

Texada South Quarry

Mine Plan

Davie Bay

Texada Island

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May 15, 2009

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1. Project Overview

Lehigh Northwest Materials Ltd. has long been involved in the supply of quality aggregate materials from its operations in Victoria and Sechelt and now wishes to develop a supply of quarried building materials from its Davie Bay holdings on Texada Island. The target markets for this operation will be Vancouver, Vancouver Island and potentially Seattle and the US Pacific Northwest.

The proposed quarry is located on the southwest side of Texada Island approximately 12 km south of Gillies Bay and covers an area of rock outcrop approximately 1.6 km inland from Davie Bay. Access to the site is provided from Gillies Bay using the Hydro West Forest Service Road and existing logging/exploration roads across the Lehigh private properties.

All quarry activities will occur within either private or crown tenures presently held by Lehigh Cement Ltd.

The project will also include a marine terminal situated at Davie Bay and this will be located within a new crown tenure. An application for this was filed with the Ministry of Agriculture and Lands in December of 2008 and a final decision is pending.

Planned production rate for the quarry operation will be up to 20,000 tonnes per month or 240,000 tonnes per year and is targeted for start up in 2010.

2. Location and Access

The proposed quarry site is located on the southwest shore of Texada Island, 95 km northwest of Vancouver and 12 km south of Gillies Bay. The site is covered by Trim Map sheets 092F059 and 092F069 with the quarry located at UTM coordinates of approximately 401000E, 5496000N (NAD83).

BC Ferries provides access to Texada Island from Powell River and scheduled air service is available from Vancouver and/or Vancouver Island into Gillies Bay.

The site is accessed by traveling south from Gillies Bay using the Hydro West Forest Service Road and existing logging/exploration roads across the Lehigh private properties.

3. Tenures and Present Land Use

The land base for the Texada South quarry project will involve various land tenures as shown on Drawing # TS0020 and summarized as follows:

<u>Name</u>	<u>Type</u>	<u>Owner</u>	<u>Activity</u>
DL 235	Private	Lehigh	quarry, stockpile, initial process, haul road, conveyor
DL 400	Private	Lehigh	loadout conveyor, office, admin
L 573	Mining Lease (# 308820)	Lehigh	quarry, final process
Proposed	Crown Lease (# 2410074)	Lehigh (pending)	marine loadout, conveyor, loadout access trail
238702	License of Occupation	JMG Logging	overhead conveyor, loadout access trail
FSR	Road Dedication, RoW	Forest Service	conveyor crossings, site access, loadout access trail

Lehigh Cement Limited presently owns DL 235 and DL 400 where most of the proposed quarry activities will occur, as well as adjacent lots 302, 303, and 548. Present activities on the private lands include aggregate and mineral exploration as well as some limited timber harvesting.

Lehigh also holds mining leases covering DL 573 and DL 589 which lie immediately south of DL 235. Mining is proposed within DL 573 as part of the subject mine plan, but will require acquisition of a supplemental Land Tenure to allow extraction of the rock material for aggregate purposes. This will be completed prior to initiating quarry operations within the lease boundaries. Quarry development will not extend into DL 589 at this time. The leases have been logged in the past, although there is no such activity on the properties at this time. Lehigh continues to explore the properties for mineral potential.

An application was filed with the Ministry of Agriculture and Lands in December 2008 to acquire a crown lease for the purposes of developing a marine loadout in association with the proposed quarry development. The proposed lease covers an area of 3.98 ha of which 2.27 ha is water and 1.71 ha is upland. The property is vacant land with no history of any industrial, commercial or residential activity, with the exception of the eastern panhandle which overlies an inactive log sort tenure. A final decision is pending.

The Ministry of Forest (MoF) has a Forest Service Road (FSR) dedication within District Lot 400 to secure access to a log sort area on the south side of the lease peninsula. By virtue of its water front orientation, this tenure effectively separates the proposed marine loadout from the adjacent Lehigh private property. As it is imperative that log sort access be maintained, the proposed loadout installations have been designed to cross over the FSR with sufficient clearances to safely allow ongoing use by logging equipment. Discussions with Trent Meyer, RPF of the Sunshine Coast Forest District have confirmed that the crossing can be accommodated provided that the established roadway clearances satisfy the requirements of Work Safe BC and that the site is managed so as to not significantly interfere with log sort operations. Lehigh will work closely with the Ministry to ensure that their interests are satisfied and will have the necessary MoF approvals in place prior to construction. It is to be noted that the log sort is not presently active and has been dormant for many years.

The log sort area accessed by the FSR dedication is actually covered by License of Occupation #238702 held by JMG Logging of Texada Island and not the MoF. Due to the critical alignment of the proposed Lehigh installations, it was necessary that the Lehigh lease overlap the northern part of the log sort tenure. Discussions with R. Jones of JMG Logging, suggest that this will not result in any significant impact on log sort operations and that the two activities can be accommodated through mutual cooperation. While the log sort has not been utilized in recent years, Lehigh respects the need to maintain the ability of the licensee to resume log sort operations as may be necessary and will accordingly minimize structures within the log sort tenure, ensure that roadway clearances are accordance with Work Safe BC requirements and that loadout activities are coordinated to avoid conflict with log sort operations.

