://www.blackpointquarry.ca). The website includes:

- Project overview
- Project history
- Project details:
  - Location
  - Aggregate Market
  - Project Benefits
  - Project Decommissioning
  - Maps and Photographs
- Community information
  - Community Liaison Committee
  - Questions and Answers
  - Frequently Asked Questions
  - Newsletters
  - Presentations
  - Reports

The Project website also includes a link to the CEA Agency website. The Project website will continue to be updated as the Project moves through the environmental assessment process.

### 11.4 Stakeholder Database and Mailing List

A stakeholder database was created at the beginning of the Project. During the first open house held on April 22, 2014, visitors were invited to provide their name and contact information (mailing address, telephone and email address) to receive updates on the Project. Since that time, the team has continued to add names of interested people to the Project stakeholder database.

A designated Project team member is tasked with maintaining the database and mailing list. There are currently 240 names on the list. The stakeholders in the database have been identified and grouped according to their interest as they relate to the Project (Table 11-1).

**Table 11-1: Stakeholder Database and Mailing List Categories**

Interest Group Category		
Open House Attendees	Mi'kmaq	Elected Officials
CLC Members	Local Fisherman	Government - Federal
Local Residents	Guysborough Inshore Fisheries Association	Government - Provincial
Non-Government Organizations	Media	Businesses

Updates regarding activities associated with the Project (meetings, field studies, reports) are circulated regularly; to date, eight outreach communications have been provided to people and organizations on the mailing list (Table 11-2).

**Table 11-2: Stakeholder Outreach Communications**

Date	Item	Distribution Method	Approximate Total Distribution
April-09-14	Open House Announcement	Ad in the Guysborough Journal	1,200 people; newsstands, subscribers, businesses
April-14-14	Morien Press Release re: Vulcan and the Project	Newswire / Press Release	>900 Canadian news outlets
April-17-14	Open House Announcement	Canada Post Mail Drop	3,000 households; does not incl farms, business, apartments
April-22-14	Display Boards, Vulcan Presentation Booklets	Hand-outs at the Open House	200+ attendees
April-30-14	CLC Member Solicitation	Ad in the Guysborough Journal	1,200 people; newsstands, subscribers, businesses
July-07-14	Project Fact Sheet	Canada Post Mail Drop	3,000 households; does not incl farms, business, apartments
July-30-14	Summer 2014 Newsletter	Pamphlet in the Guysborough Journal	1,200 people; newsstands, subscribers, businesses
August-27-14	CLC Member List	Ad in the Guysborough Journal	1,200 people; newsstands, subscribers, businesses
Dec-19-14	Frequently Asked Questions	Canada Post Mail Drop	3,000 households not including farms, business, apartments
Jan-13-15	GCIFA Endorsement	Newswire / Press Release	>900 Canadian news outlets
February 4-15	Winter 2015 Newsletter	Canada Post Mail Drop	3,000 households not including farms, business, apartments

### 11.5 Public Information Sessions/Open Houses

The first Open House was held at the Queensport Fire Hall in Guysborough on April 22, 2014. The goal of the Open House was to inform the community about the Black Point Project and the environmental assessment process, and describe anticipated Project timelines. The Open House provided an opportunity for citizens to engage directly with the Proponent’s Project team, which included specialists in Health and Safety, Engineering Design, Geology, Environmental Assessment, Quarry Operations and Communication. Two different information sessions (afternoon and evening) were held to accommodate interested visitors. Over 200 people attended the two sessions.

The format was casual, allowing visitors to meet the individual Project team members, ask questions, and voice concerns. With over 21 large format information boards on display, Project team members and subject matter experts were on hand to talk about the Project and answer questions. The topics of the information boards are provided in Table 11-3.

**Table 11-3: Open House Information Display Topics**

<b>Display Board Topics</b>		
Vulcan Materials Company	Marine Terminal	Federal EA Process
Morien Resources Corp.	Aggregates Explained	Existing Environment
Black Point Quarry	Aggregates Market	Safety
Maps – Project Location	Project Benefits	Land Management
Aggregates Mining Process	Project Schedule	Environmental Stewardship
Production Plan	Information & Engagement	Geology

At the Open House, visitors were asked to sign-in and provided an opportunity to sign-up for future updates on the Project. At one information display board and table, visitors were invited to volunteer to serve of the Project Community Liaison Committee (CLC). During the Open House, comment cards were made available to visitors for future follow-up with the Project team.

In May 2014, a follow-up email was circulated to those who provided their email address requesting confirmation of their interest in receiving updates on the Project as required by the new “anti-spam” legislation, which came into force in early 2014. Project team members continue to meet with stakeholders individually or in groups to provide updates on the Project and answer questions.

An additional Open House has been tentatively scheduled for mid March, 2015, once the EIS report has been submitted and the prescribed comment period is underway.

Additionally, several presentations have been given to various groups interested in the Project. These community presentations are provided in Table 11-4.

**Table 11-4: Community Presentations**

<b>Presentation Topic</b>	<b>Group</b>	<b>Date</b>
Black Point Marine Aggregate Quarry Update	Mining Society of Nova Scotia	June 6, 2014
Introduction to Vulcan Materials and the Project	Strait of Canso Superport Days	July 10, 2014
Project Introduction and Jobs in the Mining Industry	Fanning Academy, grades 9-12	October 16, 2014
Geology Presentation	Fanning Academy, 4th grade	October 16, 2014
Project Introduction and Jobs in the Mining Industry	Guysborough Academy, grades 9-12	October 28, 2014
Geology Presentation	Guysborough Academy, Middle School	October 28, 2014
Introduction to Vulcan Materials and the Project	Geology Matters Conference, NS Department of Natural Resources	November 13, 2014
Introduction to Vulcan Materials and the Project	Strait Area Chamber of Commerce	December 2, 2014

### 11.6 Interviews

The Proponent has been asked by several media outlets to provide comment or updates on the Project. Table 11-5 lists the interviews conducted to date.

**Table 11-5: Media Interviews**

<b>Interview Topic</b>	<b>Media Outlet</b>	<b>Date</b>
Media call; quote, general information	AllNovaScotia.com	April 14, 2014
Media call; interview	Chronicle Herald	April 14, 2014
Radio interview	CBC Information Morning	June 18, 2014
Interview, general information	Chronicle Herald	June 19, 2014
Meeting with publisher; General information	Guysborough Journal	July 16, 2014
Meeting with Editorial Board; General information	Chronicle Herald	August 12, 2014
Media call; quote, general information	Port Hawkesbury Reporter	September 25, 2014
Interview, GCIFA endorsement	Guysborough Journal	January 12, 2015
Interview, GCIFA endorsement	Chronicle Herald	January 13, 2015
Interview, GCIFA endorsement	Port Hawkesbury Reporter	January 15, 2015

### 11.7 Newsletters

The Proponent has developed the Black Point Quarry Project Newsletter to provide updates on the Project and to keep interested parties informed about the progress and current/upcoming activities. The first issue of the Black Point Quarry Project newsletter was distributed on July 30, 2014. Referred to as the Summer 2014 Newsletter, the information sheet was emailed to the Project stakeholder database and mailing list, and was distributed by Canada Post that

same week to residents in Guysborough County. A copy of this issue and all future issues will be available on the Project website.

This inaugural issue announced the beginning of the environmental assessment, provided an anticipated timeline for the assessment and project overview, and described the open house, the Superport Days event and the formation of CLC. Future newsletters will continue to provide readers with important information about the project and key milestones.

The newsletter will be distributed to stakeholders on a semi-annual basis, or when specific project developments warrant an additional newsletter. Copies of the Summer 2014 and Winter 2015 newsletters are included in **Appendix M Attachment 1**.

### 11.8 Community Liaison Committee

In mid-2014, the Proponent established a CLC to help document community questions and concerns and distribute updates regarding the Project. The overarching objectives of the CLC are:

- to facilitate frank and open communication between the local community and the project team; and
- to provide a forum for the two way exchange of accurate and up-to-date information between the community and the Proponent.

The ultimate, long term objective of establishing the CLC is to protect and enhance the quality of life for all residents and to promote a vibrant and sustainable economic climate in the Municipality of the District of Guysborough.

The Proponent solicited CLC membership at the first Open House in April, 2014 and through a public notice published in the Guysborough Journal. Twenty volunteers expressed interest in participating in the CLC. From that list, eight community members were selected to serve with four Project Team members. The CLC members represent the following communities or groups (Table 11-6):

**Table 11-6: CLC Communities and Groups Represented**

Canso	The Sipekne'katik Band (formerly the Shubenacadie Band)
Cook's Cove	Antigonish/Guysborough Black Development Association
Phillips Harbour	Director of Economic Development, MODG
Fox Island	District 4 Councillor, MODG
Guysborough	Vulcan Materials Company
Queensport	Morien Resources Corp.

The first CLC meeting was held on August 12, 2014 at the Queensport Fire Hall. Two Co-Chairs were nominated to lead the CLC: Mary Jurgina-Taylor (Canso resident) and Chris Ridgway (Vulcan Materials Company). Atisthan Roach (Vulcan Materials Company) is currently serving as secretary for the CLC.

During the first meeting, the CLC discussed their Terms of Reference (TOR) and frequency of meetings. The TOR was agreed upon, and CLC meetings were determined to take place quarterly, or when specific project developments warrant. The second CLC meeting was held on October 15, 2014 at the Queensport Fire Hall. The next CLC meeting is tentatively scheduled for mid-March, 2015.

A copy of the TOR is included in **Appendix M Attachment 2**.

### **11.9 Government and Agency Consultation**

The Black Point Quarry Project team has been consulting with government officials and regulators (municipal, provincial, and federal), both formally and informally, on an ongoing basis. The objective of these consultations is to provide information and updates on the Project and the environmental assessment, and also to receive input and guidance as appropriate. The CEA Agency and the following federal Regulatory Authorities have been consulted both before and since filing of the Project Description:

- CEA Agency
- Transport Canada (TC)
- Fisheries and Oceans Canada (DFO)
- Environment Canada (EC)
- Natural Resources Canada (NRCan)
- Health Canada (HC)

There have also been on-going meetings with the provincial Department of Environment and the Department of Natural Resources to keep them apprised of Project developments and solicit input into study design.

These consultations have involved one-on-one meetings, telephone conversations, and e-mail correspondence. Issues and concerns identified during these meetings are presented in greater detail within the EIS.

### **11.10 Other Group Meetings**

Please see **Appendix M**, Attachment 4 for a full list of consultation and outreach events.

#### **Guysborough County Inshore Fishermen's Association**

The Guysborough County Inshore Fishermen's Association (GCIFA) is considered a key local and regional stakeholder group with direct and ongoing interest in the Project. Given this, a series of meetings and information exchanges were held with GCIFA representatives to learn about fishermen and fishing activity in the area and to provide information regarding the Project to the GCIFA. The GCIFA was extremely helpful in putting Project team members in touch with local fishermen, and in facilitating meetings by offering meeting space and communicating meeting opportunities to fishermen. Although the GCIFA provided useful information to the Project team, their representatives underlined the fact that the fishermen "speak for themselves", rather than exclusively through the Association.

Concerns expressed and issues raised by the GCIFA and local fishermen are summarized in Table 11-7.

### **Meetings with Fishermen**

Based on information provided at the April Open House and with the help of the GCIFA and local residents, the Project Team compiled a list of fishermen most likely to be interested in the Project and its potential effects on commercial fishing. Sit down meetings with local fishermen were held on several occasions as summarized in Table 11-6. The overall objective of the meetings was to meet the fishermen, introduce the Project and some of its team members, and discuss / document questions and concerns with respect to commercial fishing. The meetings were intended to initiate a dialogue with fishermen that will continue as more information becomes available with respect to Project design, layout and day to day activities at the site. The ultimate objective was to identify fishermen concerns so they could be addressed within the EIS report.

**Table 11-7: Issues and Concerns Raised by People in the Commercial Fishing Industry**

<b>People in the Commercial Fishing Industry</b>				
<b>Event</b>	<b>Date</b>	<b>Comment Source</b>	<b>Made To</b>	<b>Comment, Question or Concern</b>
Letter to CEAA	24-Mar-14	Thomas Grover WT Grover Fisheries Ltd.	CEAA	<ul style="list-style-type: none"> <li>• Supportive of the Project.</li> </ul>
Letter to CEAA	27-Mar-14	Eugene O'Leary, President Guysborough County Inshore Fishermen's Association	CEAA	<ul style="list-style-type: none"> <li>• Requests additional consultation.</li> <li>• Notes Project Description inaccurately describes local fishing conditions.</li> <li>• Expresses concerns regarding displacement of fishermen, silting and noise.</li> <li>• Supportive of project but not at the cost of the fishing industry.</li> </ul>
Meeting	8-Apr-14	Ginny Boudreau, Manager Guysborough County Inshore Fishermen's Association	Proponent	<ul style="list-style-type: none"> <li>• Concerns expressed regarding potential impacts to lobster, shrimp, and ground fisheries.</li> <li>• Concern raised regarding increased traffic and displacement from fishing grounds around shipping lanes.</li> <li>• Concerns expressed regarding potential shipping impacts to shrimping activities.</li> <li>• Tentatively supportive of the Project.</li> <li>• Questioned the setback distance from the terminal (where no fishing will be permitted).</li> <li>• Concerns expressed regarding the effects of blasting on fish – mainly lobster.</li> <li>• Questioned the effects of siltation runoff on lobster fishing.</li> <li>• Questioned if the Proponent will offer training courses to local workers.</li> <li>• Questioned if "foreign workers" will be used at low wages instead of local workers.</li> </ul>
Letter	14-May-14	William Bond, Fisherman	CEAA re Draft Guidelines	<ul style="list-style-type: none"> <li>• Concerns expressed regarding the guidelines:                             <ul style="list-style-type: none"> <li>○ lack of detail regarding the marine environment</li> <li>○ fisher compensation</li> <li>○ monitoring of environmental effects</li> <li>○ biomass of aquatic species as baseline information</li> <li>○ impacts to marine waterfowl migration patterns</li> <li>○ baseline data regarding invasive species (zebra mussels and green crab)</li> <li>○ monitoring and company mitigation should new invasive species be discovered</li> <li>○ effects of silt run off</li> <li>○ effects of severe weather on project infrastructure.</li> </ul> </li> </ul>
Meeting	29-May-14	Ginny Boudreau, Manager Guysborough County Inshore Fishermen's Association	Proponent	<ul style="list-style-type: none"> <li>• Concerns expressed regarding:                             <ul style="list-style-type: none"> <li>○ increased traffic and the location of increased traffic</li> <li>○ new buoy/markers</li> <li>○ how ships will affect existing fisheries as they leave the shipping lane</li> <li>○ siltation</li> </ul> </li> </ul>

<b>People in the Commercial Fishing Industry</b>				
<b>Event</b>	<b>Date</b>	<b>Comment Source</b>	<b>Made To</b>	<b>Comment, Question or Concern</b>
Meeting	16-Jul-14	David Murphy, Fisherman	Proponent	<ul style="list-style-type: none"> <li>Concern expressed that the Project will not consult with other fishers who are permitted to fish within LFA 31a.</li> </ul>
Meeting	16-Jul-14	Jerry Creamer, Fisherman	Proponent	<ul style="list-style-type: none"> <li>Concerns expressed regarding:                             <ul style="list-style-type: none"> <li>coal dust from ongoing transfer operations</li> <li>invasive species in ballast water</li> <li>potential displacement of shrimp and scallop fishermen</li> </ul> </li> </ul>
Meetings	17-Jul-14	Fishermen: Kenny Snow, Alan Newel, Bob Anderson, Tom Anderson, Steve Mead, Billy Bond, Basil Dobson, Ben Hensbee, Dave Murphy, Allan Hensbee, Thane Jameson	Proponent	<ul style="list-style-type: none"> <li>Questioned if dust from off-loading will cause siltation on nearby lobster beds.</li> <li>Questioned the amount of silt that will be discharged (in storm water or process water) and how far the tides and currents will disperse the silt.</li> <li>Questioned the effect of ships leaving the shipping lane to access the marine terminal on shrimp and scallop fishers.</li> <li>Questioned the amount of lobster fishing grounds to be lost.</li> <li>Questioned the size of the exclusion zone or "off limits zone".</li> <li>Questioned the cumulative traffic effects of additional ships combined with new ships when the new container terminal starts up.</li> <li>Concerns expressed regarding the effects on fishing from additional noise, displacement of fishers and loss of gear.</li> <li>Questioned how ballast water from ships will be addressed.</li> <li>Questioned the management of new invasive species from ballast water.</li> <li>Questioned the cumulative effects of new invasive species from ballast water (two years from now, five years, ten years).</li> <li>Questioned the effect of blasting and vibration on lobster and if blasting will push them offshore.</li> <li>Questioned if blasting will cause the female lobster or snow crab (or other egg carriers) to drop their eggs early.</li> <li>Questioned the assurances or guarantees that can be given that the Project will not destroy the Bay or their livelihood with explosives by scaring away or changing the behaviour of these species.</li> <li>Concerns expressed regarding mackerel and squid being diverted by noise and vibrations from blasting.</li> <li>Concerns expressed regarding the displacement of fishers onto other fishers as the area is reportedly fully fished with little room for displacement.</li> <li>Questioned if the shipping lane can skirt a depression off of Black Point that extends for several kilometres, as it has a muddy bottom and is very good for shrimp fishery, and come parallel to the shoreline to avoid the prolific shrimp grounds.</li> </ul>
Meeting	13-Aug-14	Fishermen: Garth Meade, Jim Meade	Proponent	<ul style="list-style-type: none"> <li>Appreciative of Proponent's efforts to meet with them.</li> <li>Questioned if the dates and times of ship arrival and departures could be posted.</li> </ul>

**People in the Commercial Fishing Industry**

<b>Event</b>	<b>Date</b>	<b>Comment Source</b>	<b>Made To</b>	<b>Comment, Question or Concern</b>
Meeting	15-Oct-14	Fishermen: Kevin Horne, Howard Jack, Alan Newel, Bob Anderson, Basil Dobson, Allan Hensbee; Others: Eugene O'Leary, Ginny Boudreau, Sara Delory (GCIFA)	Proponent	<ul style="list-style-type: none"> <li>• Discussion of proposed shipping routes; one preferred route was selected by the fishermen present</li> <li>• Discussion of the marine terminal and probable exclusion zone;</li> <li>• Discussion of nearby areas suitable for the creation of new lobster habitat</li> <li>• Discussion of mackerel behaviour with respect to A. Newell's traps in Indian Cove – will the terminal interrupt their movement along the shore?</li> <li>• Discussed training requirements for workers at the quarry</li> <li>• Discussion of sedimentation, effects of blasting, bilge water disposal</li> </ul>
Meeting	12-Jan-15	Eugene O'Leary, Ginny Boudreau, William Bond, Roger Williams, Patricia Rhynold, Duncan Bellefontaine	Proponent	<ul style="list-style-type: none"> <li>• Update on the Project</li> <li>• Letter of endorsement from the GCIFA</li> </ul>

## Door to Door Meetings

Although many residents attended the first Open House in April, 2014, the Proponent was not entirely sure that all of residents nearest to the Project site were able to attend that event. To help ensure these residents had the opportunity to learn about the Project, pose questions, express concerns, and contact the Project team specialists if needed in the future, two Project team members (Mike MacDonald, Morien Resources and Russell Dmytriw, SLR Consulting) went door-to-door along Half Island Cove Road, Upper Fox Island and Fox Island Main during the week of July 14, 2014. In total, 17 of 25 addresses were visited and face-to-face meetings held. Of the 8 unvisited residences, 4 occupants were not home while 4 addresses were not occupied (i.e., for sale or apparently abandoned).

