

Forest Cover

A sugar maple, yellow birch, beech climax forest comprises much of the undisturbed hilltop and slope areas of the MacLeod Resources property. Scattered white pine, are also found throughout the site. Patches of second-growth forest occur on areas of the site that were formerly cut and disturbed and have regenerated. On these sites there is a shift from a pure tolerant hardwood forest to a mixed forest, with spruce and balsam fir, white birch and red maple. The site of the proposed quarry is located within an eight-year old clearcut, which is currently dominated by shade-intolerant woody shrubs and raspberries.

Terrestrial Habitat Evaluation

MacLeod Resources Limited contacted the Department of Natural Resources, the Nova Scotia Museum and the Atlantic Canada Conservation Data Center for all available information on rare or endangered species. As a result of these inquiries, and the review of the draft registration document MacLeod Resources Ltd. undertook a detailed botanical survey of the proposed quarry site, [See Appendix VIII]. Vegetation communities were examined to determine the types of ecosystems and terrestrial habitats that comprise the proposed quarry site and adjacent landscape. Climax hardwood forests were found to be typical of the area and present no unique or endangered ecosystem attributes. The climax forest areas on the lands owned by the proponent will be preserved and are not in the proposed quarry area. The proposed quarry site is located in the corner of a 26-hectare clearcut, and does not include ecosystems or habitats that are unique. No rare species were found in the area of the undertaking.

Significant Wildlife Values

To assess the wildlife value of the property and proposed quarry site the proponent contacted representatives from the Nova Scotia Department of Natural Resources. Wildlife habitat concerns are primarily related to deer wintering areas, and commercial forestry activity that might impact deer wintering areas (Figure 12). MacLeod Resources has no plans to harvest forest stands, and forested areas will not be disturbed by the operation of the proposed quarry, which is located in the corner of an eight-year old clearcut, that is grown over with shrubs and intolerant hardwoods and is considered to have low wildlife value.



Natural
Resources

Department of Natural Resources

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(902) 563-3372
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April 30, 2002

Chris Trider
99 Archibald Road
RR#1 Truro, NS B2N 5A9

Re: proposed marble quarry located at River Denys, Inverness County, NS

Dear Mr. Trider

Please find attached a sketch map showing the location of the marble quarry in relation to significant wildlife habitat as indicated in NSDNR's GIS database. The only information I have for this site indicates the existence of a large deer wintering area (DWA) surrounding the quarry site to the north, west and south. It is located partly on provincial Crown lands and private lands extending through softwood and mixed wood stands along the stream corridor of Kennedy's Big Brook.

The major concerns with respect to Deer Wintering Areas relates to forest harvesting in and around the stands. As noted in the Forest/Wildlife Guidelines, there are guidelines for maximum size of harvest area, retention of a minimum area of mature softwood left un-cut, etc. The main concern is that traditionally heavily used areas of mature softwood are retained as functional deer wintering habitat. The site of the quarry is located in a large group of stands of largely tolerant hardwood and should not pose a negative impact to the DWA.

In addition to the information at hand, you should, at minimum, also contact the NS Museum and the Atlantic Canada Conservation Data Centre for additional information particularly on species at risk which are likely to occur in the forest habitats involved. If the information suggests the presence of species at risk, habitat inventories for both flora and fauna should be completed during the appropriate time of year by qualified personnel.