MoF also maintains a Right of Way across Lehigh private lands for the Hydro West Forest Service Road which will require crossing with haul roads and conveyors as part of the proposed quarry development. While Lehigh retains certain rights with respect to realignments, crossings and use, every effort will be taken to again work closely with the Ministry to ensure that their interests are satisfied and that any necessary MoF approvals in place prior to construction.

4. Description of Work

Aggregate materials will be quarried from two locations above Davie Bay using conventional drill and blast methods. Of the two locations proposed, the lower quarry site is intended as a start up development which will provide initial production as well as material for haul road and quarry infrastructure development. It will also create a permanent location for the mine services and support facilities required for development of the primary quarry, located at higher elevations.

The quarry product will be crushed and transported to a lower level stockpile area by haul truck and/or overland conveyor. The crush product will then be reclaimed and loaded on barges by conveyor for final shipment. Other than small quantities of road base and/or construction material for use on site, the quarry will produce a single -75 mm aggregate product at rates of up to 20,000 tonnes per month or 240,000 tonnes per year.

All quarry disturbances will be progressively reclaimed to commercial forest and wildlife habitat.

4.1 Development Sequence

The mine will be developed in phases to allow a systematic progression of infrastructure upgrade and system optimization concurrent with market opportunities. This also facilitates the reduction of initial capital expenditures, minimization of production lead time, and allows for effective management of the proposed quarry disturbances and associated reclamation initiatives.

4.1.1 Phase I

The initial phase of the project is designed to establish the barge loading capabilities and initial quarry development. The work will include:

- a) construction of the barge loadout with overland conveyor and feed hopper
- b) clearing and development of loadout stockpile area using loader for stack and reclaim
- c) the set up and operation of a portable crushing plant in the stockpile area
- d) construction of an electrical substation and initial site distribution
- e) initiation of lower quarry development using existing access road with articulated haul trucks, minimal upgrade and radio communications
- f) establishment of quarry and stockpile drainage control and settling ponds

4.1.2 Phase II

Phase II will involve optimization of the barge loadout system and improved quarry haulage capabilities. Improvements will include:

- a) installation of a loadout stockpile stacking conveyor
- b) installation of a stockpile reclaim and transfer conveyor
- c) development of a new lower quarry haul road, with reduced grade and increased width
- d) implementation of large haul truck operations

4.1.3 Phase III

The objective of Phase III development will be to initiate upper quarry operations, minimize truck haulage, and to move crushing equipment away from the Hydro West Forest Service Road and general public access. This work will include:

- a) installation of overland conveyor between lower quarry and loadout stockpile
- b) establishment of a primary stockpile with conveyor reclaim at lower quarry
- c) installation of powerline to lower quarry
- d) relocation of portable crusher plant to lower quarry
- e) development of haul road between lower and upper quarries
- f) initiation of upper quarry development
- g) establishment of upper quarry drainage and sediment control systems

4.1.4 Phase IV

All mining will be moved to the upper quarry as part of the Phase IV initiative and will include enhanced crushing and materials handling systems and consolidation of mine services within the lower quarry footprint. Key activities will include:

- a) development of an internal haul road within the upper quarry to access the 210m elevation
- b) installation of an overland conveyor from upper quarry to lower quarry
- c) installation of powerline to upper quarry
- d) construction of new crushing plant
- e) termination of lower quarry development
- f) relocation of remaining mine infrastructure to lower quarry

Quarry construction is tentatively planned for the spring of 2010 with commissioning expected by late fall. It is expected that operations will continue until exhaustion of the aggregate resources which, based on available data, could result in an operational life in excess of 100 years. Start up will, however, be subject to market and general economic conditions and as such, firm dates can not be established at this time.

4.2 Mine

Two quarry locations are proposed, both of which will be excavated using a conventional benching system. Benches will be nominally 10 metres high with widths of not less than 8 metres. All final bench faces will be cut with a 15 degree backslope and will be scaled and/or otherwise stabilized for long term stability prior to access being lost. A ramp system will be established within the limits of the final quarry development to provide bench access.

Multiple benches will be developed to allow for product blending and quality control, however, the amount of disturbance at any given time will be limited to that necessary to sustain short term mining operations. As benches are completed, supplemental stripping will be required. This will, however, be offset by the progressive reclamation of those areas no longer required for on going mine operations.

The lower quarry will be established with a floor elevation of 110 metres and will extend to a crest at 150 metres. The quarry is designed to be free draining and will be provided with storm runoff collection and sediment control ponds. Development at this location will be limited as, other than being a source for initial production, the primary purpose is to create a suitable area for mine shops, services and administration facilities which will support the long term development of the upper quarry.

By comparison, the upper quarry will be initiated at the 250 metre bench and will extend upwards to the 330m bench and down to the 210 metre elevation where a crushing plant will be constructed as part of the Phase IV development. This quarry is also designed to be free draining and will be provided with storm water collection and sediment control at both the 250 and 210 metre elevations.

