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Mid Atlantic Minerals Inc. Aguathuna Quarry Development

Environmental Impact Comprehensive Study Report

Executive Summary

**Prepared on Behalf of
Atlantic Canada Opportunities Agency**

EXECUTIVE SUMMARY AGUATHUNA QUARRY DEVELOPMENT PROJECT COMPREHENSIVE STUDY REPORT

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1.0 Executive Summary

The Atlantic Canada Opportunities Agency (ACOA) has prepared a Comprehensive Study Report (CSR) for the proposed Aguathuna Quarry Development at Aguathuna, Newfoundland. The proponent is Aguathuna Quarries, a joint venture between Mosher Limestone Ltd. of Nova Scotia, and MidAtlantic Minerals Inc. of the Province of Quebec.

The CSR fulfills ACOA's obligations as the Responsible Authority (RA) pursuant to the Comprehensive Study provisions of the *Canadian Environmental Assessment Act* (CEAA). It provides the results of related environmental assessment (EA) considerations carried out in consultation with the proponent, the public, stakeholders, provincial and federal expert departments and the Canadian Environmental Assessment Agency (Agency).

The CSR presents an overview of the project, a summary of the environmental effects of the project, a summary of public consultations, recommendations regarding mitigation measures designed to eliminate or reduce significant environmental effects of the project, and conclusions regarding the significance of the environmental effects of the project.

The CSR in fact comprises a combined EA and CSR proper. As such, the CSR provides details concerning EA methodology in addition to

information normally provided by a CSR submitted subsequent to an Environmental Impact Assessment.

1.1 Project Overview

The Aguathuna Quarry Development Project consists of the reactivation and further development of the Aguathuna quarry, located on the Port au Port Peninsula, on the island of Newfoundland (Refer to Figure 1 and 2) . The site was originally developed by the Dominion Steel & Coal Corporation, Limestone Division, which began quarrying limestone in 1913 for use as a flux in their steel mill in Sydney, Nova Scotia. Operations ceased in 1964, with more than 12 million tonnes of material produced.

MidAtlantic Minerals Inc. owns a total of one hundred and thirty-six claims in the Project Area (42 in Aguathuna, 29 in Campbell's Creek, and 65 in White Hills), all of which will be transferred to the newly incorporated Aguathuna Quarries. In order to maintain the claims in good standing, engineering evaluation reports were submitted to the Department of Mines on January 7, 1998, for each of the three claim units, outlining assessment work done between August 1, 1997 and December 5, 1997. This site work included geological and geochemical studies, a drilling program, bathymetric surveys and sub-bottom profiles, and a wind and wave analysis.

This survey and evaluation work determined that the Aguathuna site offered several advantages. These include high grade calcium and dolomitic limestone, close proximity of the quarry to deep tidal water, an ample and existing workforce in the area and potential financial support from both ACOA and the EDGE program funded by the provincial Department of Industry.

The construction of a crushing and screening plant, a limestone product stockpile area, startup of the dolomite quarry and the installation of the marine facility is scheduled for the late summer and fall of 1999, and shipping is expected to begin in the fall of 1999. The company plans to ship 150,000 tonnes in the first year of operation, with annual capacity of 500,000 tonnes.

1.2 Alternative Means of Carrying Out the Project

The proponent has examined and evaluated technically and economically feasible alternative means of carrying out the Project, including different modes of transportation and alternative facility locations. In terms of transportation, consideration was given to the environmental and socio-

economic implications of shipping the crushed dolomite/limestone versus moving it overland. It was determined by the proponent that the use of ocean-going vessels along established and approved shipping lanes would be considerably less expensive, and that it would be considerably less intrusive to the surrounding community. Furthermore, it was determined that the use of ocean vessels will require less construction and maintenance of infrastructure such as roads and highways able to withstand heavy loads. Adopting the shipping mode of transportation was deemed to have the additional benefit of restricting the spatial extent of potential effects on the terrestrial environment in the project area and the Port au Port region.

As a result of consultations with stakeholders and regulatory authorities, it was discovered that the intended site for the marine terminal comprised the most viable lobster habitat in the project area. Accordingly, the site for the terminal was moved 600 metres to the east, a site not characterized by lobster habitat. Viable crustacean habitat will, however, be created at the new site.