Residents typically expressed support for the Project, especially with respect to job opportunities for local residents and their children. At the same time, a certain degree of frustration was expressed at the perceived slow pace of development. Other residents were neutral or indifferent, neither positive nor negative towards the proposed Project. In several instances, discussions were more detailed; certain residents posed a number of questions regarding project effects to the local environment, water quality, ambient noise conditions and other subjects. Project team members responded to questions and followed up with additional information by email where needed. In all cases, residents who expressed concerns were open minded and interested in learning more about the Project. Concerns expressed and issues raised by local residents are summarized in Table 11-8.

Other concerns and questions have been raised during Proponent outreach events by people who are not residents of the immediate vicinity of the Project. These events and the subjects discussed are presented in **Appendix M Attachment 4**.

**Table 11-8: Issues and Concerns Raised by Residents in the Project Vicinity**

<b>Residents in the Project Vicinity (Names omitted to ensure privacy)</b>				
<b>Event</b>	<b>Date</b>	<b>Comment Source</b>	<b>Made To</b>	<b>Comment, Question or Concern</b>
Open House	22-Apr-14	Local residents (2 people)	Proponent	<ul style="list-style-type: none"> <li>• Supportive of the Project.</li> </ul>
Meeting	16-Jul-14	Residence #1 (2 people)	Proponent	<ul style="list-style-type: none"> <li>• Supportive of economic development in the area.</li> <li>• Questioned the effect of the quarry on their water well.</li> <li>• Questioned the chemicals that might be left in the groundwater and the harmful effects they can cause in drinking water.</li> <li>• Concern expressed regarding the level of noise they will hear.</li> <li>• Concern expressed regarding dust generated at the quarry.</li> </ul>
Meeting	16-Jul-14	Residence #2 (2 people)	Proponent	<ul style="list-style-type: none"> <li>• Supportive of the Project.</li> </ul>
Meeting	16-Jul-14	Residence #3 (1 person)	Proponent	<ul style="list-style-type: none"> <li>• General discussion, neither positive nor negative.</li> </ul>
Meeting	16-Jul-14	Residence #4 (1 person)	Proponent	<ul style="list-style-type: none"> <li>• Supportive of the Project.</li> </ul>
Meeting	16-Jul-14	Residence #5 (1 person)	Proponent	<ul style="list-style-type: none"> <li>• Supportive of the Project.</li> </ul>
Meeting	16-Jul-14	Residence #6 (2 people)	Proponent	<ul style="list-style-type: none"> <li>• Supportive of the Project.</li> </ul>
Meeting	16-Jul-14	Residence #7 (2 people)	Proponent	<ul style="list-style-type: none"> <li>• Supportive of the Project.</li> </ul>
Meeting	16-Jul-14	Residence #8 (2 people)	Proponent	<ul style="list-style-type: none"> <li>• Supportive of the Project.</li> <li>• Provided information regarding tuna fishing by non-residents.</li> </ul>
Meeting	16-Jul-14	Residence #9 (1 person)	Proponent	<ul style="list-style-type: none"> <li>• Generally supportive of the Project.</li> </ul>
Meeting	17-Jul-14	Residence #10 (1 person)	Proponent	<ul style="list-style-type: none"> <li>• Questioned the potential for siltation in Indian Cove.</li> <li>• Concerns expressed regarding quarry noise.</li> <li>• Concerns expressed regarding the level of ship noise.</li> <li>• Questioned the effect on property values.</li> </ul>
Meeting	17-Jul-14	Residence #11 (1 person)	Proponent	<ul style="list-style-type: none"> <li>• Concerns expressed regarding transparency during expropriation.</li> <li>• Questioned the number of Proponent's employees compared to local hires.</li> <li>• Questioned the Proponent's commitment to sustainability and the local community.</li> <li>• Concerns expressed regarding ballast water and invasive species.</li> </ul>
Meeting	17-Jul-14	Local Business (1 person)	Proponent	<ul style="list-style-type: none"> <li>• Concerns expressed regarding noise generated at the quarry.</li> <li>• Concerns expressed regarding the effect on her well water.</li> </ul>
Email	31-Jul-14	Residence #12 (2 people)	Proponent	<ul style="list-style-type: none"> <li>• Thanked the Proponent for the update.</li> </ul>

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## 11.11 Engagement of Aboriginal Communities

### 11.12 Strategy and Objectives

The Proponent understands that it is the duty and responsibility of the Crown to consult with First Nations regarding matters related to the impact development projects may have on the Treaty and Aboriginal Rights of the Mi'kmaq, and that these responsibilities are met through direct consultations between the Nova Scotia Office of Aboriginal Affairs and the Kwilmu'kw Maw-Klusuaqn (KMK) Negotiations Office. The Proponent is also cognizant that there are several international, national, and provincial protocols and procedures that aim to advance First Nation involvement in environmental management and promote cooperation between project proponents and Aboriginal communities in Nova Scotia. As a result, the Proponent has undertaken several measures to identify the concerns of Mi'kmaq communities, through their designated representatives, about potential adverse effects or the environmental effects of the Project, and to promote Mi'kmaq involvement in the Project. Similar to other development initiatives in Nova Scotia, The Proponent has taken direction from "A Proponent's Guide to Environmental Assessment," and "Proponents' Guide: Engagement with Mi'kmaq of Nova Scotia," in developing its strategies and objectives (NSE 2014; NSOAA 2009).

The Proponent has also taken a more proactive approach by following the principles of Free, Prior and Informed Consent as presented and discussed within the United Nations Permanent Forum on Indigenous Issues. To this end, the Proponent has addressed early engagement with the Mi'kmaq community in Nova Scotia as a priority and has developed an Aboriginal Community Engagement Strategy, which commenced several years prior to the filing of the Project Description with in February 2014. The premise of the engagement strategy is that, through effective engagement, the Proponent can establish an effective relationship with Mi'kmaq communities and organizations. The Proponent's objectives were to:

- inform Mi'kmaq communities about its proposal;
- solicit information on the Mi'kmaq issues and concerns with respect to the proposed Project; and
- identify ways and means for Mi'kmaq engagement in the planning process and approaches to a mutually beneficial Project implementation.

Based upon a preliminary assessment of the Project location and the known activity of Mi'kmaq communities in Nova Scotia, several communities and Mi'kmaq organizations were identified as potentially affected and/or having a direct interest in the Black Point Quarry Project. These communities (shown on **Figure 6.8-1**) and organizations are listed in Table 11-9.

**Table 11-9: Key Mi'kmaq Communities**

Category	Communities/Organizations
Mi'kmaq communities	Paqtnekek First Nation Pottotek First Nation Millbrook First Nation Sipekne'katik First Nation
Mi'kmaq organizations	Assembly of NS Mi'kmaq Chiefs Kwilmu'kw Maw-Klusuaqn (KMK) Negotiations Office KMK Benefits Committee Sipekne'katik Negotiations Office
Provincial organizations	Nova Scotia Office of Aboriginal Affairs

### 11.13 Engagement Strategy and Activities

As noted above, the primary objectives of the Mi'kmaq engagement strategy are to establish a positive collaborative working relationship with the Mi'kmaq of Nova Scotia, and to identify potential issues of concern to the Mi'kmaq communities or their representatives that could potentially cause negative effects on the Mi'kmaq if not addressed. To achieve these objectives, The Mi'kmaq Community Engagement Strategy for the Black Point Quarry Project involves a series of engagement activities that include:

- face to face contacts with Chiefs and Council representatives;
- presentations/meetings with communities;
- presentation at regional Tribal Council/Provincial Tribal Organization meetings;
- frequent telephone and email communication;
- letters of notification of EA;
- MEK Study;
- tours of the Project site on three occasions; and
- telephone interviews with Band Fishery Managers with members holding communal commercial licenses in the area.

The engagement activities that have taken place to date are listed in Table 11-10. In addition invitations to all Public meetings/Open House events (Section 11-3) were sent to representatives of the Mi'kmaq communities identified in Table 11-9 above.

**Table 11-10: Engagement Activities**

Mi'kmaq Community Engagement Activities	Date
<b>Face to Face Contacts with Chiefs</b>	
Paqtnekek	Oct 12, 2010 (initial meeting with Chief)
Millbrook	Mar 21, 2011 (initial meeting with Band Manager) May 7, 2014
Sipekne'katik	Jun 18, 2014 Aug 12, 2014 (site visit)
<b>Presentations / Meetings with Communities</b>	
Sipekne'katik Band Council	Jun 17, 2014 Aug 11, 2014 Aug 12, 2014 (site visit)
<b>Presentation at regional Tribal Council/Provincial Tribal Organization Meetings</b>	
KMK staff	Oct 13, 2011 (initial meeting with CEAA) Nov 21, 2011 Sept 20, 2013 (with CEAA) Mar 11, 2014 May 27, 2014 Jun 18, 2014 (site Visit)
KMK - Benefits Committee	Sep 10, 2014
Assembly of NS Chiefs	Through KMK
<b>Site Visits</b>	
J. Walsh, M. Nevin	18 June, 2014
J. Copage, I. Knockwood, J. MacDonald	August 12, 2014
Chief W. Marshall, K. Prosper	October 27, 2014

Finally, the Proponent has requested to present the Environmental Impact Statement report to the Assembly of Nova Scotia Chiefs and agreed to set up a web-based portal through which Mi'kmaq Communities can provide direct comment on the documents.

The Guidelines for the EIS were issued on June 9, 2014 (CEA Agency 2014). The Kwilmu'kw Maw-klusuaqn Negotiation Office provided comments which were forwarded to the Proponent for review and response, where applicable. The comments are presented in summarized form in Table 11-11.

**Table 11-11: Key Comments and Issues Raised by Mi'kmaq Communities**

Subject Area	Comments/Concerns/ Suggestions	Study Team Responses/Actions
Opportunities (Economics, Training, Other)	Seeking engagement in accordance with Proponents Guidelines, issued by the NS Government	Initiated communication with Chiefs and KMK; made commitments in a draft MOU pertaining to development of long-term relationship and provision of Project benefits.
	Potential for collaboration and employment	Negotiation of collaborative benefits agreement.
	Potential for training and skills development	Including training in negotiation of benefits agreement.
	Potential for support for KMK operations	MOU includes negotiation of support to facilitate development of benefits agreement.
Planning Process	MEK Study	MEKS updated and submitted for review.
	Environmental protection	Providing opportunity for direct review of the EA document (made presentation and provide means to facilitate

Subject Area	Comments/Concerns/ Suggestions	Study Team Responses/Actions
Review of EIS Guidelines/KMK meetings	Request internal review of MEKS	feedback). Agree. A copy of the MEKS has been provided for review and comment.
	Concerns for fish, fish habitat, and Mi'kmaq fisheries	A MEKS has been prepared as part of the EA process. This includes a discussion of potential effects on fishing. The Proponent's' engagement program with Mi'kmaq communities has addressed potential project-related effects and establishes commitments for effects management and communication.
	Identified concerns for archaeological assessment	A MEKS and archaeological assessments have been prepared as part of the EA process. This includes a discussion of potential effects on archaeological sites. The Proponent' engagement program with Mi'kmaq communities also addresses potential project-related effects and establishes commitments for archaeological fieldwork and documentation. In addition the Proponent has committed to a separate site visit being undertaken with a qualified Mi'kmaq archaeologist prior to project implementation
	Kwilmu'kw Maw-klusuaqn Negotiation Office may coordinate Mi'kmaq representation in CLC.	The Proponent has established a CLC and invited Mi'kmaq community to be represented (Sipenke'katik is represented).
	Identified expectations for impact benefits agreement.	The Proponent has commenced and will continue to engage Mi'kmaq communities in the Project's planning and development process. As such The Proponent is in the process of negotiating with the Kwilmu'kw Maw-klusuaqn Negotiation Office a comprehensive Cooperation Agreement.
Consultation and Engagement	Crown responsibilities and activities regarding consultation with Mi'kmaq communities about the Project.	Maintaining direct dialogue with Mi'kmaq organizations and communities without prejudice. Maintaining arm's length discussions with Office of Mi'kmaq Affairs.
	Distinction between Crown Consultation and Proponent Engagement.	Proponent is ensuring Project staff is not directly involved in negotiations between NS Government and Mi'kmaq negotiators.

#### 11.14 Identified Issues and Concerns

As described above, preliminary meetings with the KMK Benefits Committee, and the Sipekne'katik Band Council, have been held. Presentation materials used during these initial contacts are provided in **Appendix M Attachment 3** while issues and concerns identified are summarized above in Table 11-11. Based on discussion during these engagement sessions, there is a general understanding between The Proponent and Mi'kmaq communities that the engagement process will continue to facilitate open dialogue on matters related to First Nations interest regarding environment and economic development.

#### 11.15 Memorandum of Understanding (MOU)

The Proponent is in negotiations to conclude a MOU with the Assembly of Nova Scotia Chiefs through the KMK Benefits office and a separate MOU is being negotiated with the Sipekne'katik First Nation. The purpose and focus of these MOUs is to guide ongoing discussions regarding

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collaborative benefits agreements (CBAs) between the Proponent and Mi'kmaq communities. Discussions have been ongoing since spring, 2014 and are proceeding in an open and constructive manner.

### **11.16 Engagement Following EIS Submission**

The Proponent has committed to an ongoing relationship with the Mi'kmaq of Nova Scotia. In accordance with the terms of the MOU, the focus of engagement activities in the short-term will be the conclusion of the CBA. This Agreement will provide the foundation for continued engagement activities that will meet the spirit and intent of the MOU, namely, to cooperate with each other with respect to the Project on the basis of equality, reciprocity and mutual benefit. Future engagement activities will be coordinated through specifically designated contact persons, and through the Mi'kmaq Representatives on the Community Liaison Committee (CLC).

The Proponent will make presentations to update the Assembly of NS Chiefs, or their designated committees, on the Project from time to time. Mi'kmaq communities are also represented on the CLC and as such will be regularly involved in the discussion of Project planning and implementation with The Proponent and other community representatives.

The Proponent has also reserved seats on the Community Liaison Committee for representatives from both the KMK and the Sipekne'katik First Nation. This participation is expected to foster greater participation in the project both through bilateral processes under the CBA, and through community level activities in collaboration with participants from the community of Guysborough.

### **11.17 Issues Identified by Other Stakeholders**

The Proponent has communicated with members of the public and stakeholders to provide updates on the Project and receive feedback regarding key issues or concerns. As described above the Proponent has met with individuals and groups to better understand issues and information to be considered during the environmental assessment. Contacts have been made either as face-to-face meetings, telephone conversations, and email correspondence. Key outreach events (meetings, telephone calls, emails, etc.) are provided in **Appendix M Attachment 4**. A summary of key comments and concerns is provided in Table 11-12.