Pits have been designed to maintain a minimum 30 metre environmental buffer between quarry disturbances and all adjacent watercourses and wetland areas. While the primary control on mine development is based on geology, an ephemeral watercourse known as Mossie Creek, will establish excavation limits along the north side of the upper quarry. This creek is fed almost entirely from a higher elevation wetland with minimal flow contributions along the quarry perimeter. As such, the quarry development will not result in any significant impacts to the overall hydrology of the Mossie Creek drainage. The upper quarry benches have also been laid out such that the final floor elevations are maintained above those of the adjacent stream bed to preserve existing groundwater regimes. There are no hydrological constraints associated with the lower quarry development.

Mine workforce will be approximately 10 to 12 people including contractors.

All mine operations will be conducted in accordance with the Health Safety and Reclamation Code for Mines in BC

4.2.1 Quarry Preparation, Stripping and Soil Storage

Mine preparation will commence with the progressive removal of forest cover in accordance with needs of immediate mining operations. This will reduce the amount of open mine disturbance and minimize visual and environmental impacts.

The quarry areas have been extensively harvested in the past with little merchantable timber remaining and regeneration from these earlier forestry activities has been slow due to the lack of soil and water. Commercial timber will be salvaged and marketed. Non-commercial fibre, slash and other woody debris will be utilized for the reestablishment of wildlife habitat as part of the ongoing reclamation initiatives. What materials cannot be used in this manner will be burned, and/or composted. Opportunities will be explored for marketing wood chips and if it can be made viable, will be implemented to reduce burning requirements. Logging will not extend into the established environmental buffers and will be scheduled to avoid bird nesting seasons.

There is no significant overburden present within the proposed mine area, however, what does exist, will be stripped and stockpiled for reclamation purposes. Overburden will be removed progressively in conjunction with on going mining operations to minimize the amount of open mine disturbance.

All overburden will be removed within 2 metres of the crest of the proposed quarry excavation and the resulting cut slope will be graded back at 2:1 (h:v). Under no circumstances will the overburden removal and backslope cuts infringe on the established environmental buffers. Immediately upon excavation, backslope cuts will be seeded with a native groundcover to minimize erosion and reduce visual impacts.

Designated overburden stockpiles have been provided at the lower quarry and at three locations peripheral to the upper quarry development. Stockpile areas will be cleared prior to placement of overburden materials and overburden will be placed in lifts to ensure long term stability. Surface runoff will also be diverted away from stockpile areas to prevent erosion. Outside slopes of overburden stockpiles will be graded at 2:1 (h:v) and seeded with a native ground cover for erosion control and to reduce visual impacts. Consideration will be given to interim reforestation of the stockpile surfaces whenever recovery of the overburden material will not be required for at least one rotation of an appropriate commercial tree species.

Recovery of some overburden will be required on an ongoing basis to satisfy the requirements of the progressive quarry reclamation initiatives. Stockpile recovery areas will be managed to minimize erosion, visual impacts and long term slope stability.

4.2.2 Drilling and Blasting

Drilling and blasting will be contracted out as part for the initial quarry operations, but will be transferred to quarry personnel at first opportunity. Blasting, whether undertaken by contractor or the company, will only be undertaken by persons holding valid BC Mines Blasting Certificates.

Initial quarry production will be produced using 125 to 150mm holes on a nominal 3 metre by 4 metre pattern. Explosives will be Anfo, with high explosive primers and "handidet" initiators. Blast size will be a nominal 5000 tonnes.

Given the limited production requirements, an onsite explosives magazine will not be maintained and explosives will be delivered on an as needed basis by the explosives supplier for existing magazines on Texada Island. Should this change, applications will be filed with the Ministry of Energy and Mines to obtain the necessary approvals for an onsite installation.

Public notifications will be posted along the Hydro West Forest Service Road, one on either side of the Lehigh properties, to provide information on the of blasting schedules. An additional advisory will be posted at the start of the Stromberg Creek trail which can be used to access known karst and other recreational features.

When blasting, all quarry access points will be guarded by company personnel to prevent unauthorized entry. Air traffic control will also be notified to avoid overflights during blasting operations.

Initial blasts will monitored for noise and vibration to allow optimization of the blasting practices. Further monitoring will be undertaken whenever there are significant changes to the blasting program or blast location.

4.2.3 Loading and Haulage

Twenty tonne articulated haul trucks will be utilized for initial quarry operations as they can be accommodated for radio controlled transit on the existing lower quarry access road with only minor road upgrades being necessary. This will transition to larger 50 or 100 tonne haul trucks upon completion of the new haul road construction. Truck loading will be by excavator or front end loader and dump blocks will be installed at all truck dump hopper locations

Overland conveyors will eventually be installed as part of the more advanced mining programs to eliminate the downhill truck haul. Once the conveyor system has been completed as part of the Phase IV development, truck haul will be limited to in-pit transfer between the quarry face and the crushing plant.

As part of the conveying system, an intermediate stockpile will be established at the lower quarry to receive conveyed material from the upper pit. This will include a reclaim conveyor installation which will be provided with an escapeway from the back end of the reclaim tunnel. All conveyors will be provided with pinch point and drive system guards and well as trip cords for emergency stoppage. As with the marine area conveyors, a belt overturn strategy will be employed to reduce spillage along the conveyor alignments.