Over the course of assessing potential impacts of fugitive dust and particulate emissions from the conveyor facility, the design of the equipment was altered to include protective hooding. The proponent has also incorporated additional dust and sediment controls, including settling ponds, wet spraying, speed limits and stockpile stabilization.

1.3 Alternatives to the Project

The primary alternative to the project is maintaining the status-quo (i.e. no new quarry project). This is not a preferred alternative because the proponents would not be able to access world markets with an additional 500 thousand metric tonnes of product per year. This production capacity is not available at the existing Kelly's Cove facility in Nova Scotia, nor does the partnership own other holdings which would supply sufficient quantities of high quality dolomite. As noted later in this document, no compelling environmental reasons for maintaining the status quo option were found.

1.4 Purpose of the Project

The purpose of the project is to facilitate the procurement of an expanded (global) market share, with a view to enhancing the long term viability of both the company proper, and the economy of the Port au Port region through the creation of sustainable employment. The project

is expected to bring 25 full time jobs to the area, for a minimum of 20 years.

1.5 Project Description / Project Scope

Terrestrial construction activities will consist of developing the new dolomite quarry, facility installation and upgrades and the refurbishing of existing infrastructure. The development of the new quarry will require the removal of overburden, clearing, grubbing and soil stockpiling, as well as the construction of a ramp into the pit and the installation of conveyors. The establishment of the crushing and screening plant will not require any permanent construction except for refurbishing existing access roads to the site, clearing and levelling. The immediate areas to be affected are the existing abandoned quarry just south of the Brook Quarry (located approximately 500 m south of the highway to Boswarlos), and the East Quarry area north of the highway.

The construction of the marine terminal will include the addition of caissons as well as a shiploader and conveyors, infilling, the installation of a seaward floating wharf section and anchorage emplacement. The rockfill section will be constructed with approximately 12,000 C.M. of clean, limestone boulders from the existing east quarry face adjacent to the shore. It will be placed with dump trucks, front end loaders and dozers. The construction period is estimated to be four (4) days. The placing of anchors and buoys in the bay will be carried out using a floating barge and crane, and the construction period for this component is estimated to be three (3) days.

The operational phase will consist of quarrying activity, which includes drilling and blasting, primary, secondary and tertiary crushing, dry and wet screening, stockpiling, reclaiming of finished products and vessel loading. Quarry and settling pond de-watering will occur as required. Water quality will be tested, but it is expected to be very good, with no associated metals. The grounds and facilities will be maintained according to environmental health and safety standards and regulations.

The operation will be seasonal, running from mid April to December each year with a two-shift operation as required. The quarry is expected to operate for approximately 20 years.

The details of site decommissioning will not be determined until late in the operational phase. However, based on existing decommissioning standards and protocols for mines and quarries, it is anticipated that the following routine activities will occur:

- Prior to decommissioning, the public and local stakeholders will be consulted to determine possible further commercial or recreational uses of the site.
- All facilities and infrastructure, with the possible exception of the marine terminal, will be dismantled. These structures and other waste materials will be disposed of and/or recycled in an appropriate manner, and in accordance with existing environmental regulations. Access roads will also be closed at this time.
- The site will be restored using (such measures as) re-establishment of drainage patterns, revegetation, soil stabilization and habitat enhancement methodologies, as appropriate.
- A Phase I Environmental Site Assessment will be required prior to finalization of attendant decommissioning plans.

Since the operation will be seasonal, the proponent will ensure that access to the site is closed when the site is not in operation.

Full details for all phases of the project subject to EA are provided in Section 3 of the CSR.

1.6 Scope of Environmental Assessment

Section 16(1) of CEAA lists those factors to be considered in screenings and comprehensive studies. These include: the environmental effects of the project, including accidents and malfunctions and cumulative effects; the significance of those effects; comments from the public in relation to those effects; technically and economically feasible means to mitigate those effects; and, any other matter relevant to the environment that the RA and/or the Minister of the Environment may wish to include (e.g. need for or alternatives to the project).