**Table 11-12: Comments and Issues Raised by Other Interested Parties**

Other Interested Parties				
Event	Date	Comment Source	Made To	Comment, Question or Concern
Email to CEAA	13-Mar-14	Tanner Welsh	CEAA	<ul style="list-style-type: none"> <li>• Supportive of project.</li> <li>• Concerns expressed regarding increased land and sea traffic, noise pollution and silt runoff.</li> </ul>
Letters to CEAA	22-Mar-14	89 People	CEAA	<ul style="list-style-type: none"> <li>• Supportive of the Project.</li> </ul>
Letter to CEAA	24-Mar-14	Warden Vernon Pitts (MODG)	CEAA	<ul style="list-style-type: none"> <li>• Supportive of the Project.</li> </ul>
Letter to CEAA	24-Mar-14	Harold Roberts, President CADA	CEAA	<ul style="list-style-type: none"> <li>• Supportive of the Project.</li> </ul>
Letter to CEAA	24-Mar-14	Tom Gunn, Principal Strait Area Campus, NSCC	CEAA	<ul style="list-style-type: none"> <li>• Supportive of the Project.</li> </ul>
Letter to CEAA	27-Mar-14	H. Basil Mattie, P. Eng	CEAA	<ul style="list-style-type: none"> <li>• Supportive of the Project.</li> </ul>
Letter to CEAA	27-Mar-14	R. Bruce MacKeen, Campbell & MacKeen	CEAA	<ul style="list-style-type: none"> <li>• Supportive of the Project.</li> </ul>
Letter to CEAA	31-Mar-14	Michele McKenzie	CEAA	<ul style="list-style-type: none"> <li>• Concerns expressed regarding impacts to sustainable tourism.</li> </ul>
Letter to CEAA	undated	Heather Cross, Hydrogeologist	CEAA	<ul style="list-style-type: none"> <li>• Referenced concerns and made recommendations for EIS Guidelines:</li> <li>• dust emissions</li> <li>• radon monitoring</li> <li>• water quality and management</li> <li>• stream monitoring</li> <li>• impacts to stream and lake baseflow &amp; aquatic life</li> <li>• Referenced sea water intrusion into the pit, sea level change, dewatering, bench slopes &amp; stability, reclamation, storage tanks, organic stockpiles, ARD, storm water management, contingency plans, Pre-Blast Survey and offsite groundwater study.</li> <li>• Recommended hydrogeologic study components, geological assessment, aquifer characterization, modelling and water quality/quantity monitoring.</li> </ul>
Letter to CEAA	2-Apr-14	Sean Kirby Mining Association of Nova Scotia	CEAA	<ul style="list-style-type: none"> <li>• Supportive of the Project.</li> </ul>
Email	19-Apr-14	Michael Hendsbee	Proponent	<ul style="list-style-type: none"> <li>• Concerns expressed regarding traffic noise.</li> </ul>
Open House	22-Apr-14	Donald Green	Proponent	<ul style="list-style-type: none"> <li>• Questioned if union workers will be used at the quarry.</li> </ul>

Other Interested Parties

Event	Date	Comment Source	Made To	Comment, Question or Concern
Open House	22-Apr-14	David Hochman	Proponent	<ul style="list-style-type: none"> <li>Supportive of the Project.</li> </ul>
Open House	22-Apr-14	Unknown	Proponent	<ul style="list-style-type: none"> <li>Suggested that Proponent contact local Nova Scotia Community College (Port Hawkesbury) to align workforce.</li> </ul>
Open House	22-Apr-14	Joe Murphy	Proponent	<ul style="list-style-type: none"> <li>Questioned if he can continue to trap on the property over the short term.</li> </ul>
Open House	22-Apr-14	Frank Fogarty	Proponent	<ul style="list-style-type: none"> <li>Questioned what would happen to human remains if they are found on the expropriated Fogarty Property.</li> </ul>
Open House	22-Apr-14	Bill MacMillan	Proponent	<ul style="list-style-type: none"> <li>Supportive of the Project.</li> <li>Stated he would like to discuss support for a coastal trail with the Proponent.</li> </ul>
Open House	22-Apr-14	Jerry Creamer	Proponent	<ul style="list-style-type: none"> <li>Supportive of the Project.</li> </ul>
Report	6-May-14	Frank Fogarty	CEAA re: Draft Guidelines	<ul style="list-style-type: none"> <li>Concerns expressed, in Fogarty Family EIS Response, regarding:</li> <li>air pollution</li> <li>noise</li> <li>light</li> <li>protected species</li> <li>fisheries</li> <li>recreational boating</li> <li>vegetation loss</li> <li>wetland loss</li> <li>beach loss</li> <li>wildlife loss</li> <li>permanent change in land use</li> <li>loss of family heritage resources</li> <li>disturbance of human remains</li> <li>lack of local economic benefits</li> <li>difficulty in rehabilitating the site</li> <li>lack of communication prior to expropriation</li> </ul>
Email	6-May-14	June Jarvis	CEAA re: Draft Guidelines	<ul style="list-style-type: none"> <li>Concerns expressed regarding the potential negative effects of on-site and downstream wetlands and water features and the ecology supported therein.</li> </ul>
Post Card	22-May to 27 May	Post Cards from 33 citizens	CEAA re: Draft Guidelines	<ul style="list-style-type: none"> <li>Expressed concerns through the submission of post cards with a series of items that could be "checked" to indicate concern</li> <li>Concerns include: Destruction to Flora, Destruction to Fauna, Proximity to Watershed Lands, Potential Destruction to Artifacts, Damage to Fisheries, Encroachment on</li> </ul>

Other Interested Parties

Event	Date	Comment Source	Made To	Comment, Question or Concern
				Beach
Email	22 May-14	Cindy Davidson	CEAA re: Draft Guidelines	<ul style="list-style-type: none"> <li>Expressed concern regarding physical appearance of quarry ("eyesore")</li> </ul>
Email	23-May-14	Heather Cross, Hydrogeologist	CEAA re: Draft Guidelines	<ul style="list-style-type: none"> <li>Recommended that the following items be considered:</li> <li>200-year flood event</li> <li>extreme precipitation events</li> <li>additional geological references</li> <li>dewatering and seawater intrusion should the quarry extend below sea level</li> <li>reclamation plan</li> </ul>
Email	26-May-14	Garnet Rogers	CEAA re: Draft Guidelines	<ul style="list-style-type: none"> <li>Concerns expressed regarding:</li> <li>negative effects on wildlife and fisheries</li> <li>toxic runoff</li> <li>loss of historical artifacts</li> <li>damage to local roads</li> <li>loss of tourism</li> <li>out-sourcing of jobs</li> <li>potential tax-funded clean up upon closure.</li> </ul>
Social Media Post	26-May-14	Garnet Rogers	Proponent	<ul style="list-style-type: none"> <li>Concerns expressed regarding:</li> <li>expropriation</li> <li>destruction of road</li> <li>permanent impact on fragile ecology and fishery</li> <li>massively toxic runoff that will impact inshore fishery and water table</li> <li>unspecified impacts to Mi'kmaq and their artifacts</li> <li>jobs being outsourced</li> <li>impacts on real long terms jobs and tourism</li> <li>creation of "toxic and filthy mess"</li> <li>"massive and catastrophic impacts to health and environment, etc."</li> </ul>
Email	27-May-14	Diana Wallis	CEAA re: Draft Guidelines	<ul style="list-style-type: none"> <li>Concerns expressed regarding:</li> <li>loss of pristine environment</li> <li>loss of local tourism business and related employment</li> <li>noise</li> </ul>
Letter	28-May-14	G. Fitzgerald, Director Sierra Club Atlantic	CEAA re: Draft Guidelines	<ul style="list-style-type: none"> <li>Concerns expressed regarding significant and irreversible impacts to:</li> <li>fish and fish habitats</li> </ul>

Other Interested Parties

Event	Date	Comment Source	Made To	Comment, Question or Concern
				<ul style="list-style-type: none"> <li>• aquatic life</li> <li>• migratory birds</li> <li>• traditional use of the land by Mi'kmaq people</li> <li>• Species at Risk</li> <li>• wetlands</li> <li>• cultural heritage</li> <li>• Concerns expressed locally regarding the implications of the project on the environment and community values.</li> </ul>
Letter	28-May-14	J. West Geoscience Coordinator and J. Graham Coastal Coordinator, Ecology Action Centre (EAC)	CEAA	<ul style="list-style-type: none"> <li>• Requested a Review Panel due to potential impacts to:</li> <li>• marine and coastal ecosystems</li> <li>• freshwater</li> <li>• wetlands</li> <li>• wildlife</li> <li>• fish</li> <li>• existing and emerging fisheries</li> <li>• tourism and communities</li> <li>• Stated that the EAC is not necessarily opposed to a quarry in this area, but want to ensure that it brings the most long term benefits to the community, the region, and the environment.</li> <li>• EAC acknowledged the need for job creation.</li> </ul>
Letter	28-May-14	Gretchen Fitzgerald, Sierra Club Atlantic	Ministers Aglukkaq and Delorey; CEAA	<ul style="list-style-type: none"> <li>• Requested a Review Panel and comments to the Draft Guidelines.</li> </ul>
Facebook Post	8-Jun-14	Various	Proponent via public posting	<ul style="list-style-type: none"> <li>• Concerns expressed regarding:</li> <li>• perceived lack of due process during expropriation</li> <li>• dust</li> <li>• air quality</li> <li>• aggregate trucking</li> <li>• exaggerated employment claims</li> <li>• inadequate Nova Scotia air quality regulations</li> <li>• Proponent interaction with community</li> </ul>
Email	9-Jun-14	Frank Fogarty for the Fogarty Family	CEAA	<ul style="list-style-type: none"> <li>• Concerns expressed regarding perceived environmental effects on:</li> <li>• flora</li> </ul>

Other Interested Parties

Event	Date	Comment Source	Made To	Comment, Question or Concern
				<ul style="list-style-type: none"> <li>• fauna</li> <li>• wetlands</li> <li>• Fogherty Lake</li> <li>• beach</li> <li>• noise pollution</li> <li>• light pollution</li> <li>• generation of dust particles</li> </ul>
Email	9-Jun-14	F. Fogarty	CEAA re: Draft Guidelines	<ul style="list-style-type: none"> <li>• Requested a Panel Review.</li> <li>• Concerns expressed regarding effects on:</li> <li>• flora</li> <li>• fauna</li> <li>• wetlands</li> <li>• Fogherty Lake</li> <li>• beach</li> <li>• noise pollution</li> <li>• light pollution</li> <li>• dust</li> <li>• negative visual aesthetics</li> </ul>
Email	17-Jun-14	Garnet Rogers	CEAA	<ul style="list-style-type: none"> <li>• Concerns expressed regarding effects perceived impacts to:</li> <li>• groundwater</li> <li>• fishery</li> <li>• air quality</li> <li>• water storage and treatment</li> <li>• fishing industry</li> <li>• feeding and migration (whales, blackfish, seals)</li> <li>• dust</li> <li>• Concerns expressed regarding:</li> <li>• use of local union workers</li> <li>• OSHA standards</li> <li>• Mi'kmaq consultation</li> <li>• secrecy &amp; transparency</li> <li>• compensation</li> <li>• tourism</li> </ul>

Other Interested Parties

Event	Date	Comment Source	Made To	Comment, Question or Concern
CBC Radio Interview	17-Jun-14	James Fogarty	Proponent via public radio	<ul style="list-style-type: none"> <li>Concerns expressed regarding:</li> <li>expropriation</li> <li>lack of forewarning of expropriation</li> <li>lack of due process</li> <li>ongoing work at the site</li> </ul>
Newspaper Article	26-Jun-14	Eva Hoare with quotes from the Fogarty Family	Proponent via newspaper article	<ul style="list-style-type: none"> <li>Concerns expressed regarding:</li> <li>a lack of warning regarding expropriation</li> <li>inflated job expectations</li> <li>conflict of interest</li> <li>remediation costs to taxpayers</li> <li>impacts to tourism (Fogarty family)</li> <li>petroglyph survey (KMK)</li> <li>harvesting, fishing and archaeological resources (Sidney Peters, co-chair Assembly of NS Mi'kmaq Chiefs)</li> <li>impacts to fisheries (GISFA)</li> </ul>
Newspaper Article	27-Jun-14	Editorial	Proponent via newspaper article	<ul style="list-style-type: none"> <li>Stated unfairness of the Nova Scotia Expropriation Act.</li> </ul>
Newspaper Article	28-Jun-14	Garnet Rogers	Proponent via newspaper article	<ul style="list-style-type: none"> <li>Concern and suspicion expressed regarding the offer from MODG (G. MacDonald) to meet and explain expropriation process in more detail.</li> </ul>
Letter	30-Jun-14	John Pettipas, Pettipas Market, Auld's Cove	Proponent via letter to the newspaper	<ul style="list-style-type: none"> <li>Disagreed with G. Rogers' critical letter.</li> <li>Stated that in his experience, the nearby Auld's Cove quarry is "exceptionally safety conscious" and has an excellent safety record.</li> <li>Stated the Auld's Cove quarry provides good paying jobs with benefits and is a substantial contributor to the local economy.</li> </ul>
Newspaper Article	2-Jul-14	Helen Murphy	Proponent via newspaper article	<ul style="list-style-type: none"> <li>Refuted errors contained in the Chronicle Herald article dated June 26, 2014.</li> </ul>
Letter	16-Jul-14	Garnet Rogers	Proponent via letter to the newspaper	<ul style="list-style-type: none"> <li>Concerns expressed regarding:</li> <li>unfairness expropriation</li> <li>lack of public knowledge in Canso about the project</li> <li>impacts to tourism</li> <li>remediation costs to taxpayers</li> </ul>

Other Interested Parties

Event	Date	Comment Source	Made To	Comment, Question or Concern
				<ul style="list-style-type: none"> <li>inflated job estimates</li> <li>use of temporary foreign workers</li> <li>erroneous compensation figure</li> <li>lack of transparency from the municipality</li> </ul>
Funding Request	29-Jul-14	Paul Ehler, Curator Out of the Fog Lighthouse Museum Half Island Cove	Proponent	<ul style="list-style-type: none"> <li>Stated that he found the Open House to be informative and well presented.</li> <li>Stated he was pleased with Proponent's support of community organizations.</li> </ul>
Email	31-Jul-14	Billy Joe MacLean, Mayor of Port Hawkesbury	Proponent	<ul style="list-style-type: none"> <li>Supportive of the Project.</li> </ul>
Email	31-Jul-14	Grail Sangster, New Harbour	Proponent	<ul style="list-style-type: none"> <li>Thanked Proponent for information.</li> <li>Questioned if the time and location for the community liaison meeting had been established.</li> </ul>
Email	31-Jul-14	June Jarvis	Proponent	<ul style="list-style-type: none"> <li>Thanked Proponent for information.</li> <li>Stated that they will be following the process with great interest.</li> </ul>
Email	31-Jul-14	Adam Rodgers, President of Strait Area Chamber of Commerce	Proponent	<ul style="list-style-type: none"> <li>Supportive of the Project.</li> </ul>
Email	31-Jul-14	Sean Kirby, MANS	Proponent	<ul style="list-style-type: none"> <li>Supportive of the Project.</li> </ul>
Email	31-Jul-14	Gavin Iseonor, Dexter Construction Company	Proponent	<ul style="list-style-type: none"> <li>Thanked Proponent for information.</li> <li>Stated that, as a player in the local aggregate industry and President of the Mining Association of Nova Scotia, he was impressed with the Proponent's efforts to engage the community in the Project from the start.</li> </ul>
Email	31-Jul-14	Miles MacDonald, MODG, Councillor District #3	Proponent	<ul style="list-style-type: none"> <li>Thanked Proponent for information and stated that it was very informative.</li> </ul>
Email	31-Jul-14	Don Dixon, Business Representative for Intl. Union of Operating Engineers, Local 721 & 721B	Proponent	<ul style="list-style-type: none"> <li>Thanked Proponent for information and stated that they could provide help to promote the Project.</li> </ul>
Telephone Call	5-Aug-14	Mrs. Mayola Dobson	Proponent	<ul style="list-style-type: none"> <li>Concerns expressed regarding:</li> <li>dust fallout on her home</li> <li>noise from blasting</li> <li>destruction of pristine wilderness</li> </ul>

Other Interested Parties

Event	Date	Comment Source	Made To	Comment, Question or Concern
Meeting	12-Aug-14	John Pettipas, Pettispas Market, Aulds Cove	Proponent	<ul style="list-style-type: none"> <li>• Supportive of the Project.</li> </ul>
CLC Meeting	12-Aug-14	C. Cosgrove, MJ Taylor, Ben Hendsbee, Dorian Harnish, Donna Hochman, G. MacDonald, B. George + Ed Parker (DFO) + Ian Knockwood, Jason MacDonald (Shubenacadie Band)	Proponent	<ul style="list-style-type: none"> <li>• Discussed terms of reference, nominated secretary, discussed follow up meetings, project overview and history, misinformation regarding expropriation, discussed land valuation &amp; expropriation.</li> <li>• Concerns expressed regarding:</li> <li>• project impacts to beach</li> <li>• weather patterns</li> <li>• property values</li> <li>• runoff effects on fish habitat</li> <li>• loss of fish habitat</li> <li>• workforce training</li> <li>• DFO's role</li> </ul>
Letter	19-Aug-14	John Pettipas, Pettispas Market, Auld's Cove	Proponent	<ul style="list-style-type: none"> <li>• Thanked the Proponent for visiting the Market.</li> <li>• Expressed support for the anticipated economic opportunities.</li> <li>• Requested local sourcing of goods and services.</li> <li>• Provided information regarding the Terry Fox fundraising event.</li> </ul>
Telephone Call	22-Oct-14	Joe Murphy, Resident	Proponent	<ul style="list-style-type: none"> <li>• Explained his use of the site for trapping</li> <li>• Enquired how much longer trapping would be possible</li> </ul>

### **11.18 Consultation Following EIS Submission**

The Proponent will continue both public and agency consultations throughout the permitting, construction, and operation phases of the Project. Public consultation activities will include the continuation of the CLC, publication of newsletters, and as appropriate, public meetings. Agency consultation activities will focus on implementation of the conditions of environmental assessment approval, as well as requirements for federal, provincial, and local permits. Interactions and results of discussions with the regulatory agencies will be communicated to the public using the Project newsletter as warranted.

## **12.0 ENVIRONMENTAL IMPACT STATEMENT CONCLUSIONS**

This section summarizes in Table 12-1 the environmental effects assessment presented in this EIS and presents the Proponent's concluding statements with respect to the Project's impacts on the environment and the environment's impacts on the Project.