The conveyor between the lower quarry and the loadout stockpile will pass through box culverts under both the lower haul road and Hydro West Forest Service Road (FSR). Some grade adjustments will be necessary on the FSR to facilitate the crossing. This work will be done in consultation with the Ministry of Forests and in a manner that does not impact public use.

4.2.4 Roads

An existing logging road will be utilized to access the lower quarry for initial mine production. This will limit haulage operations to the utilization of articulated trucks, single lane traffic and radio based traffic control.

Haul roads upgrades are proposed as part of the more advanced mine programs and will these will allow use of up to 100 tonne haul trucks and unrestricted, two way transportation.

Upgraded roads have been designed with a travel surface of 19 metres which exceeds three times the width of the largest haulage vehicle being proposed. Roads will be provided with ditching along the upslope side, culverts and safety berms wherever the adjacent dropoff exceeds 3 metres. Safety berms, when installed, will be at least $\frac{3}{4}$ the height of the wheel on the largest vehicle being used on the road. Haul road grades will not exceed 10%, with 8% being typical.

Haul road construction will require cut and fill to create the desired alignments. Cuts in rock outcrop will be established with a 15 degree backslope and will be scaled and stabilized as part of the construction process. Cuts in unconsolidated material will be graded with a final slope of 2:1 (h:1).

The substrate of road fills will be excavated to remove organic material prior to the construction of the road prism. Such materials will be retained for top dressing of final cut and fill sideslopes. Fill materials will be placed in lifts, compacted and provided with a downslope gradient of 2:1 (h:V). Sideslopes of all cuts in unconsolidated material and fill areas will be top dressed with recovered overburden and planted at first opportunity, with both a native ground cover and a commercial tree species to control erosion and to minimize both visual impact and unreclaimed mine disturbance. Travel surface will be appropriately surfaced and maintained with crush material.

In-pit ramps will be constructed using the same basic parameters as the primary haul road system, although the road grade will standardized at 10%.

4.3 Processing

Aside from minor quantities of roadbase intended for on site use, the quarry will produce only a single minus 75mm aggregate product.

A portable crushing set will be utilized for initial production with a permanent crusher installation planned once access has been established to the 210 metre bench. Both portable and permanent plants will be powered from the existing BC Hydro power grid to minimize the requirements for fuel transport and storage.

The portable crusher will be set up initially at the loadout stockpile location and as infrastructure is developed, will be relocated to the lower quarry. This will result in shorter haul times and additional separation between the crushing operations and publicly accessible areas. With commissioning of the permanent crusher installations at the upper quarry, the portable crusher will no longer be required for primary production but may be retained for the manufacture of roadbase materials for maintenance of quarry infrastructure.

Both crusher installations will be provided with pinch point and drive system guards, conveyor trip cords and dust suppression equipment. Dump hoppers will be provided with dump blocks as may be appropriate. Transfer points will be constructed with rock boxes and/or rubber linings to reduce noise.

4.4 Waste Handling

Other than overburden which will be stored for reclamation purposes, there will be no waste dumps associated with the mining operation as all excavated material will be shipped as product.

4.5 Loadout Stockpile Area

A stockpile area will be developed adjacent to the Hydro West FSR in order to support barge loading operations. This location will also constitute the base of initial mine operations with the construction of a combination dry/mine shop, and conversion of an existing building for mine administrative purposes. Other services that will be provided at this location will include the fuel storage, an electrical sub station, First Aid station, and a helipad for emergency evacuation.

The loadout stockpile area will also be the location for set up of the portable crusher for processing of all early quarry production. Stockpiling of both pit run and final product will initially be undertaken as a truck and loader operation but will be upgraded to a stacking conveyor with reclaim as infrastructure is developed. Stockpiles are designed for an ultimate 20,000 tonne live capacity which would provide sufficient supply for loading multiple barges.

All drainage from the stockpile area will be collected and diverted through settling ponds prior to leaving the site. Additional settling capacity has been provided for drainage flowing north past the stockpile and reclaim installations. Settling ponds will be fitted with oil separation/collection capabilities and spill containment materials will be maintained at these locations. Pond sediment will be recovered and either shipped as product or added as a reclamation enhancement to the stockpiled overburden materials.

4.6 Marine Loadout

Servicing of the proposed markets from Texada Island will require the use of marine transportation to be economically feasible and accordingly, the development of a marine loading terminal is critically essential to the project development. Unfortunately a suitable loadout location does not exist on current Lehigh tenures and as such, it was necessary to screen adjacent crown holdings. After considerable investigation, the subject crown property was chosen on the basis that it is the closest site to the primary aggregate source, is adjacent to existing Lehigh property and exhibits specific site attributes that will allow safe operation of the marine systems with minimal impact on the surrounding environment.

The marine loadout will consist of an elevated, covered conveyor extending from Lehigh's upland property to the shore, a floating standoff and a permanently moored conveyor barge to transfer and place the material on larger barges for shipment. The product barges will moor outboard of the conveyor barge and be positioned using hydraulic winches to facilitate loading.