Section 16(2) further requires that a comprehensive study include a consideration of : the purpose of the project; alternative means of carrying out the project and related environmental effects; the need for and requirements of any follow-up program (as defined by Section 38 of CEAA); and, the capacity of renewable resources likely to be significantly affected by the project to meet the needs of the present and future alike.

Assessment Approach

Standard EA protocol requires that the existing environment be described in sufficient detail to facilitate the identification of

project/environment interactions, and to identify those environmental components potentially at risk from interactions. Mitigation measures are then carefully selected and the significance of environmental effects, with mitigation, is then determined. Related considerations were carried out in consultation with the stakeholders and the public, (Section 5.0, CSR), with expert departments (DFO, EC, NDOEL, NRC), with the Agency, using consultants, through site visits and using professional judgement.

1.6.1 Marine Habitat and Fish : Summary of Existing Conditions

Costa Bay comprises the eastern portion of Port au Port Bay on the west coast of Newfoundland, and is partially isolated from the Gulf of St. Lawrence by the Port Au Port peninsula to the west. The bay supports moderate lobster, groundfish and pelagic fisheries and hosts potential aquaculture sites. The physical environment in the area of the proposed loading dock is characterized by limestone cliffs and outcrops from previous quarrying operations. The bathymetry from shore has a sloping drop off to a depth of approximately 15 m at a distance of approximately 150 m from shore.

Benthic habitat and species present were investigated along a diving transect at the proposed loading dock, which included the area 25 m east and west of centre line of the dock, with buoys placed at a distance of 50 m from shore. Bottom composition in the area consists mainly of bedrock with boulders, and some sand-covered patches. Probes were only able to penetrate to a maximum depth of 0.2 m. Observed marine life consisted of 14 flatfish, one rock cod and three rock crab. No lobster were observed on the sea floor.

Beyond the 50 m mark offshore, the bottom graduates from bedrock and boulders to muddy sea floor. Within this area (50-150 m offshore), there were fewer flatfish, five rock crab, and four scallops; no lobster or other species were observed. Average probe depth was 1-1.5 m, with an occasional depth of 2 m to the east of the center transect line.

Consultation with local fishers indicates that the area of the proposed infill and floating loading dock is not usually fished for lobsters. As discussed, lobsters are fished in the rocky debris of the former quarry dock (located approximately 600m to the west of the proposed dock).

The shipping route from the loading dock to the mouth of Port au Port Bay is not an area of concentrated fishing by gillnetters, scallop

draggers, pelagic purse seines or groundfish otter trawlers. Historically, there has not been a conflict between commercial shipping and fishing vessels along the shipping route (pers. comm. Andrew Harvey and Robert Lambert, 1998). Some gill netting occurs seasonally at the eastern end of the bay. The bay has the potential to support moderate ground fishing, and may host potential aquaculture sites.

1.6.2 Freshwater Resources: Summary of Existing Conditions

A site visit by a biologist in 1998 confirmed that there is a small stream fed by a small man-made pond in the area that could be affected by the Project development. However, no fish were observed in a preliminary survey. The stream also contained several blockages that would impede any upstream migration of fish. No fish were found within the proposed terrestrial footprint of the project. This will be confirmed during follow-up monitoring studies pursuant to the Environmental Protection Plan (EPP).

The proposed plant site contains two settling ponds that will have to be de-watered and pond embankment structures removed before the plant can be constructed. The preliminary dolomite pit excavation will also have to be de-watered before further excavation can be conducted.

1.6.3 Terrestrial Resources: Summary of Existing Conditions

The project is located along East Bay which opens to the Gulf of St. Lawrence. Generally, the Port au Port Peninsula comprises excellent habitat for a variety of migrant shorebirds, waterfowl, seabirds and raptors, as well as native songbird species.

The project area was visited by a biologist in June and September, 1998. During this period, there were no observations or reports of eagle, hawk or shorebird nests in the immediate project area. The coastal portion of the quarry operation has been previously developed and does not currently provide suitable breeding or feeding grounds for shorebird or waterfowl species. The quarry site itself was also previously cleared and therefore provides marginal habitat only for migrant species. The surrounding areas (Piccadilly, Long Range Mountains, Browmoore Bog and Flat Island) provide more suitable habitat with food and nesting grounds more accessible and less disturbed by humans.