Sincerely,

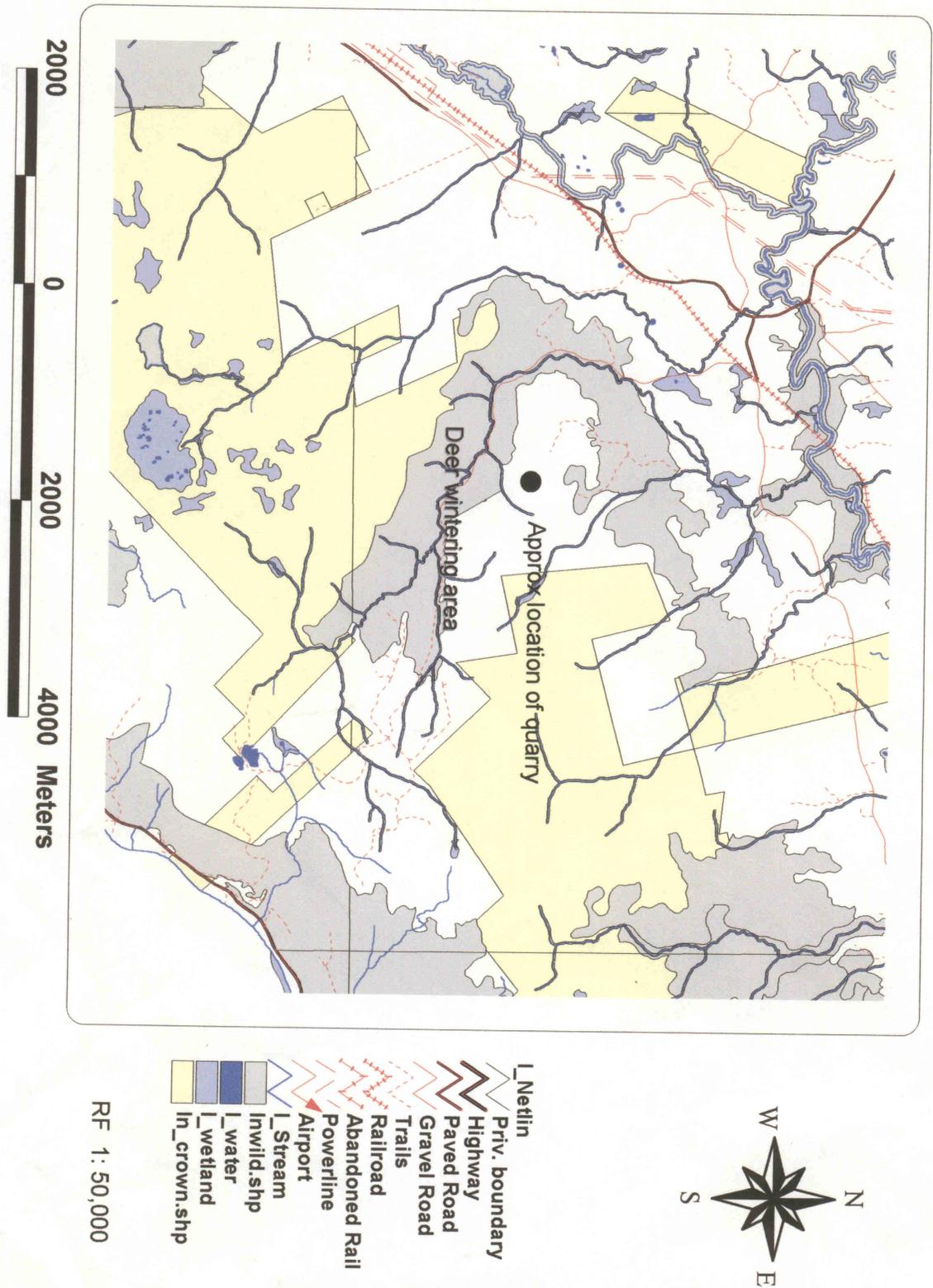
A handwritten signature in black ink that reads "Terry Power".

Terry Power

enc.

cc. Bill English

Figure 12: Deer Wintering Areas



Lands at River Denys, Inverness Co.
March 2002

Wetlands

No wetlands occur on the MacLeod property, which is for the most part characterized by well-drained soils. A natural depression on the site formed by an old forestry road collects water during periods of high precipitation, but it is very small in size (10 metres by 15 metres), seasonal, and does not constitute a wetland ecosystem.

Valued Ecosystem Components (VECs) [See Appendix II]

The proposed quarry site has undergone a Canadian Environmental Assessment Act Screening Report. This study was conducted and compiled by Troy Young of the Canadian Environmental Assessment Agency on behalf of Enterprise Cape Breton Corporation as part of the funding requirement (Appendix II). The screening report identifies valued ecosystem components (VEC's). Potential impacts to valued ecosystem components are addressed in the Screening Report document, and relate to: (a) surface water quantity and quality, (b) fish and fish habitat, (c) soils, (d) climate, (e) rare and/or endangered species, and (f) heritage/archaeology. Valued ecosystem components are discussed in Section 8, along with a list of mitigation designed to be employed during the development and operation of the quarry.

Cultural and Heritage Values

The proponent contacted representatives at the Nova Scotia Museum of Natural History, Heritage Resources Services, with a request that the proposed quarry site be investigated for the presence of known heritage resources. The museum responded that they have not identified any known archeological or other sites of cultural significance on the proposed quarry site.