An access road will also be constructed across the leased property to provide access for construction purposes and will remain in place as an ATV trail for subsequent operation and maintenance activities.

Loadout conveyors will be fitted with belt scrapers and utilize a belt overturn strategy to reduce spillage and carry back. Guards will be installed at all pinch points and on drive system components. Emergency stop pull cords will be provided along all accessible portions of the conveying system. Elevated conveyors will be provided with railed walkways for servicing.

The conveyor barge will be initially powered by an onboard diesel generator, but this will be converted to shore power when the necessary infrastructure is in place.

Spill containment materials will be maintained at the loadout site.

4.7 Infrastructure

4.7.1 Site Access and Security

All site access roads will be provided with gates and signage indicating the quarry contact information, access restrictions and safety advisories. Similar signage will be posted along the waterfront in proximity to the marine loadout installations and around the less accessible portions of the site perimeter.

Fencing will be installed along the Hydro West FSR along to restrict access to the loadout stockpile area and conveyor underpass installations.

A sign-in, sign-out protocol will be implemented at the mine dry for all employees and contractors. All site visitors will, similarly be required to report to the mine administration office for sign in prior to entering the mine property and sign out upon departure.

4.7.2 Offices and Administration

An existing building on Lot 400 will be utilized as a base for mine administration services.

A "dry" facility, supervisors office, lunch room and first aid station will be provided as part of the mine maintenance shop facility to be constructed within stockpile loadout area.

4.7.3 Maintenance Facilities

A combination maintenance shop/dry will be constructed at the lower stockpile area to support initial mining operations.

When mining at the lower quarry site is complete, a new shop will be constructed at that location along with a separate lunch room/first aid station. The dry, supervisors office and property entry sign-in will be maintained at the lower site.

Shops will be provided with runoff collection systems fitted with oil separators, fire suppression equipment, and spill containment materials.

Fuel storage facilities will be provided for mobile equipment at both shop locations. Tankage facility will either be covered and provided with secondary containment in excess of 110% of the stored capacity or be of double walled enviro-tank style construction. Refueling area will be hard surfaced and graded to allow collection of runoff water. Collection basin will fitted with an oil water separator. Fire extinguishers will be mounted at the refueling stations and spill containment materials will be maintained at the adjacent shop facilities.

4.7.4 Explosives Storage

No explosives will be stored on site. Blasting agents will be delivered to the quarry on an as required basis from existing magazines on Texada Island.

4.7.5 Utilities

Power is available from the existing hydro transmission line along the Hydro West FSR. A substation will be constructed on DL235 to feed the processing and stockpiling operations. A distribution line will be extended along the conveyor alignments to supply the marine loadout and upper quarry locations.

There is no telephone line connection to the property. Cell coverage is, however, available on site and will be utilized for general site operations in conjunction with VHF radios.

4.7.6 Water Supply

No significant quantities of water are required for the proposed mining and processing activities. Water will be used primarily for dust suppression and for fire fighting purposes. Water for these purposes will be sourced from a combination of wells and recycle from the proposed settling pond installations. Water storage will also be provided through a combination of ponds and tankage for fire fighting purposes.

Crew amenities on DL 235 and 400 will be supplied with water from the groundwater sources presently developed for existing site facilities. Domestic water will be tested to ensure that it satisfies the recommendations of the Canadian Drinking Water Guidelines.

4.7.7 Sanitation

Sewage will be disposed of through septic field installations on DL235 and/or DL400. Such installations will be constructed in accordance with Ministry of Health and/or Ministry of Environment requirements.

4.8 Site General

4.8.1 Work Schedule

Mine operations will be conducted on a single shift, five day per week schedule. Except for maintenance and exceptional circumstances, no work will be scheduled on weekends or statutory holidays.

4.8.2 Safety

Quarry operations will be supervised by qualified personnel with training in first aid, hazardous materials and confined space entry. All crew on site will have basic First Aid training and at least one person will have advanced accreditation. Mine crew will be given a comprehensive safety orientation upon hire. Orientation will outline site hazards, lock out procedures, provide WHMIS training, safety practices, safety equipment requirements, mine rescue, confined space and emergency response protocols.

The nearest hospital is located in Powell River although there is a local clinic at Gillies Bay. Travel time to Powell River is estimated at 2 hours by land or about ½ hour by air. Ambulance services are available at Vananda and helipads will be constructed at the loadout stockpile area and later at the lower quarry location. Helicopter and ambulance service providers will be contacted prior to commencing mine development to confirm emergency contact information and site locations.

First aid supplies and equipment will be provided in accordance with Work Safe BC requirements and will be located at a central First Aid Station established at the loadout stockpile area on DL 235. A second First Aid station will be established at the lower quarry when mine services are relocated. Supplies will include a Level 1 Kit, and ETV equipment. A crew member will be designated as the First Aid attendant and will have a minimum of Level 1 certification with transport endorsement.