### **12.1 Effects of the Project on the Environment**

Project effects on the environment were assessed from the probable Project-environment interactions derived for each VC of interest to the different stakeholder groups identified for the Project. The assessment considered the nature of infrastructure required to support the quarry and marine terminal, as well as the activities that will be undertaken during the construction, operation and decommissioning phases of the Project. To the extent possible unforeseen incidents, malfunctions and accidental events were also considered as part of the assessment.

Three types of mitigation measures were applied to reduce or eliminate potential Project-environment interactions:

1. Design measures specifically applied to Project infrastructure before construction;
2. Standard, proven industry best management practices for industrial construction and operation in the marine and terrestrial environments; and
3. Site specific oversight, training, control, management and operational mitigation measures.

Following the application of these mitigation measures, residual effects were listed and assessed.

The significance of the residual effects (i.e., those that remain following mitigation) was determined by a commonly used environmental assessment methodology. All residual effects are assessed as not significant, that is, while residual effects are expected, no significant residual effects are predicted. As a result, the Project is not likely to have significant adverse effects on the environment over the short or long terms. A series of monitoring programs are proposed to verify these predictions, meet commitments made in the EIS, comply with regulatory requirements, and help identify unexpected effects that may arise in the future.

In contrast, the Project is predicted to have positive local and regional economic effects in the form of direct and indirect employment opportunities, increased discretionary income in the local economy, royalties paid for extraction of the granite resource and increased tax revenues to various levels of government. A corollary positive benefit results from the increased understanding of the evolving environmental conditions, including the use of the local area by Mainland Moose, that will result from Project-related commitments made as part of the assessment process.

Table 12-1 summarizes the expected effects of the Project, lists the criteria used to determine if an effect is "significant" and describes the mitigation measures for each VC. As the table notes, none of these effects is significant according to the criteria established for their assessment.

## 12.2 Effects of the Environment on the Project

As required by the EIS Guidelines issued by the CEA Agency and NSE for this Project, the potential effects of the environment on the Project were also evaluated.

The Black Point Quarry will utilize simple, robustly built and commonly employed industrial machinery that is currently found in many different coastal environments around the world. Quarry operations in Nova Scotia do not require unusually specialized equipment or operational procedures. Site equipment including the marine terminal will naturally be designed to account for severe weather events including the changing conditions predicted in worst-case climate change scenarios over the life span of the Project. In this regard, design considerations that include climate change-induced severe events are typically applied to new industrial developments. Given these factors, the effects of the environment on the Project are considered to be insignificant.

It is understood that special consideration must be made to consider the effects of even minor environmental impacts on the rights of Canada's aboriginal peoples. Furthermore, every effort will be made to advance positive project impacts of the human environmental condition of First Nations communities. To this end, the Project will conduct ongoing, formal and routine meetings with representatives from the Mi'kmaq First Nations to identify any such impacts and to determine appropriate mitigations measures. These discussions will be conducted in accordance with the terms established under the Collaborative Benefits Agreements undertaken for this Project.

## 12.3 Cumulative Effects

This assessment inherently includes an evaluation of the cumulative effects of existing and past projects since these effects are already present in the description of the existing environment. In addition, this assessment considers the cumulative effects from other potential projects that are likely to occur in the foreseeable future. These projects include:

1. Chedabucto Aggregates Quarry Expansion (Halfway Cove, MODG)
2. Goldboro Liquefied Natural Gas Project (Goldboro, MODG)
3. Maher Melford Container Terminal (Melford, MODG)
4. Bear Head Liquefied Natural Gas Project (Port Hawkesbury, Cape Breton)

As described in Section 9.3, Shipping and Navigation and Local Economy, Land and Resource Use aspects of the Melford Container Terminal and the Bear Head Natural LNG Projects are expected to overlap with the residual effects of the Black Point Quarry Project. Taking into account the basic mitigation measures described in Section 9.3, the residual adverse cumulative effects expected with respect to Shipping and Navigation are predicted to be insignificant. Cumulative effects to the Local Economy, Land and Resource Use are expected to be positive and potentially significant over the medium to long term.

Cumulative effects on First Nations are a special consideration. Some cumulative impacts may result in small changes in abundance or distribution of food resources. This can result in changes in areas of primary hunting activity. While it is expected that there will be no significant impact from the Black Point Quarry, cumulative effects on wildlife and fish in the area will be a matter of routine discussion with Mi'kmaq First Nations as part of the formal and routine

meetings undertaken during the course of negotiations regarding the Collaborative Benefits Agreements. In other instances the cumulative effects of multiple developments in the region can have a positive impact on the social and economic environment for the Mi'kmaw. It is possible that there could be a positive cumulative impact on the social condition of Mi'kmaq harvesters as multiple projects are undertaken that could provide useful and necessary employment employing Mi'kmaq marine and environmental skills for the mutual benefit of several projects. Every effort will be made to advance these effects through discussion with the Mi'kmaq.

#### **12.4 Conclusions of the Proponent**

As progressively described within this EIS, a series of Project-environment interactions can be expected during the construction, operation and decommissioning of the Black Point Quarry Project. These interactions and their resulting effects on the environment are entirely consistent with and typical of environmental impacts of natural resource development projects in Nova Scotia and elsewhere in Canada. For many reasons the Project site is well suited for a quarry operation. The large, chemically stable granite resource is not used as a potable water supply, the nearest residential properties are not situated at the property boundary but rather hundreds or thousands of meters away, the quarry face is directed across open water rather than toward residential development, the resource is located near a deep water, ice free shipping route to a major commercial market, prime fishing areas can be avoided or in the case of lobster habitat occupied by the marine terminal, can be recreated through offset compensation measures in the immediate vicinity, etc.

Given these considerations and a number of others, the Proponent concludes that the Project is not likely to result in any significant adverse environmental effects. In contrast, the Black Point Quarry Project is expected to result in long term direct and indirect employment opportunities, in addition to other positive economic benefits for the local, regional and provincial economies.

**Table 12-1: Summary of Residual Adverse Effects, Significance Thresholds, Significance of Residual Effects**

VC and Residual Adverse Effects	Threshold for Determination of Significance	Significance of Residual Adverse Effect
<b>Air Quality and Climate Change</b>		
Fugitive dust emissions from site preparation, quarrying, crushing, stockpiling, vehicle traffic and off loading	An exceedance of the Nova Scotia or CCME ambient air quality standards at a residential or commercial location outside the property boundary, where the exceedance is due to emissions from the operation and the event occurs more than twice in the period of time that the standard is based	Not Significant
Emissions of fuel combustion products from site vehicles and generators	As above	Not Significant
<b>Noise (Terrestrial)</b>		
Ambient noise perceived by residents living around the site during construction (road building, vehicle traffic, blasting, crushing, marine terminal construction)	An exceedance of the maximum noise or vibration limits listed in the <i>Pit and Quarry Guidelines</i> at or beyond the property boundary, where the exceedance is due to noise from the operation and the event occurs more than twice in the period of time that the standard is based.	Not Significant
Ambient noise perceived by residents living around the site during operation (blasting, loading, crushing, screening, offloading)	As above	Not Significant
<b>Ambient Light</b>		
Increased ambient light from the Project construction and operation, including operation of the marine terminal	Direct light trespass that according to the affected resident regularly interferes with the use and enjoyment of nearby residential properties on a permanent basis.	Not Significant
Attraction or disturbance of nocturnal wildlife and/or migrating birds	Evidence of unacceptable levels of bird mortality associated with Project lighting (mortality or injury of ten or more migratory birds in a single event, or of any number of species at risk birds).	Not Significant
<b>Geology, Soil and Sediment Quality</b>		
Surface water discharge to the marine environment	An accidental release of low pH, acid rock drainage to the marine environment.	Not Significant
As above	An accidental release of total suspended solids in	Not Significant

VC and Residual Adverse Effects	Threshold for Determination of Significance	Significance of Residual Adverse Effect
excess of the maximum values listed in the CCME (1999) Water Quality Guidelines for the Protection of Aquatic Life (Marine) and/or the Nova Scotia Pit and Quarry Guidelines (NSEL 1999).		
<b>Groundwater Resources</b>		
Reduction in groundwater recharge to offsite surface water features; changes to groundwater quality	A decrease in groundwater supply to Adjacent Areas by 20% and/or an impairment in water quality such that groundwater discharge to surface waterbodies no longer meets Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life (CCME 1999 as updated).	Not Significant
<b>Marine and Surface Water Resources</b>		
Changes to surface water quality	Discharge from the site exceeds the liquid effluent discharge standards in the <i>Pit and Quarry Guidelines</i> (NSEL 1999) or criteria listed in the CCME <i>Canadian Water Quality Guidelines for the Protection of Aquatic Life</i> , both freshwater and marine (CCME 1999).	Not Significant
Effects on Reynolds Brook and Murphys Lake from diversion of surface and groundwater into the pit over time	A predicted change in the mean annual runoff within any off-site watercourse, or flow into any water body which changes by 20%.  A predicted change in peak flow of water discharged from the site which will measurably increase the risk of flooding to downstream watercourses	Not Significant
<b>Terrestrial Ecosystems</b>		
Habitat loss / plant mortality	A decline in abundance and/or a change in distribution beyond which natural recruitment would not return the population to its pre-project level within several (3-5) generations.	Not Significant
<b>Wetlands</b>		
Progressive habitat loss due to Project construction and operation over 50 years	An effect that is likely to cause a permanent net loss of wetland function as established during the wetland evaluation.	Not Significant following compensation
Changes to wetland hydrology and water quality resulting in habitat loss	As above.	Not Significant
<b>Terrestrial Wildlife</b>		
Habitat loss / fragmentation	An effect that causes a decline in abundance and/ or	Not Significant

<b>VC and Residual Adverse Effects</b>	<b>Threshold for Determination of Significance</b>	<b>Significance of Residual Adverse Effect</b>
	a change in distribution beyond which natural recruitment would not return the population to its pre-project level within several (three to five) generations	
Wildlife disturbance	As above	Not Significant
Disturbance of seabirds and waterfowl	As above	Not Significant

### Freshwater Species and Habitat

Effects on Reynolds Brook from diversion of surface and groundwater into the pit over time	A permanent, irreplaceable loss of Freshwater Species and Habitat that are part of or support a commercial, recreational or Aboriginal fishery.	Not Significant
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### Marine Species and Habitat

Temporary noise and vibration effects to marine biota	<ol style="list-style-type: none"> <li>1. Adverse and irreversible changes to critical habitats;</li> <li>2. Serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish species that support such a fishery;</li> <li>3. Permanent impairment of the ecological functioning of the biotic community; and/or</li> <li>4. Increased ecological risk to a level that long term effects to the health of aquatic biota is predicted.</li> </ol>	Not Significant
Permanent loss of habitat resulting from the construction and operation of the marine terminal	As above	Not Significant following Offset

### Species at Risk (SAR)

Terrestrial Flora and Fauna SAR/SOCC - Clearing and site preparation will result in habitat loss and fragmentation and SOCC plant mortality	An effect that causes a decline in abundance and/ or a change in distribution beyond which natural recruitment would not return the population to its pre-project level within several generations and/or an adverse effect that causes a net loss of habitat function	Not Significant
Terrestrial Fauna SAR/SOCC - Change in behavior as a result of noise and light (including blasting).	As above	Not Significant
Marine SAR/SOCC - Loss of fish habitat due to construction of	As above	Not Significant

VC and Residual Adverse Effects	Threshold for Determination of Significance	Significance of Residual Adverse Effect
<hr/> marine terminal <hr/>		
Marine SAR/SOCC - Disturbance and potential change in behavior due to noise from ship traffic, pile driving and blasting	As above	Not Significant
<hr/> <b>Economy, Land and Resource Use</b> <hr/>		
Change in land use from occasional recreational/trapping to quarry, with resulting limitations on these activities	Pervasive change in land use patterns within the Study Area that adversely affects a community's use of that land and/or is inconsistent with a designated land use established through a municipal planning process.	Not Significant
<hr/> <b>Tourism and Recreation</b> <hr/>		
A decrease in wilderness/nature oriented recreation and tourism within the Project Area and vicinity due to vessel traffic and actual or perceived noise, dust and light	A permanent and widespread change in tourism or recreational activities such that people are no longer able to undertake these activities within the municipality and/or that result in a significant loss of tourism related revenue to local businesses.	Not Significant
<hr/> <b>Commercial Fisheries</b> <hr/>		
Temporary loss of lobster fishing grounds due to the marine terminal construction and operation and, as a result, displacement of fishermen into other areas	<ol style="list-style-type: none"> <li>1. An uncompensated loss of habitat of those fish species that are used for, or support commercial, recreational and/or Aboriginal fisheries; or</li> <li>2. A sustained decrease in earnings from a fishery due to lower catch quantity and/or quality, or increased fishing costs (i.e., due to longer travel times, loss of gear, additional license fees, etc).</li> </ol>	Not Significant following Offset
<hr/> <b>Archaeological and Heritage Resources</b> <hr/>		
None anticipated	An uncontrolled disturbance to, or destruction of, any historical resource considered by the First Nations, provincial regulators or local residents to be of major importance.	Not Significant
<hr/> <b>Aboriginal Land and Resource Use</b> <hr/>		
Loss of future opportunities to harvest traditional terrestrial resources on portions of the property (there is currently no harvesting on the site)	Loss of fishing employment/income that could not be replaced within a reasonable time, loss of food resources not present in reasonable proximity to communities, or permanent loss of cultural relationship with the lands, flora and fauna.	Not Significant

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<b>VC and Residual Adverse Effects</b>	<b>Threshold for Determination of Significance</b>	<b>Significance of Residual Adverse Effect</b>
Harm to or dispersion of local wildlife; Potential depreciation of the quality of local food and medicinal plants; Potential degradation of the local marine and shoreline habitats	As above	Not Significant



### **13.0 ACRONYM LIST**

AAROM - Aboriginal Aquatic Resource and Oceans Management

ACCDC – Atlantic Canada Conservation Data Centre

AICFI - Atlantic Integrated Commercial Fisheries Initiative

APA - Atlantic Pilotage Authority

AQI – Air Quality Index

Amsl - above mean sea level

ARIA – Archaeological Resource Impact Assessment

ARTM – Atlantic Road and Traffic Management

asl – above sea level

bgs – below ground surface

BMP – Best Management Practice

BP – (Years) Before Present

CAC – Criteria Air Contaminants

CBA – Collaborative Benefits Agreement

CCG – Canadian Coast Guard

CCME – Canadian Council of Ministers of the Environment

CD – Chart Datum

CEAA – Canadian Environmental Assessment Act

*CEAA 2012 – Canadian Environmental Assessment Act, 2012*

CEA Agency – Canadian Environmental Assessment Agency

CEAR – Canadian Environmental Assessment Registry

CEPA – Canadian Environmental Protection Act

CHS – Canadian Hydrographic Services

CIS – Canadian Ice Service

CLC – Community Liaison Committee

CO – carbon monoxide

CO<sub>2</sub> – carbon dioxide

CO<sub>2</sub>e – carbon dioxide equivalent

COSEWIC – Committee on the Status of Endangered Wildlife in Canada

CRA – commercial, recreational, or Aboriginal

CSA – Canadian Standards Association

CSAS - Canadian Science Advisory Secretariat

CWS – Canadian Wildlife Service

DFO – Fisheries and Oceans Canada

DHV – Design Hourly Volume

DWA – Deer Wintering Areas

EA – Environmental Assessment

EC – Environnement Canada

ECAREG - Eastern Canada Vessel Traffic Services Zone

ECM – Environmental Compliance Monitoring

EEM – Environmental Effects Monitoring

EHS – Emergency Health Services

EIS – Environmental Impact Statement

ELC – Ecological Land Classification

EMP – Environmental Management Plan

EPP – Environmental Protection Plan

FN – First Nation

FWAL – Freshwater Aquatic Life

GASHA – Guysborough Antigonish Straight Health Authority

GCHA – Guysborough County Heritage Association

GCIFA - Guysborough County Inshore Fishermen's Association

GHG – Green House Gas

GHGMP – Greenhouse Gas Management Plan

GPS – Global Positioning System

GSC – Geological Survey of Canada

HADD – Harmful Alteration Disruption or Destruction

HASP – Health and Safety Plan

HSE – Health, Safety and Environment

IFMP - Integrated Fishery Management Plan

IMO – International Maritime Organization

ISO – International Standards Organization

JRCC - Joint Rescue Co-ordination Centre

KMK – Kwilmu'kw Maw-klusuaqn

Lat - Latitude

LFA – Lobster Fishing Area

LOA – Length Overall (boat specification)

Lon - Longitude

MBA – Maritimes Butterfly Atlas

MBBA – Maritime Breeding Birds Atlas

*MBCA – Migratory Birds Convention Act*

MCTS Marine Communications and Traffic Services

MEDS - Marine Environmental Data Service

MEKS – Mi'kmaq Ecological Knowledge Study

MODG – Municipality of the District of Guysborough

MOU – Memorandum of Understanding

MPA – Marine Protected Area

MRI - Marshall Response Initiative

MSDS – Materials Safety Data Sheets

MWL – Mean Low Water

NAFO – Northwest Atlantic Fisheries Organization

NB – New Brunswick

NBCC – National Building Code of Canada

NFPA – National Fire Protection Association

NH<sub>3</sub> – ammonia

NO<sub>2</sub> – nitrogen dioxide

NO<sub>x</sub> – nitrogen oxides

NPA – *Navigation Protection Act*

NPRI – National Pollutant Release Inventory

NRCAN – Natural Resources Canada

NS – Nova Scotia

NSDA – Nova Scotia Department of Agriculture

NSDAF – Nova Scotia Department of Aquaculture and Fisheries

NSDE – Nova Scotia Department of Energy

NSDNR – Nova Scotia Department of Natural Resources

NSDTCH – Nova Scotia Department of Tourism, Culture and Heritage

NSE – Nova Scotia Environment

NSEA – Nova Scotia *Environment Act*

NSEL – Nova Scotia Department of Environment and Labour

NSESA – Nova Scotia Endangered Species Act

NSF – Nova Scotia Department of Finance

NSFA – Nova Scotia Federation of Agriculture

NSGSAR - Nova Scotia's Ground Search and Rescue

NSMNH – Nova Scotia Museum of Natural History

NSPI – Nova Scotia Power Incorporated

NSTIR – Nova Scotia Department of Transportation and Infrastructure Renewal

NSUARB – Nova Scotia Utilities and Review Board

NSWA – Nova Scotia Wildlife Act

*NWPA – Navigable Waters Protection Act*

PAIR - Pre-Arrival Information Report

PID – Property Identification Number

PEI – Prince Edward Island

PEL – Probable Effects Level

PET - Potential Evapotranspiration

PIRI – Partners in RBCA (Risk-Based Corrective Action) Implementation (various countries; environmental program)