The only heritage value associated with the site is the MacLeod farm, granted to a Scottish immigrant family in the nineteenth century. The foundation of the MacLeod family farmstead, still remains on the present-day property and is located approximately 0.4 kilometres from the quarry site. MacLeod Resources Limited will not disturb the site, and is in the process of designing a small marble cairn memorial that will to be dedicated to the old farm site.



Nova Scotia Museum
Heritage Resource Services

Memorandum

File No. F:\2001-02\28000-55 Environmental Screenings\02-03-04 MacLeod Resources, River Denys\HD Response.wpd

TO: Chris Trider
MacLeod Resources

FROM: Robert Ogilvie
Nova Scotia Museum

DATE: March 25, 2002

RE: **Environmental Screening 02-03-04**
River Denys Marble Quarry

Further to your request of March 4, 2002, staff of the Nova Scotia Museum have reviewed their files for reference to the presence of known heritage resources in the study area. Please be aware that our information is not comprehensive, in that it is incomplete and of varying degrees of accuracy with respect to the precise location and condition of heritage resources.

Cultural Heritage

Archaeology

There are no known archaeological sites recorded within the study area. The 1884 geological map shows no structures within the study area. The study area has low potential for Pre-Contact sites. We have no concerns. If any suspected archaeological features are found during the course of development the Curator of Archaeology, Nova Scotia Museum should be notified immediately.

Natural Heritage

The staff of the Nova Scotia Museum of Natural History have reviewed the documents and make the following observations:

Botany

The following botanical species of concern are known from the area of development and in habitats that are likely to be found on site. They should be considered in any botanical field study as being present, unless otherwise ascertained, in a timely fashion, i.e. during their growing season.

Yellow status: *Lilium canadense*, *Rumex salicifolius*, var. *mexicanus*, *Asclepias incarnata*, *A. virginiana* and *Floerka proserpinacoides*.

One Indeterminate ranked species is of concern, as there is no recent data about their numbers:
Viola nephrophylla.

Palaeontological Sites

The Museum has no records of significant paleontological resources within the development area.

If you have any questions, please contact Robert Ogilvie at 424-6475.

8. POTENTIAL ENVIRONMENTAL IMPACTS AND IMPACT MANAGEMENT

Background

MacLeod Resources Limited has planned and designed the proposed quarry to minimize disturbance to the site, and to reduce or remove potential adverse effects to the environment. The current land use adjacent to the proposed quarry site is commercial forestry. In the nineteenth century the site was used for agriculture. The proponents own a total of 118 hectares of land. Both the quarry site and production facility are located on land that has been disturbed. The proposed quarry site is located in one corner of a 26-hectare clearcut and the production plant will be located adjacent to the public road at the base of the mountain in an area used for roadbed gravel extraction by the previous owners.

The proposed quarry site is located 300 metres from the nearest watercourse and the project will not affect fish or fish habitat, or any unique or special resources. The North Mountain area is known to host an all-red phase of the Eastern Redbacked Salamander, which is relatively uncommon, and utilizes deciduous forest habitats. It is also suggested in the Flora of Nova Scotia, that several species of rare plants exist in the North Mountain area. As a result of prior clearcutting, the proposed quarry site is not likely to contain suitable habitat for these species (CEASR, 2001). [See Appendix VII Botanical Survey] No aesthetic impacts due to the quarry are anticipated. The quarry site is not visible from any main roads, and the small size of the quarry will not change the mountain face. The Environmental Assessment Screening document reports:

The site affected by the proposed undertaking is within an area, which was clearcut by the previous owners in 1993. The site is currently covered by young sugar maple and striped maple regeneration, interspersed with white pine. Much of the area is bare rock with surface outcrops of marble. The site is a natural quarry location in terms of the structure of the marble deposit around an existing depression to allow for the collection and settling of water with minimal disturbances of adjacent lands (CEASR, 2001).

MacLeod Resources plans to minimize impacts to the environment by designing a quarry and processing facility that addresses potential adverse effects in the way in which it is initially developed, as well as its method of operation and the manner in which it is managed. The proponent plans to mitigate against adverse impacts to the environment in all phases of the project development from the initial construction, to decommissioning of the quarry. The company will comply with all stipulations of Federal, Provincial or Municipal authorities or their officers.