Personal flotation devices will be worn by all personnel working around the marine loadout facility. Loadout operator or maintenance crew will not be permitted to work alone and will require at least one other person to be present for safety purposes. Throw lines, life rings and an emergency retrieval raft/boat will be provided at this location.

Fire fighting equipment will be provided at all mine installations. Extinguishers will be provided at equipment refuelling stations, shops, lunch room, substation and at strategic locations along the conveyor alignments and loadout installations. Fire pumps and fire fighting equipment will be available for forest fire suppression. Overburden stripping, timber clearing and mining activities near the pit perimeter will be suspended during periods of high forest fire hazard.

All site visitors will be required to attend a safety orientation training session prior to entering the mine area. The session will outline site hazards, safety equipment requirements, muster locations and emergency procedures. Visitor safety orientation training will be considered valid for a calendar year, after which a refresher course will be mandatory.

4.8.3 Emergency Plan

An emergency plan will be prepared and posted prior to commencing construction, outlining contact information for emergency response personnel, medical assistance, hospitals, Medevac transportation, fire department, police services and government agencies and will include detailed emergency response procedures. All mine personnel will be trained in such procedures as part of their site orientation.

4.8.4 Water Management

There are no identified watercourses downslope of the proposed quarries which suggests that storm water presently infiltrates into the underlying rock formations. All runoff from quarries and stockpiles that may exist due to surface compaction will be collected and diverted through settling ponds to remove entrained sediment. Pond overflows will not be discharged into any watercourses but will be allowed to infiltrate into the surrounding forest floor in close approximation to the observed natural drainage mechanism. All settling pond installations will be provided with oil separator/collection capabilities and spill containment materials will be available to address emergency situations. Two ponds are proposed for the loadout stockpile area, one pond for the lower quarry and three pond installations at the upper quarry location. Sediment will be removed from the settling pond basins as part of a routine maintenance program. Recovered sediment will be reintroduced into the quarry product and shipped or blended as an enhancement, into the overburden materials and used for quarry reclamation.

To reduce erosion and the resulting sediment generation, vegetation will be reestablished on the slopes of all road cut and fills as well as on the slopes of long term overburden stockpiles. Roads will also be provided with appropriate ditching, culverts and a proper maintenance of the road surface to prevent erosion and sediment issues.

Thirty metre wide environmental buffers have also been established around all watercourses and wetlands to minimize possible impacts on these hydrological resources and associated habitat values. Drainage along the buffer perimeter will be diverted into the mine development and diverted through the pit sediment control systems.

Quarry disturbances will be kept to the minimum necessary to sustain ongoing mining operations and areas that have been mined to the operational limit, will be progressively reclaimed to further reduce opportunities for sediment generation. Conveyors will also be fitted with belt scrapers and employ a belt overturn system to reduce the deposition of spillage along the conveyor alignments, which could otherwise, be remobilized by rain and runoff.

4.8.5 Dust Control

Dust generation along the overland conveying systems should be minimal due to the coarse product sizing, however where the conveyors are exposed to wind at the marine loadout facility, enclosed conveyors will be utilized to mitigate fugitive dust.

Water sprays will be utilized when necessary, to attenuate crusher and conveyor transfer point dust generation and the permanent crusher plant at the 210 metre bench will be provided with a proper dust collection system. Dust will be further mitigated through the implementation of enhanced spill reduction measures and the maintenance of “close” forest cover as a natural wind break.

Dust from quarry roads will be addressed through proper road surface maintenance and by applying water during dry weather.

4.8.6 Noise Control

Noise impacts will be mitigated through the following measures

- a) implementation of a work schedule that avoids night time, weekend and statutory holidays
- b) the provision and maximization of physical separation between the mine operations and publicly accessible areas
- c) use of rock boxes and lined chutes at conveyor transfer points
- d) maintenance of forest buffers between mine and public areas, whenever possible
- e) proper blast design and scheduling to avoid unfavourable atmospheric effects
- f) minimization of diesel power and use of the BC Hydro power grid
- g) use of alternative back up alarm systems if necessary
- h) installation and maintenance of high efficiency muffling systems on mobile equipment

4.8.7 Spill Contingency

A spill contingency plan will be in place prior to commencing construction and spill containment materials and supplies will be positioned at strategic locations within the site. Training will be provided to ensure that mine workers are fully capable of responding to a spill event in a timely and proper manner.

Spill prevention will be an integral component of the plan and will establish proper practices for such activities as equipment refueling, equipment maintenance and oil disposal.

4.8.8 Other Site Utilizations

The mine site will not be utilized for any purpose other than the production of rock materials and the loading of barges with aggregate, minerals or other bulk commodities. This does not, however, preclude the production and shipment of wood chips or the pursuit of other business opportunities that would be considered as having a direct link to the primary quarry operations.

4.9 Reclamation

Quarry reclamation will be conducted progressively in conjunction with ongoing mine operations. As such, quarry disturbances that are no longer required to support subsequent mining operations will be reclaimed at first opportunity. This will include the sloping and green up of roadway cut and fills, temporary green up of overburden stockpiles as well as final reclaim of abandoned quarry benches. This approach effectively attenuates expansion of the quarry footprint, reduces environmental risks, minimizes the long term reclamation liability, and returns the land base to productive forest at the earliest possible opportunity.