PM - Particulate Matter

PM<sub>10</sub> – PM with aerodynamic diameter less than a nominal 10 micrometers

PM<sub>2.5</sub> - PM with aerodynamic diameter less than a nominal 2.5 micrometers

POL – petroleum-oil-lubricant

RBCA – Atlantic Risk-Based Corrective Action

RMP – Risk Management Plan

ROW – Right-of-Way

SAR – Species at Risk

*SARA – Species at Risk Act*

SO<sub>2</sub> – sulphur dioxide

SO<sub>x</sub> – sulphur oxides

SOCC – Species of Conservation Concern

SPA – Scallop Production Area

SQG – Sediment Quality Guidelines

TAC – Total Allowable Catch

TC – Transport Canada

TERMPOL – Technical Review Process of Marine Terminal Systems in Transshipment Sites

the Agency – Canadian Environmental Assessment Agency

the Project – Black Point Quarry Project

the Proponent – Vulcan Materials Company

TOR – Terms of Reference

TRS – Total Reduced Sulphur

TSP – total suspended particulates

TSS – total suspended sediments

UNESCO – United Nations Educational, Scientific and Cultural Organization

US – United States

USACE – United States Army Corps of Engineers

USEPA – United States Environmental Protection Agency

UTM – Universal Transverse Mercator

VC – Valued Component

VOC - Volatile Organic Compound

VTS Vessel Traffic Services

WHMIS – Workplace Hazardous Materials Information System

WHO – World Health Organization

WMP – Waste Management Plan

WNS – White-Nose Syndrome

## 14.0 LIST OF UNITS

% - percent

µg/kg – micrograms per kilogram

µg/L – micrograms per litre

µg/m<sup>3</sup> – micrograms per cubic metre

µS/cm – microseimens per centimetre

µS/m – microseimens per metre

cm – centimetre

dB – decibels

dB (L<sub>A,max</sub>) – decibels (Maximum Sound Level)

dB (L<sub>eq</sub>) – decibels (Equivalent Sound Levels)

dB re 1 µPa – decibel micropascals

dB (A) – decibels (A-Weighted)

dB (Lin) – decibels (Unweighted)

dbh – diameter breast height

g/s – grams per second

ha – hectare

kg – kilogram

km – kilometre

km/h – kilometres per hour

km<sup>2</sup> – square kilometre

kVA – kiloVolts-amps

kW – kilowatt

kW/m<sup>2</sup> – kilowatt per square metre

L – litre

L/d – litres per day

Ldn – Day-night level

LMP – litres per minute

m – metre

m/s – metres per second

m<sup>2</sup> – square metres

m<sup>3</sup> – cubic metres

m<sup>3</sup>/d – cubic metres per day

m<sup>3</sup>/h – cubic metres per hour

mbar (g) – millibars (gauge)

mg/kg – milligrams per kilogram

mg/L – milligrams per litre

mg/m<sup>3</sup> – milligrams per cubic metre

mm – millimetre

Mt – million tonnes

Mtpa – million tonnes per annum

MW – megawatt

NTU – Nephelometric Turbidity Units

ng/L – nanograms per litre

°C – degrees Celsius

ppb – parts per billion

ppm – parts per million

ppmv – parts per million (volumetric)

ppt – parts per thousand

t – tonne (metric tonne)

t/d – tonnes per day

t/y – tonnes per year

V - volt

## 15.0 REFERENCES

- ACCDC: Atlantic Canada Conservation Data Centre. 2014. Maritime Butterfly Atlas. Retrieved from: <http://www.accdc.com/mba/index-mba.html>.
- ACZISC: Atlantic Coastal Zone Information Steering Committee. 1999. Workshop Report – Natural Disasters in the Coastal Zone and their Mitigation: Rising Sea levels, Hurricanes, storm surges and erosion.
- ACOA: Atlantic Canada Opportunities Agency. 2009. Guysborough County Profile.
- ACS: Archibald Consulting Services, LLC. 2009. Eastern US Seaboard Market Study. Prepared for Erdene Resources Development Corp. 21 pp.
- AECOM. 2014a. Black Point Quarry Project Description. Prepared for Morien Resources Corporation. February 2014. Project 60314716.
- AECOM. 2014b. Technical Memorandum: Black Point Hydrogeology June and July, 2014 Field Program.
- AECOM. 2014c. Technical Memorandum: Black Point Hydrogeology August, 2014 Field Program.
- AFN: Assembly of First Nations. 2011. Marketing/International Trade – Barriers, Opportunities, and Best Practices. Overview of First Nation Fisheries and Policy Considerations. 20 pp.
- AMEC. 2006. Environmental Assessment. Keltic Petrochemicals Inc. Goldboro, Nova Scotia. Project No. TV61029.
- AMEC. 2008. Environmental Impact Statement (EIS) for the Proposed Melford International Terminal Final Report. Submitted to Nova Scotia Environment and CEEA.
- AMEC. 2011. Black Point Baseline Ecological Surveys Summary Report. Erdene Resource Development Corporation.
- AMEC. 2013. Environmental Impact Assessment Report (Class II Undertaking) Goldboro LNG Project. Natural Gas Liquefaction Plant and Marine Terminal Pieridae Energy Canada Ltd.
- APA: Atlantic Pilotage Authority. 2013. Compulsory Areas. Website accessed August 2014. <https://www.atlanticpilotage.com/eng/compulsory-areas/strait-of-canso.html>. Copyright 2013.
- APCFNC: Atlantic Policy Congress of First Nations Chiefs. 2009. Marshall 10 Years Later: Atlantic and Gaspé First Nations Participation in Fisheries. 49 pp. [www.apcfnc.ca/en/fisheries/resources/Marshall10years.pdf](http://www.apcfnc.ca/en/fisheries/resources/Marshall10years.pdf).
- Beale, C.M. 2007. The behavioural ecology of disturbance responses. *International Journal of Comparative Psychology* 20:111-120.

- Bigelow, H.B. and Schroeder, W.C. 2002. Fishes of the Gulf of Maine. United States Department of the Interior – Fish and Wildlife Service. Fishery Bulletin of the Fish and Wildlife Service, Volume 53.< <http://gma.org/fogm/Default.htm> > 2014-09-26.
- Bird Studies Canada. 2015. Atlantic Canada Shorebird Survey. Data accessed from NatureCounts, a node of the Avian Knowledge Network, Bird Studies Canada. Available: <http://www.naturecounts.ca/>. Accessed: 12 January 2015.
- Blumstein, D.E. Fernandez-Juricic, P. Zollner, and S. Garity. 2005. Inter-specific variation in avian responses to human disturbance. *Journal of Applied Ecology* 42:943-953.
- Bolduc, F., and M. Guillemette. 2003. Human disturbance and nesting success of Common Eiders: interaction between visitors and Gulls. *Biological Conservation* 110:77-83.
- Boudreau, V., and Social Research for Sustainable Fisheries (SRSF). 2001. Fishing for a living: a profile of the Guysborough County inshore fisheries. Canso, NS. Internet publication: <http://www.gcifa.ns.ca/Docs/fishing.doc>.
- Bramford, A.R., Davies, S.J.J.F., & Van Delft, R. 1990. The effects of model power on boats on waterbirds at Herman Lake, Perth, Western Australia. *Emu*, 90, 260-265.
- Broders, H.G., G.M. Quinn, and G.J. Forbes. 2003. Species Status, and the Spatial and Temporal Patterns of Activity of Bats in Southwest Nova Scotia, Canada. *Northeastern Naturalist* 10:383-398.
- Brown, A.L. 1990. Measuring the effect of aircraft noise on sea birds. *Environment International* 16: 587-592.
- Burger, J. 1981. Behavioral responses of Herring Gulls (*Larus argentatus*) to aircraft noise. *Environmental Pollution Series A*, 24: 177-184.
- Burger, J., M. Gochfeld, C. Jenkins, and F. Lesser. 2010. Effect of approaching boats on nesting Black Skimmers: using response distances to establish protective buffer zones. *Journal of Wildlife Management* 74:102-108.
- Canadian Biodiversity Information Facility (CBIF). 2014-04-15. Integrated Taxonomic Information System – Search Records. <<http://www.cbif.gc.ca/acp/eng/itis/search>> 2014-09-26.
- Canadian Environmental Assessment Act. Prepared by the Federal Environmental Assessment Review Office. 16 99.
- Carney, K. M., and W.J. Sydeman. 1999. A review of human disturbance effects on nesting colonial waterbirds. *Waterbirds* 22:68-79.
- CBCL: CBCL Limited. 2010. Black Point Quarry Marine Facility, Review of Engineering Study February 2010.
- CBDC: Community Business Development Corporation. 2013. Guysborough County Community Business Development Corporation Limited Annual Report. <http://www.cbdc.ca/ns/uploads/file/Final%20Annual%20Report-june2013.pdf>. Webpage Accessed September 28, 2014.

- CCD: Canadian Church Directory. 2014.  
<http://churchdirectory.ca/browse/?p=NS&a=&c=Guysborough>.  
Webpage accessed on September 17, 2014.
- CCG: Canadian Coast Guard. 1981. TEMPOL Assessment of Melford Point. Volume 2. Transport Canada Canadian Coast Guard Office of the Commissioner. 400 pp.
- CCG: Canadian Coast Guard. 2012. Ice Navigation in Canadian Waters: Chapter 3 Ice Climatology and Environmental Conditions. Icebreaking Program, Maritime Services, Canadian Coast Guard, Fisheries and Oceans Canada. 165 pp.
- CCG: Canadian Coast Guard. 2014. Maritime Region – Search and Rescue. Retrieved from: <http://www.ccg-gcc.gc.ca/Search-and-Rescue-Maritimes>. Webpage accessed September 24, 2014.
- CCME: Canadian Council of the Ministers of the Environment. 1999a. Canadian Environmental Quality Guidelines. Retrieved from: [http://www.ccme.ca/en/resources/canadian\\_environmental\\_quality\\_guidelines/index.html](http://www.ccme.ca/en/resources/canadian_environmental_quality_guidelines/index.html)
- CCME: Canadian Council of the Ministers of the Environment. 1999b. Canadian Environmental Soil Quality Guidelines for Protection of the Environment and Human Health: Industrial/Commercial. Retrieved from: <http://st-ts.ccme.ca/en/index.html?chems=all&chapters=4&pdf=1>
- CCME: Canadian Council of Ministers of the Environment. 2000. Canada-Wide Standards for Particulate Matter (PM) and Ozone. Retrieved from: [http://www.ccme.ca/assets/pdf/pmozzone\\_standard\\_e.pdf](http://www.ccme.ca/assets/pdf/pmozzone_standard_e.pdf)
- CCME: Canadian Council of Ministers of the Environment. 2001. Canadian Sediment Quality Guidelines for the Protection of Aquatic Life. Retrieved from: [http://www.ccme.ca/en/resources/canadian\\_environmental\\_quality\\_guidelines/index.html](http://www.ccme.ca/en/resources/canadian_environmental_quality_guidelines/index.html)
- CCME: Canadian Council of Ministers of the Environment. 2010. Canada-wide Standards for Particulate Matter (PM) and Ozone Endorsed by CCME Council of Ministers, June 5-6, 2000, Quebec City. 11 pp.
- CCME: Canadian Council of the Ministers of the Environment. 2012. Canadian Environmental Quality Guidelines - Canadian Water Quality Guidelines. Retrieved from: [http://www.ccme.ca/en/resources/canadian\\_environmental\\_quality\\_guidelines/index.html](http://www.ccme.ca/en/resources/canadian_environmental_quality_guidelines/index.html)
- CEA Agency: Canadian Environmental Assessment Agency. 1994. Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects.
- CEA Agency: Canadian Environmental Assessment Agency. 2013a. Operation Policy Statement Assessing Cumulative Environmental Effects Under The Canadian Environmental Assessment Act, 2012. Retrieved from: [https://www.ceaa-acee.gc.ca/Content/1/D/A/1DA9E048-4B72-49FA-B585-B340E81DD6AE/CEA\\_OPS\\_May\\_2013-eng.pdf](https://www.ceaa-acee.gc.ca/Content/1/D/A/1DA9E048-4B72-49FA-B585-B340E81DD6AE/CEA_OPS_May_2013-eng.pdf)

- CEA Agency: Canadian Environmental Assessment Agency. 2013b. Addressing "Purpose of" and Alternative Means" under the Canadian Environmental Assessment Act, 2012. website <http://www.ceaa-acee.gc.ca/default.asp?lang=En&n=1B095C22-1> December 2013 last updated 2014-06-26.
- CEA Agency: Canadian Environmental Assessment Agency / The Province of Nova Scotia. Updated 2014. Guidelines for the Preparation of an Environmental Impact Statement pursuant to the Canadian Environmental Assessment Act, 2012 and Nova Scotia Registration Document pursuant to the Nova Scotia Environment Act, Black Point Quarry Project (June 2014). 40 pp.
- Cooper, T., Hickey, T. Sock, L., G. Hare and B. Milliea. 2010. Critical Success Factors in the First Nations Fisheries of Atlantic Canada: Mi'kmaq and Maliseet Perceptions. The Atlantic Aboriginal Economic Development Integrated Research Program, AAEDIRP. 147 pp.
- CSAS: Canadian Science Advisory Secretariat. 2013. ASSESSMENT OF NOVA SCOTIA (4VWX) SNOW CRAB Maritimes Region Science Advisory Report 2013/060. Fisheries and Oceans Canada.
- Dalton, P. 2011. Field Report – Acid Rock Drainage Potential. Prepared for Erdene Resource Development. 7 pp.
- DFO: Fisheries and Oceans Canada. 1998. Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters. Retrieved from:<http://www.dfo-mpo.gc.ca/Library/232046.pdf>
- DFO: Fisheries and Oceans Canada. 2000a. Stock Status Report C3-49 (2000) Maritimes Region – Southwestern New Brunswick (LFA 36-38) Green Sea Urchins. < <http://www.dfo-mpo.gc.ca/csas/csas/status/2000/c3-49e.PDF> > 2014-09-26.
- DFO: Fisheries and Oceans Canada. 2000b. Stock Status Report C3-48 (2000) Maritimes Region – Nova Scotia Green Sea Urchins. 2014-09-26.
- DFO: Fisheries and Oceans Canada. 2003. Strengthening Our Relationship: The Aboriginal Fisheries Strategy and Beyond. Retrieved from:<http://www.dfo-mpo.gc.ca/fm-gp/aboriginal-autochtones/afs/afsoct03-eng.htm>
- DFO: Fisheries and Oceans Canada. 2004. Eastern Shore Lobster (LFAs 31A, 31B, 32). Stock Status Report 2004/033. 8 pp.
- DFO: Fisheries and Oceans Canada. 2005. The Scotian Shelf: An Atlas of Human Activities. Oceans and Coastal Management Division, Oceans and Habitat Branch.
- DFO: Fisheries and Oceans Canada. 2008a. State of the Ocean 2007: Physical Oceanographic Conditions on the Scotian Shelf, Bay of Fundy and Gulf of Maine. Sci. Advis. Sec. Sci. Advis. Rep. 2008/025.

- DFO: Fisheries and Oceans Canada. 2008b. Aquatic Species at Risk – Harbour Porpoise (Atlantic). Accessed: September 2014. <http://www.dfo-mpo.gc.ca/species-especes/species-especes/harbourporpoiseAtl-marsouinat-eng.htm>
- DFO: Fisheries and Oceans Canada. 2008c. Aboriginal Aquatic Resource and Oceans Management Program <http://www.dfo-mpo.gc.ca/fm-gp/aboriginal-autochtones/aarom-pagrao/index-eng.htm> Accessed August 2014; last modified 2012-09-13.
- DFO: Fisheries and Oceans Canada. 2010a. Aquatic Species – Details for Grey Seal. Accessed: September 2014. <http://www.dfo-mpo.gc.ca/species-especes/aquatic-aquatique/grey-seal-phoque-gris-eng.htm>
- DFO: Fisheries and Oceans Canada. 2010b. Aquatic Species – Details for Green Sea Urchin. <http://www.dfo-mpo.gc.ca/species-especes/aquatic-aquatique/green-sea-urchin-oursin-vert-eng.htm> > 2014-09-26.
- DFO: Fisheries and Oceans Canada. 2011a. About Harbour Authorities. <http://www.dfo-mpo.gc.ca/sch-ppb/aboutha-aproposap-eng.htm> Last modified 2011-07-08.
- DFO: Fisheries and Oceans Canada. 2011b. Assessment of Lobster Off the Atlantic Coast of Nova Scotia (LFAs 27-33) CSAS Science Advisory Report 2011/064 25 pp.
- DFO: Fisheries and Oceans Canada. 2011c. The Scotian Shelf in Context. State of the Scotian Shelf Report. Oceans and Coastal Management Division. 67 pp.
- DFO: Fisheries and Oceans Canada. 2012a. Marine Protected Area Network Planning in the Scotian Shelf Bioregion: Objectives, Data, and Methods. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2012/064. 19 pp.
- DFO: Fisheries and Oceans Canada. 2012b. The Scotian Shelf in Context. <http://coinatlantic.ca/docs/scotian-shelf-in-context.pdf>. 67 pp.
- DFO: Fisheries and Oceans Canada. 2013a. Aquatic Species at Risk – Fin Whale (Atlantic). Accessed: September 2014. <http://www.dfo-mpo.gc.ca/species-especes/species-especes/finwhale-atlantic-rorqual-commun-atlantique-eng.htm>.
- DFO: Fisheries and Oceans Canada. 2013. Fisheries Protection Policy Statement. Retrieved from: <http://www.dfo-mpo.gc.ca/pnw-ppe/pol/PolicyStatement-EnoncePolitique-eng.pdf>
- DFO: Fisheries and Oceans Canada. 2013. Changes to the Fisheries Act. Retrieved from: <http://www.dfo-mpo.gc.ca/pnw-ppe/changes-changements/index-eng.html>
- DFO: Fisheries and Oceans Canada. 2013. Fisheries Productivity Investment Policy: A Proponents Guide to Offsetting. Retrieved from: <http://www.dfo-mpo.gc.ca/pnw-ppe/offsetting-guide-compensation/index-eng.html>
- DFO: Fisheries and Oceans Canada. 2013. Commercial Data Division, Policy and Economics Branch Data Request: CDD20130066. September 2014.