Terrestrial Habitats

Construction and operation will not result in the loss of either large areas of forest cover, or wetlands. Buildings for the workers are removable trailer-type structures, built on skids and moved to the site. The production facility where marble will be processed is the largest building planned for the site, and will be a single-story structure with a floor area of 3,000 square feet.

Construction of the building will occur on a previously disturbed site, which was cleared and used for gravel roadbed material by the previous owners. Impacts to the environment associated with the construction of buildings for the proposed quarry are anticipated to be minimal. Clearing and grubbing of the quarry area will take place within a portion of the previously clearcut area.

Professionals consulted to assess and evaluate the proposed undertaking have expressed no concerns regarding adverse impacts to adjacent terrestrial ecosystems, or the species that inhabit them. The most dominant undisturbed ecosystem within the MacLeod Resources property is the climax hardwood forest, which surrounds the quarry site. The proponent's intent is to preserve the undisturbed forested areas around the perimeter of the existing clearcut, in order to promote natural regeneration and reforestation of the clearcut areas that are not used directly in the quarry undertaking. The proponents have no development plans for the mature climax forest that surrounds the quarry site and in this regard the quarry undertaking will have a limited or negligible impact, on the natural vegetation and terrestrial habitats surrounding the site.

No rare plants or animal species are known to be located within the site of the proposed quarry, and as such construction and operation are not expected to have any adverse environmental effects on terrestrial habitats. The proponent will employ mitigative measures proposed by the Canadian Environmental Assessment Screening Report (Appendix II) and recommendations by other government agencies.

Water Quality [See Appendix VI]

Any potential impacts on the adjacent springs and other groundwater resources will be the primary environmental concern of the proponent. MacLeod Resources proposes to monitor diligently to prevent any impacts from its quarry or plant operations and these concerns will be addressed throughout the life of the undertaking. This marble quarry will not use blasting or chemicals in its production and is processing a natural, limestone based material. Water will be our primary concern through the entire construction, operational and decommissioning phases of the undertaking. Sediment from surface runoff may enter surface depressions and make its way directly into the groundwater, rather than into surface streams. Watercourses with springs identified as headwaters, for example, Red Brook and MacLean Brook may be susceptible to turbidity problems contributed by both the groundwater component and surface runoff. However, the connection between surface water runoff and groundwater flow for this system of brooks is unknown. The proponent plans to minimize all potential risks to both surface water and groundwater quality by employing mitigative measures designed to protect adjacent water resources. Besides turbidity, there are potential problems associated with soil erosion, hydrocarbons released from machinery and fueling operations, and accidental spills. There will be a contingency plan in place in case of a fuel or chemical spill. The contingency plan includes procedures to be followed in the event of a spill. Spill equipment and bales of hay will be kept on site at all times. Staff will be trained in the use of materials and tools designed to contain, spills (such as portable berms, adsorbent materials), and emergency contact numbers will be posted near telephones.

To avoid impacts to water resources construction work will be scheduled to avoid periods of heavy precipitation. Erosion control structures (temporary matting, geotextile fibre fabric) will also be used, as appropriate, to prevent erosion and silty runoff during construction. Drainage will be controlled with rip-rap, silt barriers, berms, and directed through ditches and culverts to settling ponds. Limiting the areas exposed at any one time will minimize exposed soils and landscape fabric will be used to reduce erosion and stabilize exposed slopes. All stockpiled soils will be covered and/or dyked to prevent erosion and sediment-laden water from leaving the site. Construction machinery will be regularly checked for leaks and will be refueled at least 30 metres from the nearest watercourse.

The activities of soil stripping and marble extraction associated with the operation of the quarry may mobilize sediments from the surface to the subsurface which in turn may cause turbidity in hydraulically connected springs. All site runoff will be controlled and treated. Removed overburden will be stockpiled where the bedrock surface is smooth, with no apparent karst morphology. Overburden will be compacted as it is applied to the pile to help stabilize the material. Piles will be shaped in a way that facilitates drainage from the top and from around the perimeter, toward the settling ponds. Low areas in the exposed surface will be filled with sand and gravel to improve runoff and traction for equipment. Quarry access roads and site areas will be sloped away from seasonal streams. The quarry will use drainage ditches, channels and culverts and rock silt barriers in swales to direct silt-laden runoff to settling ponds, which are designed to catch sediment-laden water and precipitate silts and other sediments. A settling pond system will be used to prevent runoff from drill dusts or other wastewater entering adjacent watercourses. If required, the settling pond will be lined with an impermeable barrier.