4.9.1 End Use Objectives

The proposed end use objective for the Texada South quarry will be commercial forest and wildlife habitat.

4.9.2 Mine

Reclamation of the quarry areas will include:

- a) removal of all mine equipment, mine shops, fuel storage, structures and operating materials and debris
- b) establishment of a nominal 15 degree backslope on final quarry faces
- c) scaling and stabilization of quarry faces
- d) placement and grading of residual quarry materials up against quarry faces
- e) recovery of overburden from stockpile and spreading on quarry benches as growth media
- f) establishment of stable drainage patterns which approximate natural conditions
- g) removal of enclosed drainage structures and replacement with armoured open channels
- h) conversion of settling pond overflows to armoured open channel spillways
- i) seeding of benches with a successional ground cover to address initial erosion issues
- j) placement of coarse woody debris on benches to provide wildlife habitat
- j) planting of benches with a commercial tree species compatible with the ambient environmental setting

4.9.3 Processing

Processing and stockpile areas will be reclaimed as follows:

- a) removal of all processing equipment, structures and operating materials and debris
- b) regrading of site to approximate original site conditions
- c) recontouring of residual stockpiles to integrate with the original site topography
- d) establishment of stable drainage patterns approximating original site conditions
- e) removal of all enclosed drainage structures and replacement with armoured open channels
- f) conversion of setting pond overflows to armoured open channel spillways
- g) seeding of process areas with a successional ground cover to address initial erosion issues
- h) placement of coarse woody debris on processing and stockpile areas to provide wildlife habitat
- i) planting of processing and stockpile areas with a commercial tree species compatible with the ambient environmental setting

4.9.4 Loadout

Reclamation of the marine loadout will include:

- a) removal of all conveyors, supports, barge standoffs, equipment and materials
- b) scarification of conveyor and trail alignments
- c) recontouring of site disturbances to approximate original site topography
- d) revegetation of the peninsula disturbances with plant species native to the peninsula environment

4.9.5 Roads

Main roads will be retained for forest management purposes. Access will be maintained, although the roads will be partially deactivated, to establish a self-maintaining and stable situation. Deactivation will include:

- a) removal of all culverts and replacement with armoured waterbars
- b) upgrade of ditching to eliminate maintenance requirements
- c) scarification of the road travel surface
- d) seeding of the road surface, berm and ditch sideslopes with a successional ground cover

4.9.6 Site Miscellaneous

Overburden stockpiles will be recovered for topdressing of quarry and process area reclamation. Stockpile footprint will be recontoured to approximate original topography and planted with both an initial ground cover to address erosion issues and commercial tree species.

Powerlines and overland conveyors will be removed. Alignments will be recontoured as required to approximate original topography, scarified and planted with ground cover and commercial trees. Box culverts will be backfilled to prevent access.

4.9.7 Disturbance Summary

The following table summarizes the overall surface disturbances associated with the proposed quarry development and does not take into consideration scheduling of the progressive reclamation initiatives.

<u>Disturbance</u>	<u>DL 400</u>	<u>DL 235</u>	<u>L573</u>	<u>Crown Lease</u>	<u>LOC 238702</u>	<u>FSR</u>	<u>total</u>
loadout				0.18			0.18
loadout conveyor	0.15	0.02		0.31	0.11	0.04	0.48
service road				0.08	0.03		0.11
stockpile/plant		4.13					4.13
lower pit stockpile		1.39					1.39
overburden							
stockpiles		3.28	3.84				7.12
lower quarry		3.37					3.37
upper quarry		10.36	35.31				45.67
interim haul road		0.11					0.11
lower haul road		3.10					3.10
upper haul road		7.38	0.14				7.52
lower quarry							
conveyor		0.64					0.64
upper quarry							
conveyor		1.04	0.10				1.14
pit crusher			0.36				0.36
settling ponds	0.05	0.20	0.02				0.27
Total (ha.)	0.2	35.02	39.77	0.57	0.14	0.04	75.59 ha

5. Environmental Considerations

Studies have been done on the terrestrial, marine and aquatic ecosystems that could be impacted by the Texada South quarry and loadout operations. Based on these studies, planning was done to ensure the construction and operation of the mine will be done in ways that mitigate potential impacts on these ecosystems.

Planning covers six separate areas of the site. These areas are:

- a) The peninsula where the marine loadout will be and which is crossed by a conveyer system.
- b) The marine loadout.
- c) The foreshore conveyer crossing.
- d) The loadout stockpile area located between the main road and the foreshore where the crushed rock stockpiles will be located and which will be crossed by the conveyer to the marine loadout.
- e) The area upland of the main road where the quarries, crushing plant and haul roads associated conveyors will be located.
- g) Stromberg Creek watershed

5.1. Peninsula

The peninsula will be crossed by a conveyer system and the marine loadout will be anchored to the above water line shore of the peninsula. There are two terrestrial ecosystems on the peninsula:

Rock Outcrop

- Covers 60% of the peninsula
- An open area with sparse tree and shrub cover.
- Substantial moss cover with a diverse herbaceous layer in some areas.
- Used by river otter, harbour seal, possibly sea lions, oyster catchers, harlequin ducks, common and hooded mergansers, great blue heron and Canada geese for foraging, protective cover. Kingfishers and bald eagles could use trees for nesting and perching.
- Coarse woody debris provides otter denning habitat and protective cover

Douglas Fir – Shore Pine – Arbutus

- Covers 40% of the peninsula
- Very dry open forested area.
- Sparse shrub layer, high herbaceous and moss layers.
- Open dry sites provide potential roosting and nesting sites for raptors and great blue herons.
- Mature trees provide cavities for breeding, roosting, thermal protection and security.