- DFO: Fisheries and Oceans Canada. 2013. Underwater World – Northern Shrimp. <<http://www.dfo-mpo.gc.ca/science/publications/uww-msm/articles/northernshrimp-crevettenorique-eng.html>> 2014-09-26.
- DFO: Fisheries and Oceans Canada. 2013. Underwater World – Snow Crab. <<http://www.dfo-mpo.gc.ca/Science/publications/uww-msm/articles/snowcrab-crabedesneiges-eng.html>> 2014-09-26.
- DFO: Fisheries and Oceans Canada. 2014a. Integrated Fisheries Management Plans. Website accessed July 2014: <http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/ifmp-gmp/index-eng.htm> Last modified 2014 08 12.
- DFO: Fisheries and Oceans Canada. 2014b. Shrimp (*Pandalus borealis*) - Scotian Shelf - As of 2013 (Integrated Fisheries Management Plan) <http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/ifmp-gmp/shrimp-crevette/shrimp-crevette-2013-eng.htm>Date modified: 2014-05-08.
- DFO: Fisheries and Oceans Canada. 2014c. Canadian Atlantic Herring Southwest Nova Scotia Rebuilding Plan – Atlantic Canada 2013.
- DFO: Fisheries and Oceans Canada. 2014d. Bluefin Tuna Management in Atlantic Canada. Webpage <http://www.dfo-mpo.gc.ca/international/tuna-thon/bluefin-mgt-gestion-rouge-eng.htm> Accessed August 2014. Last modified 2014-01-06.
- DFO: Fisheries and Oceans Canada. 2014. Shrimp. <<http://www.dfo-mpo.gc.ca/fm-gp/sustainable-durable/fisheries-peches/shrimp-crevette-eng.htm>> 2014-09-26.
- DFO: Fisheries and Oceans Canada. 2014. Snow Crab. <<http://www.dfo-mpo.gc.ca/fm-gp/sustainable-durable/fisheries-peches/snow-crab-eng.htm>> 2014-09-26.
- Di Cesare F. 2006. Ambient Air Quality in Nova Scotia. Air Quality Branch, Nova Scotia Environment and Labour. 20 pp.
- DMA: Davis MacIntyre & Associates Limited. 2011. Fogherty Head Project: Archaeological Resources Impact Assessment (Heritage Research Permit A2011NS67). July 2011.
- DMA: Davis MacIntyre & Associates Limited. 2014. Black Point Quarry 2014: Archeological Resource Impact Assessment Heritage Research Permit A2014NS099 Category C. Project No. 14-033.1SLR.
- Doherty, P. and T. Horsman. 2007. Ecologically and Biologically Significant Areas of the Scotian Shelf and Environs: A Compilation of Scientific Expert Opinion. Can. Tech. Rep. Fish. Aquat. Sci. 2774: 57 + xii pp.
- Doyle-Bedwell, P., Cohen, F.G. 2001. Aboriginal peoples in Canada: their role in shaping environmental trends in the twenty-first century. In: Parson, E.A. (Ed.), Governing the Environment: Persistent Challenges, Uncertain Innovation. University of Toronto, Toronto, Canada.

- Dummer, T.J.B., Yu, Z.M., Nauta, L., Murimboh, J.D. and Parker, L. 2014. Geostatistical modelling of arsenic in drinking water wells and related toenail arsenic concentrations across Nova Scotia, Canada.
- EAC: Ecology Action Centre. 2012. Chedabucto Bay Trap Caught Shrimp Recognized for Sustainability and Quality; Fishermen Benefit Financially. Posted by Miles Howe, March 29, 2012. Webpage accessed September 2014. <http://halifax.mediacoop.ca/newsrelease/10353>
- EC: Environment Canada. 1994. Guidance Document on Collection and Preparation of Sediments for Physiochemical Characterization and Biological Testing. Webpage Accessed Oct 3, 2014
- EC. Environment Canada. 1996. The Federal Policy on Wetland Conservation – Implementation Guide for Federal Land Managers.
- EC: Environment Canada. 1998. National Guidelines for Monitoring Dredged and Excavated Material at Ocean Disposal Sites. Retrieved from [http://publications.gc.ca/collections/collection\\_2014/ec/En40-573-1999-eng.pdf](http://publications.gc.ca/collections/collection_2014/ec/En40-573-1999-eng.pdf)
- EC: Environment Canada. 1999. Disposal at Sea Permit No. 4543-2-06754. Retrieved from: [http://www.ec.gc.ca/lcpe-cepa/0A968D70-3D0A-4B0A-99D1-1FD38F91FB8B/4543-2-04394\\_eng.pdf](http://www.ec.gc.ca/lcpe-cepa/0A968D70-3D0A-4B0A-99D1-1FD38F91FB8B/4543-2-04394_eng.pdf)
- EC: Environment Canada. 2006a. Atlantic Climate Centre: The Climate of Nova Scotia Retrieved from: <http://atlantic-web1.ns.ec.gc.ca/climatecentre/default.asp?lang=En&n=61405176-1>
- EC: Environment Canada. 2006b. Atlantic Canada Wastewater Guidelines Manual for Collection, Treatment and Disposal. Retrieved from: <https://www.novascotia.ca/nse/water/docs/AtlCanStdGuideSewage.pdf>
- EC: Environment Canada. 2007. Management Plan for the Harlequin Duck (*Histrionicus histrionicus*) Eastern Population, in Atlantic Canada and Québec. Species at Risk Act Management Plan Series. Environment Canada. Ottawa. vii + 32 pp.
- EC: Environment Canada. 2009. Canadian Climatic Normals or Averages 1971-2000. Web page. Accessed January 2011 from: [http://www.climate.weatheroffice.ec.gc.ca/climate\\_normals/index\\_e.html](http://www.climate.weatheroffice.ec.gc.ca/climate_normals/index_e.html).
- EC: Environment Canada. 2013a. 10 Years of Data from the National Air Pollution Surveillance (NAPS) Network: Data Summary from 1999-2008.
- EC. Environment Canada. 2013b. About Wetlands. Updated May 16, 2013. Available online at: [http://www.ec.gc.ca/tho-wlo/default.asp?lang=En&n=B4669525-1#\\_definitions](http://www.ec.gc.ca/tho-wlo/default.asp?lang=En&n=B4669525-1#_definitions). Accessed September, 2014.
- EC: Environment Canada. 2013. Guidelines to Avoid Disturbance to Seabird and Waterbird Colonies in Canada. Retrieved from: <https://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=E3167D46-1>.

- EC: Environment Canada. 2013. Guide for Reporting to the National Pollutant Release Inventory under the Canadian Environmental Protection Act, 1999. Retrieved from:  
[http://ec.gc.ca/Publications/40876B47-097F-4986-BADB-3776ED3097AB/2012-2013\\_NPRI\\_Guide.pdf](http://ec.gc.ca/Publications/40876B47-097F-4986-BADB-3776ED3097AB/2012-2013_NPRI_Guide.pdf)
- EC: Environment Canada. 2013. National Air Pollution Surveillance (NAPS) Network Monitoring Results. Accessed January 2014. <http://maps-cartes.ec.gc.ca/rnspa-naps/data.aspx?lang=en>.
- EC: Environment Canada 2014a. 'Canadian Climate Normals 1971-2000 Station Data.' Website accessed July 2014. [http://climate.weather.gc.ca/climate\\_normals/index\\_e.html](http://climate.weather.gc.ca/climate_normals/index_e.html). Last modified 2014-02-27.
- EC: Environment Canada. 2014b. Climate and Historical Weather. Meteorological Service of Canada Website accessed August 2014: <http://www.ec.gc.ca/meteo-weather/default.asp?lang=En&n=17A7AAB9-1> Last updated 2014-04-17.
- EC: Environment Canada. 2014c. Guidelines to Avoid Disturbance to Seabird and Waterbird Colonies in Canada. [https://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=E3167D46-1#\\_008](https://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=E3167D46-1#_008). Accessed 24 September 2014.
- EC: Environment Canada. 2014d. Nova Scotia Provincial Statistics (Hurricanes) website accessed January 2015 (Link: <http://www.ec.gc.ca/Hurricane/default.asp?lang=En&n=2281E83C-1>)
- EC: Environment Canada. 2014e. Best practices for stranded birds encountered offshore Atlantic Canada. Draft - July 2014. EC: Environment Canada. 2014f. General Nesting Periods of Migratory Birds in Canada. [https://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=4F39A78F-1#\\_01\\_0\\_1](https://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=4F39A78F-1#_01_0_1). Accessed 19 January 2015.
- EC-CWS: Environment Canada, Canadian Wildlife Service. Atlantic Region. 2014. Colonial Waterbird Database.
- ECSAS: Eastern Canadian Seabirds at Sea. 2014. Eastern Canadian Seabirds at Sea Database maintained by EC-CWS.
- EL: Environmental Laboratory. 1987. Corps of Engineers Wetland Delineation Manual. Technical Report Y-87-1. US Army Engineer Waterways Experiment Station. Vicksburg, Mississippi.
- ERDC: Erdene Resource Development Corporation. 2011. Black Point Quarry Scoping Study.
- Erickson, W.P., Johnson, G.D. and Young, D.P. Jr. 2005. A summary and comparison of bird mortality from anthropogenic causes with an emphasis on collisions. In: Ralph, C.J. and Rich, T.D., editors. 2005. Bird Conservation Implementation and Integration in the Americas: Proceedings of the Third International Partners in Flight Conference. 2002 March 20-24; Asilomar, California, Volume 2 Gen. Tech. Rep. PSW-GTR-191. Albany, CA: U.S. Dept. of Agriculture, Forest Service, Pacific Southwest Research Station: p. 1029-1042.

- Fader, G.B.J. 2005. Glacial, Post Glacial, Present and Projected Seal Levels, Bay of Fundy. Atlantic Marine Geological Consulting Ltd. 20pp. Accessed on October 3, 2014.
- Farmzone. 2014. Weather Statistics by Month; Canso Nova Scotia. The Weather Network – Pelmorex Media Inc. Accessed July 2014:  
<http://www.farmzone.com/statistics/precipitation/cl8205193/ma018>. Copyright 2014.
- Fogarty Family. 2014. Environmental Impact Statement Response. Proposed Black Point Quarry Project, CEAA File # 80064.
- Ford, K.L. and S.B Ballantyne. 1983. Uranium and Thorium Distribution Patterns and Lithogeochemistry of Devonian Granites in the Chedabucto Bay area, Nova Scotia; *in* Current Research, Geological Survey of Canada, Paper 83-1A, p. 109-119.
- GALA: Guysborough County Adult Learning Association. 2012. Retrieved from:  
<http://www.guysboroughlearning.ca/index.htm>.
- Gardner M, MacAskill G and DeBow C. 2009. Economic Impact of the Nova Scotia Ocean Sector 2002-2006. Prepared for Fisheries and Oceans Canada and Nova Scotia Government. 27 pp.
- GASHA: Guysborough Antigonish Straight Health Authority. 2014. Retrieved from:  
<http://www.gasha.nshealth.ca/programs>.
- Gaston, K.J., T.W. Davies, J. Bennie and J. Hopkins. 2012. Reducing the ecological consequences of night-time light pollution: options and developments. *Journal of Applied Ecology*, 49, 1256–1266.
- GC: Government of Canada. 1991. The Federal Policy on Wetland Conservation. 15 pp.
- GC: Government of Canada. 2010. Fire Protection Standard. Retrieved from:  
<http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=17316&section=text>
- GC: Government of Canada. 2013a. Applications for Authorization under Paragraph 35 (2)(b) of the Fisheries Act Regulations. Retrieved from: <http://laws.justice.gc.ca/PDF/SOR-2013-191.pdf>.
- GC: Government of Canada. 2013b. Updated Guidelines for Federal Officials to Fulfill the Duty to Consult. Retrieved from:[http://www.aadnc-aandc.gc.ca/DAM/DAM-INTER-HQ/STAGING/texte-text/intgui\\_1100100014665\\_eng.pdf](http://www.aadnc-aandc.gc.ca/DAM/DAM-INTER-HQ/STAGING/texte-text/intgui_1100100014665_eng.pdf).
- GC: Government of Canada. 2015. Climate Website. Historical Climate Data. Date modified 2015-01-12. Hart Island and Eddy Point data accessed February 2015.  
[http://climate.weather.gc.ca/advanceSearch/searchHistoricDataStations\\_e.html?searchType=stnProv&timeframe=1&lstProvince=NS&optLimit=yearRange&StartYear=1840&EndYear=2015&Year=2015&Month=2&Day=3&selRowPerPage=25&cmdProvSubmit=Search&startRow=76](http://climate.weather.gc.ca/advanceSearch/searchHistoricDataStations_e.html?searchType=stnProv&timeframe=1&lstProvince=NS&optLimit=yearRange&StartYear=1840&EndYear=2015&Year=2015&Month=2&Day=3&selRowPerPage=25&cmdProvSubmit=Search&startRow=76)
- GCIFA: Guysborough County Inshore Fisherman’s Association. 2013. Research Working Document – Trends and Projections Lobster Fishing Areas 31A and 31B.

- GCIFA: Guysborough County Inshore Fisherman Association (GCIFA). 2014a. Fisheries. <http://www.gcifa.ns.ca/Fisheries.html>. Webpage accessed September 22, 2014.
- GCIFA: Guysborough County Inshore Fishermen's Association. 2014b. Letter to CEA Agency March 27, 2014.
- GCIFA: Guysborough County Inshore Fishermen's Association. 2014c. Webpage: Research. <http://www.gcifa.ns.ca/Research.html> Copyright 2014. Accessed August 2014.
- GHS: Guysborough Historical Society. N.D. Old Court House Museum. Retrieved from: <http://www.guysboroughhistoricalsociety.ca/courthouse-museum.htm>.
- Gilhen, J. 1984. Amphibians and Reptiles of Nova Scotia. Nova Scotia Museum. Halifax, Nova Scotia. 162 pp.
- GNL: Government of Newfoundland and Labrador – Department of Fisheries and Aquaculture. 2002. Rock Crab. < [http://www.fishaq.gov.nl.ca/research\\_development/fdp/rock\\_crab.pdf](http://www.fishaq.gov.nl.ca/research_development/fdp/rock_crab.pdf) > 2014-09-26.
- GNS: Government of Nova Scotia. 2009. Proponent's Guide: Engagement with the Mi'kmaq of Nova Scotia. Retrieved from: <http://www.novascotia.ca/abor/docs/proponants-guide.pdf>
- GNS: Government of Nova Scotia. 2011. Nova Scotia Community Counts: Community Profile. Retrieved from: <http://www.novascotia.ca/finance/communitycounts/profiles/community>. Webpage Accessed on September 22, 2014.
- GNS: Government of Nova Scotia. 2013. Nova Scotia Department of Economic and Rural Development and Tourism. Retrieved from: <http://novascotia.ca/econ/overview/> . Accessed on September 22, 2014.
- GNS: Government of Nova Scotia. 2014a. Finance and Treasury Board. Retrieved from: <http://www.novascotia.ca/finance/statistics/analysis/default.asp?id=1&sid=5>. Webpage Accessed on September 26, 2014.
- GNS: Government of Nova Scotia. 2014b. Community Counts. Retrieved from: <http://www.novascotia.ca/finance/communitycounts/topicview.asp>. Webpage Accessed on September 18, 2014.
- GNS: Government of Nova Scotia. 2014c. Emergency Management Office. Retrieved from: [http://novascotia.ca/dma/EMO/ground\\_search\\_rescue/](http://novascotia.ca/dma/EMO/ground_search_rescue/). Webpage Accessed on September 24, 2014.
- GNS: Government of Nova Scotia. 2014d. Transportation. Retrieved from: <http://novascotia.ca/tran/hottopics/ferries.asp>. Webpage Accessed on September 27, 2014.
- GNS: Government of Nova Scotia. 2014e. Nova Scotia Outdoor Activities: Queensport Beach. Retrieved from: <http://www.novascotia.com/see-do/outdoor-activities/queensport-beach>. Webpage accessed September 22, 2014.