Caspian Terns are classified as a vulnerable species by Canadian Wildlife Service. No Caspian Tern nests are found on-or-adjacent to the site but occasional feeding migrants may pass the terminal area. No Piping Plover or other endangered species, are found on-or-adjacent-to the site.

While western Newfoundland provides excellent habitat for an array of large mammals including caribou, moose, black bear, red fox, coyote, lynx and pine marten, moose and lynx are the only large mammals found within the project area. Smaller mammals found in the project area include common shrew, little brown bat, northern long-eared bat, snowshoe hare and red squirrel. The site does not comprise overwintering grounds for moose. Newfoundland pine martin, an endangered species, are not found on the site. The nearest population is found in the deep woods of west central Newfoundland, approximately 100 km east of Aguathuna

The Port au Port region is characterized by wind-exposed limestone barrens, shallow soils and large areas of exposed bedrock. The flora is composed primarily of herbaceous species, with calcareous arctic-alpine species, Gulf endemics and Cordilleran disjuncts species also found on the Peninsula.

Within a 20 km radius of the project site, there are forty-seven rare, threatened and/or endangered plant species present. None of the plants listed on the rare, endangered or threatened species list were found. Since the site was previously developed for the purposes of quarry development, the area does not provide a suitable pristine environment which many of these sensitive species require. The proposed dolomite pit site has a thin layer of top soil over bedrock which is presently sparsely vegetated with a cover of mixed-age spruce trees.

As part-and-parcel of the EMP and follow-up program, a rare and endangered plant survey of the Project Site and surrounding area will be conducted by a qualified botanist prior to quarrying activities. Any required mitigation will be specified by the EPP, a document subject to approval by the provincial and federal governments. The EPP will also be included in the public registry, and comments on the document will be welcomed from the public.

1.6.4 Air Quality: Summary of Existing Conditions

The region within 5 kilometers of the proposed facility, and Newfoundland in general, experiences good air quality because there are relatively few large industrial sources of emissions located nearby. Climate conditions provide good dispersion of air contaminants and frequent rainfall scavenges contaminants from the air. The ambient air quality also benefits from the infusion of relatively clean, oceanic air masses from the North Atlantic.

The climate is relatively wet and the prolonged winter season, with its sustained snow cover, results in the surface being saturated for much of the year. Therefore, little wind induced background particulate matter is predicted.

Marine habitat and fish, freshwater resources, terrestrial resources and air quality were selected as Valued Ecosystem Components (VECs) for the Comprehensive Study. The rationale for the selection of these VECs is summarized in Table 1.0.

Table 1.0 Rationale for Selecting the Valued Environmental Components

VECs	Rationale		
	Public	Regulators	Professional Judgement
Marine Habitat and Fish	/	/	/
Freshwater Resources			/
Terrestrial Resources		/	/
Air Quality	/	/	/

1.7 Project / Environment Interactions (S.16)

Factors Considered

An issues scoping process was used to identify potential project / environment interactions for the Project. This process involved: public consultation with local fishers and residents; consultation with expert departments (DFO, EC, NDOEL), site visits, a review of the existing literature on the study area; an inshore marine habitat survey; a synthesis of the issues identified in the consultation process; and the use of the study teams' professional judgement.

As a result of the issues scoping process, and pursuant to those requirements provided by S.16 of CEAA, the CSR considers the following potential project / environment interactions as summarized by Tables 1.1 through 1.4.

Table 1.1 Potential Interactions Between Project Activities and VECs During Construction

VECs	Construction Project Activities				
	Clearing / Leveling / Grubbing / Blasting	Overburden Removal	Vehicular Traffic	Facility Installation / Upgrade / Refurbishing	Waste Disposal
Marine Habitat and Fish		/		/	/
Freshwater Resources	/	/	/	/	/
Terrestrial Resources	/	/	/	/	/
Air Quality	/	/	/		

Table 1.2 Potential Interactions between Project Activities and VECs during Operation and Maintenance