Soil exposure within the quarry will be minimized and exposed areas will be stabilized with hay or other materials designed to reduce runoff. Slopes will incorporate sediment trap structures to reduce the flow of runoff, and direct runoff to ditches leading to settling ponds. Drainage control structures will be inspected on a regular basis and maintained as required. Exposed marble rock faces will be washed of debris (which will be collected and stockpiled). The chemical composition of the marble deposit contains no soluble toxic elements and will not impact adjacent watercourses. Excavation uses a technique that does not impact groundwater flow. The quarry will not excavate below the level of the water table, and dewatering of the site will not be necessary.

The proponent plans to implement the sampling and monitoring protocols proposed in the Water Resources Component [Appendix VI].

Wastewater Management

Quarrying and processing will occur in what are proposed to be closed-loop systems. Runoff water from the quarry face and water used for cutting in the processing facility will be directed to settling ponds and returned to recharge the reservoir for re-use. The on-site settling ponds will have the capacity to contain the runoff water and will be engineered with an impermeable liner if required (Figure 5). A minimum thirty-metre setback from all adjacent watercourses will be maintained to protect nearby brooks from runoff. The production facility will be constructed with a 0.25 metre high curb, designed to restrain and collect wastewater in the event of machinery failure or flood.

Noise

The proposed quarry undertaking is remote from urban centres, and noise from the operation will not affect the community of River Denys, located over six kilometres away from the quarry site. The proponent will comply with standard provincial guidelines for sound levels from operations. The quarry will be operational 5 days a week, for 10 hours per day, for 9 months of the year. Machinery and equipment used in the operation of the quarry will be fitted with standard noise-suppression devices. Diesel generators are: a Perkins 1000 TG2A (400/230 Volts) that produces a maximum noise level of 79 decibels, at seven feet distance, and a 250 KVA Cat generator to be placed in a soundproof building adjacent to the plant.

Dust

The proposed quarry undertaking uses specialized machinery specifically designed to reduce dust and other atmospheric pollutants. The process of cutting and polishing marble is a wet-procedure and as such, particulates are caught in water as sediments and treated on-site. If dust levels from access roads becomes problematic in the summer they will be sprayed, and vehicles will minimize speed. On-site dust and air-borne particulate levels are not anticipated to be a problem, but will be periodically monitored by the company to ensure they do not exceed maximum limits of 60-70 ug/m³ recommended in the quarry design site plan (Figure 5).

Water Monitoring

The water monitoring activities and protocols established in the Water Resources Component [Appendix VI] will be followed by the proponent.

Socioeconomic Implications

The Strait-Highlands region of Cape Breton Island has a tradition of resource-based employment, predominantly in the commercial forestry, agriculture, fishing, and soft-rock mining. The area has a local labour force with quarry skills gained when the Georgia Pacific gypsum quarries were in full production.

The proposed undertaking is located in a low-income part of Cape Breton Island. Today the area suffers chronic unemployment, and unemployment levels in the area often exceed 40%. The proposed undertaking provides opportunities for jobs at the quarry site and processing plant and has the potential to create sustainable long-term employment in the area. The positive employment aspects of the proposed undertaking are anticipated to provide an economic boost to the area, and no negative impacts to the socioeconomic environment are predicted. The project has been well received in the area and wherever possible, MacLeod Resources Limited plans to hire local residents for the construction, development, and operation of the quarry.

Reclamation

The process of quarrying marble leaves exposed cut surfaces of the natural stone. Designing the final years of the quarry to facilitate natural regeneration of the exposed marble terraces in an aesthetically pleasing structure is the reclamation plan of the proponents. To achieve this goal, the sculptural qualities of the marble terraces will be defined by additional wire saw cuts and stockpiled topsoil distributed along slope and into depressions. Rapid natural regeneration of the quarry area will be facilitated by preserving the forested perimeter and adjacent clearcut areas as seed sources. The proponent intends to retain ownership of the quarry and plant lands for future, personal use. Reclamation would therefore involve the following:

1. Design final bench cuts to reduce wall heights and slopes.
2. Place stockpiled topsoil along terraced slopes.
3. Stabilize all exposed soil with mulch pending natural regeneration from adjacent seed sources
4. Rip-rap lining on all site swales and channels having a slope greater than 3%
5. Fill any monitoring wells with concrete; fill any obvious drainage depressions with clean gravel.
6. Involve interested community members and regulators in the reclamation plan as required.