- GNS: Government of Nova Scotia. 2014f. Nova Scotia Outdoor Activities: Chapel Gully Trail. Retrieved from: <http://www.novascotia.com/see-do/outdoor-activities/chapel-gully-trail>. Webpage Accessed on September 22, 2014.
- GNS: Government of Nova Scotia. 2014g. Nova Scotia Places to Stay: Campgrounds. Retrieved from: <http://www.novascotia.com/places-to-stay/campgrounds/boylston-provincial-park>. Webpage accessed September 22, 2014.
- GNS: Government of Nova Scotia. 2014. Nova Scotia Attractions, Canso Museum: Whitman House. Retrieved from: <http://www.novascotia.com/see-do/attractions/canso-museum-whitman-house>. Webpage Accessed on September 22, 2014.
- GNS: Government of Nova Scotia. 2014. Nova Scotia Outdoor Activities: Black Duck Cove Provincial Park. Retrieved from: <http://www.novascotia.com/see-do/outdoor-activities/black-duck-cove-provincial-park>. Webpage accessed September 22, 2014.
- GNS: Government of Nova Scotia. Not Dated (n.d.). Guysborough County Profile of Agricultural Land Resources. Retrieved from: <http://novascotia.ca/agri/documents/business-research/AL1014%20Guysborough.pdf>. Webpage accessed September 25, 2014.
- Goudie, R. I., G. J. Robertson and A. Reed. 2000. Common Eider (*Somateria mollissima*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/546> doi:10.2173/bna.546
- GP: Gardner Pinfold Consulting Economists Ltd. 2006. Profile of the Atlantic Shrimp Industry. The Atlantic Council of Fisheries and Aquaculture Ministers (ACFAM) –Task Group on Northern Shrimp. 52 pp.
- GP: Gardner Pinfold Consulting Economists Ltd. 2010. Black Point Quarry Economic Impact Analysis. Prepared for Erdene Resource Development Corporation. November 2010.
- GP: Gardner Pinfold Consulting Economists Ltd. 2011. Application Order for the Dissolution of the Town of Canso- A Socio-Economic Profile. Prepared for the Municipality of the District of Guysborough, October 24, 2011.
- Greenlaw, M.E. 2009. A Classification of Coastal Inlets of Mainland Nova Scotia, Using Geophysical Information to Define Ecological Representation and to Evaluate Existing and Proposed Protected Areas. M.Sc. Thesis Manuscript, Acadia University
- Gromack, A.G., K. Allard, D. Fenton, S. Johnston, and J. Ford. 2010. Ecological and Human Use Information for Twenty Areas on the Atlantic Coast of Nova Scotia in Support of Conservation Planning. Can. Tech. Report. Fish. Aquatic. Sci. 2880: xiv + 226 p.
- Hart, H.C. 1877. History of the County of Guysborough. Belleville Ont.: Mika Publishing. Reprinted 1975.
- Hastings, K., M. King, and K. Allard. 2014. Ecologically and Biologically Significant Areas in the Atlantic Coastal Region of Nova Scotia. Can. Tech. Rep. Fish. Aquat. Sci. 3107: xii + 174 p. in preparation.

- Hatcher, B.G., MacDougall, J. and G. Pardy. 2013. Spatially Explicit Assessment of the Commercial Fishery Yields, Productivity and Fishing Activities in the Area of the Donkin Export Coking coal Transshipment Project. Bras d'Or Institute for Ecosystem Research, Cape Breton University. 51pp.
- HC: Health Canada. 2010. Useful Information for Environmental Assessments. Retrieved from: [http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/environ\\_assess-eval/index-eng.php](http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/environ_assess-eval/index-eng.php)
- HC: Health Canada. 2012. Guidelines for Canadian Drinking Water Quality – Summary Table. Water, Air, and Climate Change Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.
- Herbert, D., R. Pettipas, D. Brickman, and M. Dever. 2012. Meteorological, Sea Ice and Physical Oceanographic Conditions on the Scotian Shelf and in the Gulf of Maine during 2012. Ocean and Ecosystem Sciences Division Bedford Institute of Oceanography P.O. Box 1006, 1 Challenger Drive Dartmouth, Nova Scotia B2Y 4A2
- Hilchey, J.D., Cann, D.B. and J.I. MacDougall. 1964. Soil Survey of Guysborough County, Nova Scotia. Report No. 14, Nova Scotia Soil Survey. Canada Department of Agriculture and Nova Scotia Depart of Agriculture and Marketing. 56 pp
- Hill, J.D. 1991. Petrology, Tectonite Setting, and Economic Potential of Devonian Peraluminous Granitoid Plutons in the Canso and Forest Hill Areas, Eastern Meguma Terrane, Nova Scotia. Energy Mines and Resources Canada.
- Hooper, W.C., McCabe, L. and Robertson T. 1995. A Standardized Fisheries Stream Survey Approach for Atlantic Canada. Department of Natural Resources and Energy. Fredericton, New Brunswick.
- IBA: Important Bird Areas in Canada. 2014. <http://www.ibacanada.ca>. Accessed 18 September 2014.
- ISANS: Invasive Species Alliance of Nova Scotia. 2011. Retrieved from: <http://www.invasivespeciesns.ca/>. Accessed on October 3, 2014
- IRNS: Immigrate to Rural Nova Scotia – Community Profile – Guysborough County. 2008. Webpage Accessed September 29, 2014.
- JWEL: Jacques Whitford Environmental Limited. 2004. Environmental Assessment for the Proposed Bear Head LNG Terminal, Bear Head Nova Scotia. Prepared for Access Northeast Energy Ltd.
- King, L.H. and Fader, G.B.J. 1988: Late Wisconsinan Ice on the Scotian Shelf; Geological Survey of Canada. Open File No. 1972, 20 pp.
- Koeller, P., Covey, M. and M. King. 2007, Biological and Environmental Requisites for a Successful Trap Fishery of the Northern Shrimp *Pandalus borealis*. Proc. N.S. Inst. Sci. (2007) Volume 44, Part 1, pp. 51-71.

- Koloski, J.W., Schwarz, S.D. and D.W. Tubbs. 1989. Geotechnical Properties of Geological Materials. Engineering Geology on Washington, Vol. 1. Washington Division of Geology and Earth Resources Bulletin 78.
- Kronfeld, J.; Godfrey-Smith, D.I.; Johannessen, D.; Zentilli, M. 2004. Uranium Series Isotopes in the Avon Valley, Nova Scotia.
- Larkin, R.P. 1996. Effects of military noise on wildlife: a literature review. US Army Construction Engineering Research Laboratories Technical Report 96/21. January 1996.LC: Lions Club - District N2-Lions of Nova Scotia. 2014. <http://www.e-district.org/sites/n2/page-8.php>. Webpage accessed September 26, 2014.
- Lawrence, D. J. 1979. Flow Patterns in Chedabucto Bay, Nova Scotia. Atlantic Oceanographic Laboratory, Bedford Institute of Oceanography, Dartmouth, Nova Scotia in Canso Marine Environment Workshop Part 4 of 4 Parts Physical Oceanography and Environmental Effects F.D. McCracken Editor (1979).
- Lemontagne, M., Halchuk, S., Cassidy, J.F., and G.C. Rogers. 2007. Significant Canadian Earthquakes 1600-2006. Geological Survey of Canada Open File 5539. 32 pp.
- MacAndrew, J. 2014. The Shrimp Fishery of Chedabucto Bay: A Model of Sustainability with Profitability. Atlantic Fisherman. Webpage accessed August, 2014. <http://atlanticfisherman.com/stories.asp?id=6503>.
- MacDonald, M.A, Horne, R.J., Corey, M.C. and L.J. Ham. 1992. An Overview of Recent Bedrock Mapping and Follow-Up Petrological Studies of the South Mountain Batholith, Southwestern Nova Scotia, Canada. Atlantic Geology 28, 7-28 (1992). 22 pp.
- Mackenzie, C., and J.R. Moring. 1985. Species profiles: life histories and environmental requirements of coastal fishes and invertebrates (North Atlantic) –American Lobster. U.S. Fish Wildl. Serv. Biol. Rep. 82(11.33). U.S. Army Corps of Engineers, TR EL-82-4. 19 pp.
- MAPS: Mi'kma'ki All Points Services. 2013. Mi'kmaw Ecological Knowledge Study Black Point Quarry, Guysborough Co., NS Proposed by Erdene Resource Development Corp. 50 pp.
- MBBA: Maritimes Breeding Bird Atlas. 2014. Maritimes Breeding Bird Atlas, data summary for square 20PR42. <http://www.mba-aom.ca> Accessed 5 September 2014.
- Milley, C., Charles, A. 2001. Mi'kmaq fisheries in Atlantic Canada: traditions, legal decisions, and community management. In: Paper presented at the People and the Sea: Maritime Research in the Social Sciences: an Agenda for the 21st century, Amsterdam, Netherlands.
- Mine Environment Neutral Drainage (MEND) Program. 2009. Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials. Report 1.20.1. 579pp.
- MODG: Municipality of the District of Guysborough with Nova Scotia Power Incorporated. Environmental Assessment Registration Document: Sable Wind Project. June 27, 2012

- MODG: Municipality of the District of Guysborough. 2013. Municipality of the District of Guysborough Land Use Bylaw. 2013 Official Land Use Bylaw as Amended April 10, 2013. 72 pp.
- MODG: Municipality of the District of Guysborough. 2014a. Homepage. Retrieved from: <http://www.municipality.guysborough.ns.ca/home>.
- MODG: Municipality of the District of Guysborough. 2014b. Where to Stay. Retrieved from: <http://www.municipality.guysborough.ns.ca/visitors/where-stay>
- Mosely, M. 2007. Records of Bats (Chiroptera) at Caves and Mines in Nova Scotia. Nova Scotia Museum Curatorial Report No. 99. 27 pp.
- MRMS: Maritime Resource Management Service. 1975. Strait of Canso Natural Environment Inventory. Fish and Wildlife Resources. Canada-Nova Scotia Strait of Canso Environment Committee. 28 pp.
- MRT: Mulgrave Road Theatre. 2014. History. Retrieved from: [http://mulgraveroad.ca/?page\\_id=57](http://mulgraveroad.ca/?page_id=57).
- MSC: Meteorological Service of Canada. 2002. Canadian Climate Normal's (1951-1980). Internet publication. Last Updated December 2002. Accessed from: [http://www.msc-smc.ec.gc.ca/weather/contents\\_e.html](http://www.msc-smc.ec.gc.ca/weather/contents_e.html). Mullen, D.M., and J.R. Moring. 1986. Species profiles: life histories and environmental requirements of coastal fishes and invertebrates (North Atlantic) – sea scallop. U.S. Fish Wildl. Serv. Biol. Rep. 82(11.67). U.S. Army Corps of Engineers, TR EL 82-4. 13 pp.
- NAS: National Audubon Society. 2014. The Christmas Bird Count Historical Results Online. <http://www.christmasbirdcount.org>. Accessed 22 September 2014.
- Neily, P.D., Quigley, E., Benjamin, L., Stewart, B. and T. Duke. 2003. Ecological Land Classification for Nova Scotia. Volume 1 – Mapping Nova Scotia's Terrestrial Ecosystems. Report DNR 2003-2. 83 pp.
- NLDEC: Newfoundland and Labrador Department of Environment and Conservation. 2005. Guidelines for the Design, Construction and Operation of Water and Sewerage Systems. Water Resources Management Division. 525 pp.
- Notzke, C. 1994. Aboriginal Peoples and Natural Resources in Canada. Captus University, Ontario.
- NRCan: Natural Resources Canada. 2013a. Earthquake Zones in Eastern Canada. Website accessed August 2013. <http://www.earthquakescanada.nrcan.gc.ca/zones/eastcan-eng.php>. Last modified 2013-04-26.
- NRCan: Natural Resources Canada. 2013b. The Magnitude 7.2 1929 “Grand Banks” Earthquake and Tsunami Webpage accessed August 2014, <http://www.earthquakescanada.nrcan.gc.ca/historic-historique/events/19291118-eng.php> Last modified 2013-04-26.

- NRCan: Natural Resources Canada. 2013. Revised Modified Mercalli Intensities for the Magnitude 7.2 Grand Backs Earthquake. Webpage accessed August 2014, <http://www.earthquakescanada.nrcan.gc.ca/historic-historique/events/19291118-revmmi-eng.php> Last modified 2013-04-26.
- NS: Nova Scotia. 2014. Climate Change Adaptation Database Guysborough. <http://climatechange.gov.ns.ca/adaptation/54/61#table>. Webpage accessed October 2, 2014.
- NSAS: Nova Scotia's Authentic Seacoast. 2014. Retrieved from: <http://www.authenticseacoast.com>. Webpage Accessed on September 15, 2014.
- NSBC: Nova Scotia Bat Conservation. 2014. Retrieved from: <http://www.batconservation.ca>.
- NSBI: Nova Scotia Business Inc. 2015. Point Tupper/Bearhead Industrial Park. Website <http://www.novascotiabusiness.com/en/home/locate/property/pointtupperbearheadindustrialpark.aspx> accessed January 2015.
- NSCAP: Nova Scotia Community Access Program. 2014. Retrieved from: <http://www.nscap.ca/find-a-cap-site/cap-sites-by-region/guysborough>. Accessed on September 18, 2014.
- NSDNR: Nova Scotia Department of Natural Resources . 2003. Ecological Land Classification for Nova Scotia, Volume 1 – Mapping Nova Scotia's Terrestrial Ecosystems. Report DNR 2003-2, April 2003.
- NSDNR. Nova Scotia Department of Natural Resources. 2006. Ecological Land Classification Map of Nova Scotia – Online Viewer. Version 2, Updated March 22, 2006. Available at: <http://gis4.natr.gov.ns.ca/website/nselcmap/viewer.htm>. Accessed September, 2014.
- NSDNR: Nova Scotia Department of Natural Resources. 2007a. Recovery Plan for Moose (*Alces alces Americana*) in Mainland Nova Scotia.
- NSDNR: Nova Scotia Department of Natural Resources. 2007b. Orthoimagery from GeoNOVA, 2007, downloaded June 2014.
- NSDNR: Nova Scotia Department of Natural Resources. 2007. Ecodistricts of Nova Scotia. Map DNR 2007-2 Ecological Land Classification Map. Scale 1:500,000.
- NSDNR: Nova Scotia Department of Natural Resources. 2011a. From Strategy to Action, An Action Plan for the Path We Share, A Natural Resources Strategy for Nova Scotia. Retrieved from: [http://novascotia.ca/natr/strategy/pdf/Strategy\\_Action%20Plan.pdf](http://novascotia.ca/natr/strategy/pdf/Strategy_Action%20Plan.pdf)
- NSDNR: Nova Scotia Department of Natural Resources. 2011b. The Path We Share, A Natural Resources Strategy for Nova Scotia 2011-2020. Retrieved from: [http://novascotia.ca/natr/strategy/pdf/Strategy\\_Strategy.pdf](http://novascotia.ca/natr/strategy/pdf/Strategy_Strategy.pdf)
- NSDNR: Nova Scotia Department of Natural Resources. 2012a. Significant Species and Habitats Database. <http://novascotia.ca/natr/wildlife/habitats/hab-data/DEFAULT.ASP>. Accessed 5 September 2014.

- NSDNR. Nova Scotia Department of Natural Resources. 2012. Nova Scotia Wetlands Vegetation and Classification Inventory. Updated June 12, 2012. Online viewer available at: <http://gis4.natr.gov.ns.ca/website/nssighabnew/viewer.htm>. Accessed September 2014.
- NSDNR. Nova Scotia Department of Natural Resources. 2013. Forest Inventory (2007/2012). Updated: May 15, 2013. Available at: [http://novascotia.ca/natr/forestry/gis/dl\\_forestry.asp](http://novascotia.ca/natr/forestry/gis/dl_forestry.asp). Accessed September, 2014.
- NSDNR: Nova Scotia Department of Natural Resources. 2014a. Hunter and Trapper Harvest Statistics Index 2014a. <http://novascotia.ca/natr/hunt/stats-index.asp>. Accessed 11 September 2014.
- NSDNR: Nova Scotia Department of Natural Resources. 2014b. Nova Scotia Abandoned Mine Opening (AMO) database. <http://www.novascotia.ca/natr/meb/links/amolinks.asp>. Accessed August 2014.
- NSE: Nova Scotia Environment. 1988. Erosion and Sedimentation Control Handbook. Retrieved from: <https://www.novascotia.ca/nse/surface.water/docs/ErosionSedimentControlHandbook.Construction.pdf>
- NSE: Nova Scotia Environment. April 1991. Guidelines for Development on Slates in Nova Scotia.
- NSE: Nova Scotia Environment. 1997. Regulations Respecting On-Site Sewage Disposal Systems.
- NSE: Nova Scotia Department of Environment. 1998. The State of the Nova Scotia Environment; 1998. Halifax, Nova Scotia.
- NSE: Nova Scotia Environment. 2001. A Proponents Guide to Environmental Assessment. Retrieved from: <https://www.novascotia.ca/nse/ea/docs/EA.Guide-Proponents.pdf>
- NSE: Nova Scotia Environment. 2005. Test Your Water Well for Naturally Occurring Arsenic. Accessed online.
- NSE: Nova Scotia Environment. 2006. Guidelines for the Handling, Treatment, and Disposal of Septage, February 2006.
- NSE: Nova Scotia Environment. 2007. Solid Waste-Resource Management Regulations. Retrieved from: <http://www.novascotia.ca/just/regulations/regqs/envsolid.htm>. Webpage Accessed on October 7, 2014.
- NSE: Nova Scotia Environment. 2007. On-Site Sewage Disposal Systems Regulations, March 2007.
- NSE: Nova Scotia Environment. 2009a. Guide to Preparing an EA Registration Document for Pit and Quarry Developments in Nova Scotia, September 2008. Environmental and Natural