VECs	Operation and Maintenance Project Activities				
	Blasting	Water Management	Vessel Loading	Vehicular Traffic	Facility / Infrastructure Maintenance
Marine Habitat and Fish	/	/	/		/
Freshwater Resources	/	/		/	/
Terrestrial Resources	/			/	/
Air Quality	/		/	/	

Table 1.3 Potential Interactions between Project Activities and VECs during Decommissioning

VECs	Decommissioning Project Activities	
	Facility / Infrastructure Removal	Site Clean-up and Restoration
Marine Habitat and Fish	/	/

VECs	Decommissioning Project Activities	
	Facility / Infrastructure Removal	Site Clean-up and Restoration
Freshwater Resources	/	/
Terrestrial Resources	/	/
Air Quality		

Table 1.4 Potential Interactions between Project Activities and VECs during Accidental Events

VECs	Accidental Events			
	Marine Spill (Materials & Oil)	On-land spill (Materials & Oil)	Water Management Failures	Fires
Marine Habitat and Fish	/		/	
Freshwater Resources		/	/	/
Terrestrial Resources		/	/	/
Air Quality	/	/	/	/

1.8 Assessment Methodology

Standard EA methodology requires the establishment of ecological, spatial and temporal boundaries in order to effectively focus related considerations. In choosing study boundaries, they must not only reflect an accurate picture of potential biological, physical, social and economic effects of the project, but must also allow for an appropriately conservative approach to the effects assessment. Adopting a conservative approach in such a way is commonly referred to as a 'worst case' approach to EA.

For the purposes of this EA, the following boundaries were established:

Table 1.5 Ecological Boundaries

VEC	Boundary
Marine Habitat and Fish	Port au Port Bay
Freshwater	Freshwater Resources of Port au Port Bay
Terrestrial	Terrestrial Resources of Port au Port Peninsula
Air Quality	1000 m surrounding the project

Table 1.6 Spatial Project Boundaries

VEC	Boundary
Marine Habitat and Fish	Coastal Zone out to Buoy XU (Cdn. Hydrographic Chart 4659).
Freshwater	Project Footprint + 100 m
Terrestrial	Project Area
Air Quality	Project Area plus 1000 m.

Table 1.7 Temporal Project Boundaries

VEC	Boundary
Marine Habitat and Fish	Life of Project
Freshwater	Life of Project
Terrestrial	Life of Project
Air Quality	Operations

1.9 Environmental Effects of the Project

No significant residual or cumulative impacts are predicted for the project. The following tables summarize the predicted environmental effects of the project on the environment, including the effects of potential accidents and malfunctions and cumulative effects.

Table 1.8 Summary Table for Marine Habitat and Fish - Potential Interactions, Predicted Effects

Predicted Effects	Construction	Operation	Decommissioning	Accidental Events
Geographical Extent	1	1	1	2

Predicted Effects	Construction	Operation	Decommissioning	Accidental Events
Duration of Interaction	2	5	2	2
Frequency of Occurrence	2	2	2	1
Level of Confidence	3	3	3	3
Cumulative Effects Significance	N	N	N	N
Residual Effects Significance	N	N	N	N

Key for Table 1.8

Geographical Extent:	1 = <1 km ² 2 = 1-10 km ² 3 = 11-100 km ² 4 = 101-1000 km ² 5 = 1001-10,000 km ² 6 = >10,000 km ²
Level of Confidence:	1 = low 2 = moderate 3 = high
Duration of Interaction:	1 = <1 month 2 = 1-12 months 3 = 13-36 months 4 = 37-72 months 5 = >72 months
Residual and Cumulative Effects Significance:	S = Significant N = Not significant NA = Not applicable
Frequency of Occurrence:	1 = <10 events/year 2 = 11-50 events/year 3 = 51-100 events/year 4 = 101-200 events/year 5 = >200 events/year 6 = continuous

Table 1.9 Summary Table for Freshwater Resources - Potential Interactions, Predicted Effects

Predicted Effects	Construction	Operation	Decommissioning	Accidental Events
Geographical Extent	2	2	2	2
Duration of Interaction	2	5	2	2
Frequency of Occurrence	2	2	2	1
Level of Confidence	3	3	3	2
Cumulative Effects Significance	N	N	N	N
Residual Effects Significance	N	N	N	N