9. CONSULTATION

MacLeod Resources Limited has conducted consultation with the following adjacent landowners and groups in regard to the proposed Kennedys Big Brook Red Marble Quarry:

- Duncan MacLean – President, Friends of River Denys
- Bernie and Ruth MacLean – Owners MacLean’s General Store, River Denys
- Adjacent landowners – Lester MacLennan, Allister Gillis, Barry MacDonald, Harold Riest, Ernie MacLean, Jim MacAulay, Wayne Rich
- First Nations Representatives – Dan Christmas, Charlie Dennis, Tom Johnston

To date, there have been no objections or concerns expressed by the public or any groups contacted regarding potential adverse effects of the proposed quarry. MacLeod Resources has been granted access easements to the lands belonging to adjacent landowners Duncan MacLean and Jim MacAulay, in addition to permission to quarry within 15 metres of the property line.

10. SCHEDULE

MacLeod Resources Limited is ready to proceed immediately with the development of the quarry. Quarry plan blueprints and the site plan (Figure 7) has been drafted and signed by a registered engineer. The company plans to begin construction upon authorization of the environmental registration document. The company will also obtain all other necessary approvals and permits required to proceed with the operation of the quarry (Mining Permit, Industrial Activities Permit, Mining Lease, on-site septic approval) prior to operation. If water withdrawal exceeds 23,000 litres a day, a water withdrawal permit will be obtained. It is anticipated that construction and initial development of the quarry site in preparation for its operational phase, will be complete within thirty-days of approval. To date, under their Excavation Permit, MacLeod Resources Limited has stripped and exposed a small portion of the quarry face, and removed a 30 tonne bulk sample, which has been used to test the market potential of the Kennedys Big Brook marble, with positive results. The company has also ordered quarry machinery from both Italy and Quebec, to avoid delays in production, upon approval of the undertaking (delivery period on machinery is up to six months). The production facility site has been cleared and prepared and construction of the permanent structure is pending approval of the registration document. The Provincial Department of the Environment and Labour have undertaken a Field Inspection Report (May 6, 2002) and confirmed in their audit of the quarry that erosion and sedimentation controls are in place and that the site is sufficiently managed to minimize impacts (Appendix IV).

11. APPROVAL OF THE UNDERTAKING

The proponent is required to register this project as a Class I undertaking pursuant to the Nova Scotia *Environment Act* and *Environmental Assessment Regulations*. In addition to the *Environmental Assessment Regulations*, other relevant Provincial regulations include Industrial Approval from the NSDE&L and a Mining Lease and Mining Permit from the NSDNR. MacLeod Resources Limited will make application for additional approvals and permits in compliance with Provincial application procedures, immediately upon approval of the environmental registration document. Permits and approvals that have been granted in regard to the proposed undertaking are provided in Appendix I.

12. FUNDING

Human Resources Development Canada (HRDC) has provided funding toward salaries of workers hired from local communities. In addition MacLeod Resources Limited has received an interest-free start-up loan from the Enterprise Cape Breton Corporation (ECBC).

13. CONCLUSIONS

The proponent is engaged in the “One Window” process and as such has met with government department representative. If approval is granted, operations associated with the Kennedys Big Brook Red Marble quarry proposal will be conducted in accordance to all conditions of approvals and permits, and will comply with all mitigative measures recommended or enforced by regulatory agencies.

The proposed quarry undertaking is located on a previously disturbed site and the loss of terrestrial habitat on the site does not pose a threat to rare or endangered species or wildlife. MacLeod Resources Limited plan to preserve the surrounding forest cover and protect water resources. The company will take mitigative measures to ensure that potential impacts associated with the quarry do not adversely affect these ecosystems. The company has a zero-waste policy and will manage the operation in an environmentally friendly manner. The undertaking will create local employment opportunities and will have a positive long-term socioeconomic effect on the area. The undertaking also has the potential to expand the dimension stone industry in Cape Breton and diversify the local economy.

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