- Areas Management Division, Environmental Assessment Branch. 355pp. Retrieved from: <https://www.novascotia.ca/nse/ea/docs/EA.Guide-RegistrationDocumentation-PitQuarry.pdf>
- NSE: Nova Scotia Environment. 2009. Guide to Addressing Wildlife Species and Habitat in an EA Registration Document. Retrieved from: <http://www.novascotia.ca/nse/ea/docs/EA.Guide-AddressingWildSpecies.pdf>
- NSE: Nova Scotia Environment. 2009. Nova Scotia's Climate Change Action Plan. Retrieved from: <http://climatechange.gov.ns.ca/doc/ccap.pdf>
- NSE: Nova Scotia Environment. 2009. Guide to Preparing an EA Registration Document for Pit and Quarry Developments in Nova Scotia. September 2008. Environmental and Natural Areas Management Division, Environmental Assessment Branch. 35 pp.
- NSE: Nova Scotia Environment. 2010. Water for Life: Nova Scotia's Water Resource Management Strategy. Retrieved from: [https://www.novascotia.ca/nse/water.strategy/docs/WaterStrategy\\_Water.Resources.Management.Strategy.pdf](https://www.novascotia.ca/nse/water.strategy/docs/WaterStrategy_Water.Resources.Management.Strategy.pdf)
- NSE: Nova Scotia Environment. 2011. Guide to Considering Climate Change in Environmental Assessments in Nova Scotia. Retrieved from: <https://www.novascotia.ca/nse/ea/docs/EA.Climate.Change.Guide.pdf>
- NSE: Nova Scotia Environment. 2011. Guide to Considering Climate Change in Project Development in Nova Scotia. Retrieved from: <https://www.novascotia.ca/nse/ea/docs/Development.Climate.Change.Guide.pdf>
- NSE: Nova Scotia Environment. 2011. Nova Scotia Wetland Conservation Policy. Retrieved from: <http://www.novascotia.ca/nse/wetland/docs/Nova.Scotia.Wetland.Conservation.Policy.pdf>
- NSE: Nova Scotia Environment. 2013. Nova Scotia Watercourse Alteration Activity Standards. Retrieved from: <https://service.clearservice.com/constructionns/campaignimages/1/otherpdf/121105-DRAFT-WatercourseAlterationsStandardsversion1.5.pdf>
- NSE: Nova Scotia Environment. 2013. Watercourse Alteration Protection; Erosion Protection; Wharves; Pipe Culverts; Arch or Open Box Culverts.
- NSE: Nova Scotia Environment. 2013. On-Site Sewage Disposal System Technical Guidelines, June 2013.
- NSE: Nova Scotia Department of the Environment. 2013. Regulations Respecting Air Quality made by the Governor in Council under section 112 of Chapter 1 of the Acts of 1994-95; the Environment Act.
- NSE: Nova Scotia Environment. 2014a. Well Logs Database. Retrieved from: <http://www.novascotia.ca/nse/welldatabase/wellsearch.asp>. Accessed online on October 3, 2014.

- NSE: Nova Scotia Environment. 2014b. Naturally Occurring Uranium in Groundwater in Nova Scotia. Accessed online.
- NSE: Nova Scotia Department of Environment. 2014c. Resources for Wetland Assessors. Available online at <http://gov.ns.ca/nse/wetland/wetland.assessment.resources.asp>. Updated on Mar 31, 2014. Accessed September 2014.
- NSEL: Nova Scotia Environment and Labour. 1990. Guidelines for Environmental Noise Measurement and Assessment.
- NSEL: Nova Scotia Environment and Labour. 1996. Guidelines for Management of Contaminated Sites in Nova Scotia. Retrieved from: <http://www.novascotia.ca/nse/contaminatedsites/docs/contaminatedsitemanagementguidelines.pdf>
- NSEL: Nova Scotia Environment and Labour. 1997. Nova Scotia Standards for Construction and Installation for Petroleum Storage Tank Systems. Retrieved from: <https://novascotia.ca/nse/dept/docs.policy/petroleum.storage.tank.systems.pdf>
- NSEL: Nova Scotia Environment and Labour. 1999. Pit and Quarry Guidelines. Environmental Monitoring and Compliance Division. May 4, 1999. 8pp. Retrieved from: <https://www.novascotia.ca/nse/dept/docs.policy/Guidelines-Pit-and-Quarry.pdf>
- NSEL: Nova Scotia Environment and Labour. 2002. Storm Drainage Works Approval Policy. Retrieved from: <https://www.novascotia.ca/nse/dept/docs.policy/Policy-Storm.Drainage.Works.Approval.pdf>
- NSEL: Nova Scotia Environment and Labour. 2004. Nova Scotia Ambient Air Monitoring Stations. November 22, 2006. Accessed from: <https://novascotia.ca/nse/air/docs/DiCesare-AmbientNSAir.pdf>
- NSEL: Nova Scotia Environment and Labour. 2005. Guidelines for Monitoring Public Drinking Water Supplies. Retrieved from: [https://www.novascotia.ca/nse/water/docs/Guidelines\\_for\\_Monitoring\\_Public\\_Drinking\\_Water\\_Supplies.pdf](https://www.novascotia.ca/nse/water/docs/Guidelines_for_Monitoring_Public_Drinking_Water_Supplies.pdf)
- NSEL: Nova Scotia Environment and Labour. 2009. Guide to Addressing Wildlife Species and Habitat in an EA Registration Document. 9pp.
- NSFA: Nova Scotia Fisheries and Aquaculture. 2014a. Aquaculture Site Mapping Tool Webpage accessed August 2014. <http://novascotia.ca/fish/programs-and-services/industry-support-services/aquaculture/site-mapping-tool/>
- NSFA: Nova Scotia Fisheries and Aquaculture. 2014b. Nova Scotia Anglers' Handbook and Summary of Regulations 2014. 68 pp.

- NSHVS: Nova Scotia Historical Vital Statistics. 1891. Marriage Record: Murdock McNeil to Bridget Eaton, 2nd July. Book 1814, page 162, number 132. <https://www.novascotia.genealogy.com>
- NSLRT: Nova Scotia Lynx Recovery Team. 2006. Provincial Recovery Plan for the Canada Lynx (*Lynx canadensis*), Nova Scotia.
- NSMNH: Natural History Museum of Natural History. 1984. The Natural History of Nova Scotia, Volume 1. Nova Scotia Department of Lands and Forests and Nova Scotia Department of Education.
- NSTPW: Nova Scotia Transportation and Public Works. 1997. Standard Specification: Highway Construction and Maintenance. Retrieved from: <https://novascotia.ca/tran/publications/standard.pdf>
- NSTPW: Nova Scotia Transportation and Public Works. 2007. Generic Environmental Protection Plan (EPP) for the Construction of 100 Series Highways. Retrieved from: [https://novascotia.ca/tran/works/enviroservices/EPP100series/Generic%20EPP\\_July%202007.pdf](https://novascotia.ca/tran/works/enviroservices/EPP100series/Generic%20EPP_July%202007.pdf).
- NSW: New South Wales. (2008). New South Wales Construction Noise Guideline. Department of Environment and Climate Change, New South Wales, Australia. August 2008 draft for consultation.
- O'Sullivan, E. 2011. The Community Well-Being Index (CWB): Measuring Well-Being in First Nations and Non-Aboriginal Communities, 1981-2006. Unpublished report submitted to Aboriginal Affairs and Northern Development Canada.
- Owens, E.H. 1971. The Restoration of Beaches Contaminated by Oil in Chedabucto Bay, Nova Scotia. Marine Science Branch, Department of Energy Mines and Resources, Ottawa. Manuscript Report Series No. 19. 83 pp.
- Owens, E.H. and M.A. Rashid 1976 Coastal Environments and Oil Spill Residues in Chedabucto Bay, Nova Scotia Can. J. Earth Sci. 13, 908-928 (1976)
- PC: Parks Canada. 2011. Canso Island National Historic Site of Canada. Retrieved from: <http://www.pc.gc.ca/eng/lhn-nhs/ns/canso/index.aspx>. Webpage accessed September 22, 2014
- PHA: Port Hawkesbury Airport. 2014. <http://www.porthawkesburyairport.com/airport-facilities/>. Webpage accessed September 27, 2014.
- RCL: Royal Canadian Legion – Branch Locator. 2014. <http://www.legion.ca/who-we-are/branch-locator/>. Webpage accessed September 26, 2014.
- RCMP: Royal Canadian Mounted Police. 2014. Districts and Detachments. <http://www.rcmp-grc.gc.ca/ns/detach/index-eng.htm>. Webpage accessed on September 19, 2014.

- Richard, W. and R. Daigle. 2011. Scenarios and Guidance for Adaptation to Climate change and Sea-Level Rise – NS and PEI Municipalities. Atlantic Climate Adaptation Solutions Association. 90 pp.
- Robertson and Bryan. 2004. Technical Memorandum – pH Requirements of Freshwater Aquatic Life. Robertson-Bryan Inc. Accessed Sept 2014.  
[http://www.swrcb.ca.gov/rwqcb5/water\\_issues/basin\\_plans/ph\\_turbidity/ph\\_turbidity\\_04p\\_hreq.pdf](http://www.swrcb.ca.gov/rwqcb5/water_issues/basin_plans/ph_turbidity/ph_turbidity_04p_hreq.pdf)
- Rock, J. and D. Shervill. 2012. Country Island Tern Restoration Project Annual Report, 2012 (Year 15).
- Ruffman, A. 1995. Earthquakes and Tsunamis of Eastern Canada: Cause for Concern?; Atlantic Geology, 31 (1), p. 58.
- Ruffman, A. and Tuttle, M.P., 2005. Tsunamis of Eastern Canada and New England: the primary historical record; Proceedings of the 12th Canadian Coastal Conference, Dartmouth, Nova Scotia, November 6-9, 2005.
- SC: Statistics Canada - 2006 Community Profiles - Guysborough. 2014. <http://www12.statcan.gc.ca/census-recensement/2006/dp-pd/prof/92-591/details/page.cfm?Lang=E&Geo1=CSD&Code1=1213004&Geo2=PR&Code2=12&Data=Count&SearchText=guysborough&SearchType=Begins&SearchPR=01&B1=All&Custom=>. Webpage accessed on July 10, 2014.
- SC: Statistics Canada - 2011 Census Profile. 2014. <http://www12.statcan.gc.ca/census-recensement/2011/dp-pd/prof/index.cfm?Lang=E>. Webpage accessed on July 10, 2014.
- SC: Statistics Canada - Labour Force Characteristics, unadjusted, by economic region (3 month moving average) (Nova Scotia, New Brunswick). 2014. <http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/lfss05b-eng.htm>. Accessed on July 10, 2014
- Schummer, M.L. & Eddleman, W.R. 2003. Effects of disturbance on activity and energy budgets on migrating waterbirds in south-central Oklahoma. Journal of Wildlife Management, 67 (4), 789-795.
- SD: Science Daily. 2010. Spawning Habitat of Bluefin Tuna in Gulf of Mexico: Critical area intersects Deepwater Horizon oil spill. Retrieved from: <http://www.sciencedaily.com/releases/2010/05/100528210726.htm>. Accessed on September 26, 2014.
- SD: Science Daily. 2012. Tracking Atlantic Bluefin Tuna Shows Migration Secrets. Retrieved from: <http://www.sciencedaily.com/releases/2012/05/120522175408.htm>. Accessed on September 26, 2014.
- Shaw, J., Piper, D.J.W., Fader, G.B.J., King, E.L., Todd, B.J., Bell, T., Batterson, M.J. and Liverman, D.G.E. 2006. A Conceptual Model of the Deglaciation of Atlantic Canada. Quaternary Science Reviews 25, P. 2059 – 2081.
- Simon, M. 2014. Bay of Islands Colonial Seabird Surveys and Habitat Assessment. Prepared by Molly Simon for the Nova Scotia Nature Trust. August 25, 2014.

- SLR Consulting Ltd. 2014. Surface Water Assessment: Black Point Quarry, Nova Scotia.
- Soulliere, C.E. and Thomas, P.W. 2009. Harlequin Duck Threat Assessment, Eastern Population. Canadian Wildlife Service Technical Report, Series No. 491, St. John's, NL.
- SRI: Soil Research Institute. 1963. Soil Map of Guysborough County, Nova Scotia, East Sheet. Research Branch, Canada Department of Agriculture, Ottawa. Scale 1 in. to 1 mile.
- SRSF: Social Research for Sustainable Fisheries. 2001. The SRSF Eastern Shore Nova Scotian Coastal Fisheries Ecosystem Project: A Social Profile of LFA's 29 (Southern Richmond County) 31A and 31B (Guysborough County) Fisheries. SRSF Research Report #1. 20 pp.
- Stantec. 2009. Roadmap for Aquaculture Investment in Nova Scotia. Prepared for the Nova Scotia Department of Fisheries and Aquaculture File 1048755. 110 pp.
- Stea, R.R. and J.H. Fowler. 1979. Pleistocene Geology Eastern Shore Region, Nova Scotia. Sheet 1 Scale 1:100,000.
- Stea. R.R., Conley, H. and Brown, Y. 1992. Surficial Geology of the Province of Nova Scotia. Map 92-3, 1:500,000 scale. Nova Scotia Department of Natural Resources.
- Stiegman, M., 2006. Fisheries privatization versus community-based management in Nova Scotia: emerging alliances between first nations and non-native fishers. In: Adkin, L.E. (Ed.), Environmental Conflict and Democracy in Canada. University of British Columbia, Vancouver, Canada, pp. 69-83.
- Strait Superport. 2014. Strait of Canso Port. Website accessed July 2014. <http://www.straitsuperport.com/port/>.
- TC: Transport Canada. 2011. Ballast Water Management. Website accessed August 2014. <http://www.tc.gc.ca/eng/marinesafety/oep-environment-ballastwater-management-1963.htm> Last modified 2011-08-04.
- TC: Transport Canada. 2014. Tanker Safety and Spill Prevention. <http://www.tc.gc.ca/eng/marinesafety/menu-4100.htm#e> Website accessed August 2014. Last modified 2014-06-17.
- The Three Shores Nova Scotia. 2014. <http://threeshoresnovascotia.ca>. Webpage accessed September 15, 2014.
- Trail Peak. 2014. Guysborough Nature Trail – Trans Canada Trail. <http://www.trailpeak.com/trail-Guysborough-Nature-Trail-Trans-Canada-Trail-near-Canso-NS-6676>. Webpage accessed September 22, 2014.
- UNESCO: United Nations Educational, Scientific and Cultural Organization. 1987. Ramsar Convention on Wetlands. Retrieved from: [http://www.ramsar.org/cda/en/ramsar-documents-texts-convention-on/main/ramsar/1-31-38%5E20671\\_4000\\_0\\_\\_](http://www.ramsar.org/cda/en/ramsar-documents-texts-convention-on/main/ramsar/1-31-38%5E20671_4000_0__).

- USACE: United States Army Corps of Engineers. 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0).
- USGS. 1982. Habitat Suitability Index Models: Creek Chub. Biological Services Program. FWS/OBS-82/10.4. U.S. Department of Interior Washington, D.C. 20240.
- US Fish and Wildlife Service. 2003. Interim Guidelines to Avoid and Minimize Wildlife Impacts from Wind Turbines. Memorandum to Region Directors Regions 1-7 from the Deputy Director, May 13, 2003, Washington D.C., 2003.
- Watanabe S, Scheibling RE and Metaxas A. 2010. Contrasting Patterns of Spread in Interacting Invasive Species: *Strongylocentrotus droehbachiensis*, and the Abundance of American Lobster, *Homarus Americanus*, on the Atlantic Coast of Nova Scotia. Canadian journal of Fisheries and Aquatic Sciences 38: 1339-1349.
- Webb, K.T. and Marshall, I.B. 1999. Ecoregions and Ecodistricts of Nova Scotia. Crops and Livestock Research Centre. Research Branch, Agriculture and Agri-Food Canada, Truro, N.S.: Indicators and Assessment Office, Environmental Quality Branch, Environment Canada, Hull, Quebec. 39 pp.
- Wiber, M., Milley, C. 2007. After Marshall: implementation of aboriginal fishing rights in Atlantic Canada. Journal of Legal Pluralism and Unofficial Law 55, 163-186.
- Wightman, J. 2012. Development Trends and Vulnerability to Severe Storms. A Case Study Analysis in Nova Scotia. Dalhousie University Department of Environmental Planning Website. 17 pp.
- Williams, U. and J.W. Chardine. 1998. The Leach's Storm-Petrel: General information and handling instructions. Unpublished information paper for offshore oil companies. 5 pp.

#### Personal Communication

- J. Murphy, comment received at open house, April 22, 2014 Queensport, Nova Scotia. Follow up email received October 23, 2014.
- F. Fogarty, Fogarty descendant, email, 6 May 2014.
- G. Boudreau, Manager, Guysborough County Inshore Fishermen's Association, May 2014.
- G. Herbert, Fisheries and Oceans Canada, September 2014
- G. Anderson (Captain), Senior Marine Inspector - Expert Maritime Principal Transport Canada Marine Safety Compliance & Enforcement August 2014.
- G. Freer, Port Hawkesbury Port Authority, September 2014.
- D. Fewer, Nova Scotia Ground Search and Rescue Association, Central Zone September 26, 2014.
- J. Rock, Environment Canada - Canadian Wildlife Service, September 2014.

- A. Hicks, Environment Canada - Canadian Wildlife Service, September 2014.
- C. Gjerdrum, Environment Canada - Canadian Wildlife Service, September 2014
- D. Torrey, Development Officer, MODG, 2014
- M. Pulsifer, NSDNR, August 2014
- H. Krause, local resident, July 2014
- O. Rhynold, local resident, July 2014
- EC-CWS Environment Canada – Canadian Wildlife Service 2014.



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