Key for Table 1.9

Geographical Extent:	1 = <1 km ² 2 = 1-10 km ² 3 = 11-100 km ² 4 = 101-1000 km ² 5 = 1001-10,000 km ² 6 = >10,000 km ²
Level of Confidence:	1 = low 2 = moderate 3 = high
Duration of Interaction:	1 = <1 month 2 = 1-12 months 3 = 13-36 months 4 = 37-72 months 5 = >72 months
Residual and Cumulative Effects Significance:	S = Significant N = Not significant NA = Not applicable
Frequency of Occurrence:	1 = <10 events/year 2 = 11-50 events/year 3 = 51-100 events/year 4 = 101-200 events/year

5 = >200 events/year
6 = continuous

Table 1.10 Summary Table for Terrestrial Resources - Potential Interactions, Predicted Effects

Predicted Effects	Construction	Operation	Decommissioning	Accidental Events
Geographical Extent	2	2	2	3
Duration of Interaction	2	5	2	5
Frequency of Occurrence	2	6	2	1
Level of Confidence	3	3	3	3
Cumulative Effects Significance	N	N	N	N
Residual Effects Significance	N	N	N	N

Key for Table 1.10

Geographical Extent:	1 = <1 km ² 2 = 1-10 km ² 3 = 11-100 km ² 4 = 101-1000 km ² 5 = 1001-10,000 km ² 6 = >10,000 km ²
Level of Confidence:	1 = low 2 = moderate 3 = high
Duration of Interaction:	1 = <1 month 2 = 1-12 months 3 = 13-36 months 4 = 37-72 months 5 = >72 months

Residual and Cumulative Effects Significance:	S = Significant N = Not significant NA = Not applicable
Frequency of Occurrence:	1 = <10 events/year 2 = 11-50 events/year 3 = 51-100 events/year 4 = 101-200 events/year 5 = >200 events/year 6 = continuous

Table 1.11 Summary Table for Air Quality Aspects - Potential Interactions, Predicted Effects

Predicted Effects	Construction	Operation	Decommissioning	Accidental Events
Geographical Extent	1	1	1	1
Duration of Interaction	2	2	2	2
Frequency of Occurrence	2	4	2	2
Level of Confidence	3	3	3	3
Cumulative Effects Significance	N	N	N	S
Residual Effects Significance	N	N	N	N

Key for Table 1.11

Geographical Extent:	1 = <1 km ² 2 = 1-10 km ² 3 = 11-100 km ² 4 = 101-1000 km ² 5 = 1001-10,000 km ² 6 = >10,000 km ²
Level of Confidence:	1 = low 2 = moderate 3 = high

Duration of Interaction:	1 = <1 month 2 = 1-12 months 3 = 13-36 months 4 = 37-72 months 5 = >72 months
Residual and Cumulative Effects Significance:	S = Significant N = Not significant NA = Not applicable
Frequency of Occurrence:	1 = <10 events/year 2 = 11-50 events/year 3 = 51-100 events/year 4 = 101-200 events/year 5 = >200 events/year 6 = continuous

1.10 Implementation of Mitigation Measures

Pursuant to Section 20(2) of the CEEA, ACOA, as the RA, will ensure that all necessary mitigation measures will be implemented. In this regard, the RA commits to requiring, as a condition of funding, the development of Environmental Protection Plans for the construction, operation and decommissioning of the project. In these plans, mitigation generally discussed in the CSR will be detailed for all potentially impacting project components and activities. An EPP for the construction phase must be submitted for approval by ACOA, expert departments (e.g. Department of Fisheries and Oceans; Environment Canada) and the Province prior to construction start-up.

Similarly, an operational phase EPP will be submitted for approval prior to operational start-up.

A decommissioning plan and attendant EPP must be submitted for approval one year prior to decommissioning,

Mitigation measures outlined by the CSR are all technologically and economically feasible. Mitigation measures required to prevent impacts on the environment for operations of this nature are well understood and relatively non-complex. No lack of required expertise, equipment or materials is anticipated.

1.11 Follow Up

Aguathuna Quarries Ltd. has committed to meeting or exceeding all legislative and regulatory requirements for the project. Included as part-

and-parcel of these requirements are the Follow Up provisions of CEAA, as described by section 38 of CEAA. In particular, the CEAA requires that Environmental Assessment predictions be verified and that required mitigation is in fact put in place. As such, ACOA, as the RA, is committed to ensuring that a detailed follow-up program is prepared and acted upon. In this regard, ACOA will consult with expert departments concerning the development and implementation of the program. Part and Parcel of that program will be a clear outline of accountability within the proponent company related to corrective measures, should they be required.

For the Aguathuna Quarry Development, effects have been predicted to be insignificant with mitigation. It is acknowledged, however, that in order for the project to be successfully carried out with minimal harm to the existing environment, mitigation will be required. In this regard, the follow up program will include (but not be limited to) those components presented below:

Monitoring suspended solids in freshwater and coastal zone environs during the construction phase to ensure compliance with Section 36 of the *Fisheries Act*, CCME Water Quality Guidelines (1987) and CCME Interim Marine and Estuarine Water Quality Guidelines for General Variables (1996). Sampling will occur for all potentially affected watercourses prior to project start-up to determine baseline levels. Thereafter, sampling will occur twice weekly at baseline collection points. During the periods of visible suspended solids, samples will be collected and tested daily. Discharge from the settling pond to be sampled daily.

Monitoring suspended solids in freshwater and coastal zone environs during the operational phase (bi-weekly, except during heavy precipitation events -daily);

Pre-established criteria for water quality monitoring, including the frequency and location of sampling and contingency plans in case criteria are exceeded, will be outlined in the EPP.

Monitoring zone-of-influence air quality during the operational phase, and implementation of dust controls as necessary, (i.e. in excess of 80 ug/m³);

A dive survey of existing habitat has been carried out, and is provided in Appendix D. Following infill emplacement, a second underwater survey will be conducted either by SCUBA or ROV, to determine habitat characteristics within 50 meters of the footprint of the dock. Periodic

surveys will be carried out to monitor effects of shiploading on bottom marine habitat (e.g. every three years.);

Periodic site inspections by ACOA and/or its' representatives to verify mitigation efficacy;

Conducting pre-blast baseline surveys on all potentially affected poured concrete structures, and post blast surveys on same;

Follow-up inspections to ensure mitigation predictions;

Air quality monitoring surveys will occur throughout the construction and operational phases of the Quarry Development. Dust and noise sampling will take place in the immediate working vicinity and at intervals up to 1 km away from the dust and noise generating activities. Monitoring will occur on a regular basis (i.e. biweekly during the first year, and as dictated by weather and intensity of activities after that period).

Predictions regarding rare and endangered species on and surrounding the project site, will be confirmed as part-and-parcel of the EPP. Prior to the initiation of construction and quarrying phases, a qualified botanist will survey the site to confirm there are no rare or endangered plant species present. Further, an inventory of migratory and nesting birds on the site, and an additional survey of Goose Pond for freshwater fish species will be conducted prior to the construction phase.

A Health and Safety Plan must be developed to ensure worker safety. It will include standard operating practices for the handling of site machinery, safety requirements and instructions for medical emergencies. Employees will also be required to take appropriate safety training courses;

CEAA requires that follow up monitoring be conducted for potential negative effects on the environment. By extension, this includes any negative socio-economic effects associated with them. No adverse socio-economic effects have been identified for the project.

Weekly environmental reporting will be conducted in order to confirm EPP provisions, report accidents and/or malfunctions and verify mitigation efficacy. Reports will be retained by the proponent, and copied to ACOA, DFO, Environment Canada and provincial DOE.

Other follow-up provisions may be applied as the development progresses through its' phases.

1.12 Conclusions

No significant residual adverse environmental effects, including cumulative effects, are predicted on Marine Habitat or Fish, Freshwater Resources, Terrestrial Resources or Air Quality as a result of the project. All potential environmental effects can be mitigated using known and proven technology.

There is currently no indication that public concern warrants further assessment using Mediation or Panel Review protocols.

There are no potential unknown adverse effects associated with the project.

Date Modified: 2009-07-13