Mitigation of potential impact on the peninsula includes:

- Project designed to minimize surface disturbance.
- Selective and careful shrub and tree removal.

- Cut trees will remain on site in long lengths as coarse woody debris as this valuable habitat is limited over the entire site.
- All construction and installation will be conducted in a manner that minimizes impacts on bird nesting activities.
- During construction of conveyor and access path, project boundaries will be established and flagged to minimize areas of disturbance.
- Installation of loadout will likely be done from water with limited work done onshore.
- During operation, the loadout will be accessed either overhead via the conveyor system or by an ATV service trail rather than by a road.
- Restricted access by employees to unaltered portion of the peninsula after construction to limit further impact.

5.2 Marine Loadout and Marine Habitat

The marine loadout will consist of a covered conveyor and a moored conveyor barge. Barges to be loaded with rock will moor outboard of the conveyor barge. The loading operation will involve the shore conveyor delivering rock to a hopper on the conveyor barge and a barge based conveyor transferring rock from that hopper to the outboard barge.

Surveys of marine habitat in the area of the loadout were done by Ocean Dynamics and IEC International in 2007. These surveys included the subtidal and intertidal areas as well as the shoreline above high water. Results of these surveys in the vicinity of the proposed loadout were:

- The entire shore is steep and rocky.
- The bottom substrates are primarily bedrock with some areas of sand, gravel, cobble and boulder.
- No important species or habitats were detected.
- The site is within a fisheries closure area for rockfish.

Construction and operation of the loadout will have limited potential impact on marine habitat as it will consist of floating structures with no installations required below the high tide mark.

The loadout lies within an established federal Rock Fish Conservation Area. Discussions with DFO have confirmed that the proposed installations are not a concern and will not affect the integrity of the conservation initiative. Employees will, however, be prohibited from using the loadout area for fishing for rock fish species.

A large number of federal and provincial legislation, guidelines, and best management practices are incorporated into the design, construction and operation phases to reduce the potential impact of the loadout on the marine habitat. These include:

- The loadout structures will not be located over significant marine vegetation.
- The loadout structures will be located such that grounding will not occur.
- The loadout structures will be designed to prevent entrapment of surface debris.
- Usage of inert construction materials such as steel and concrete will be maximized (rather than using treated wood).
- Loadout design will ensure that spillage of rock during barge loading will be prevented and no crushed rock will enter the marine environment.
- All machinery will be in good working condition and operated in a manner such that no fuels, lubricants or construction wastes will enter the marine environment.

- Construction activities will be timed to ensure no impacts on plants/animals/fish occur (e.g. avoiding main spawning windows); all relevant authorizing agencies will be contacted, and any advice and mitigative measures prescribed will be complied with.
- All works will be completed in a manner that prevents the release of construction waste, excavation waste, soil, concrete, concrete-laden water, oil, grease or any other substance deleterious to fish or other aquatic life into any water course or water body.
- Aside from tow boats and initial conveyor barge operation, there will be no requirement for fuel on the proposed lease.
- If fuel must be stored or used for any other purpose on the site, it will be contained and transferred in a manner that minimizes the risk of accidental spillage of fuel into the aquatic environment and appropriate clean-up materials will be kept on hand to allow clean-up of any spillage which may occur.

5.3 Foreshore Conveyor Crossing

The foreshore areas at the heads of the two small bays will be crossed by a covered conveyor. A small access path will be constructed across this foreshore during construction and will remain in place to provide access to the loadout by small vehicles (such as quads) during the operational phase.

The intertidal beaches of these two bays were surveyed at low tide. Sand is the predominant substrate with varying levels of cobble, gravel, shell and bedrock. Pacific oyster and acorn barnacles are present. There are no eel grass beds.

Scott Northup of DFO visited the site in 2008 and observed that a small grassed area above the high tide line offered good habitat value and that area should be preserved if possible. The planned access road / ATV trail has been rerouted in accordance with this recommendation.

The original concept for the conveyor alignment called for the elimination of support structures across the isthmus to minimize surface disturbance. Discussions with DFO, however, have determined that there are minimal habitat values associated with isthmus feature and that there would be few concerns with the inclusion of intermediary support structures. The conveyor design has been modified accordingly.

A large number of federal and provincial legislation, guidelines, and best management practices exist are incorporated into the design, construction and operation phases of the conveyor crossing and access path.

- Foot print on the foreshore area is minimal.
- The conveyor and access path will not be located over significant marine vegetation.
- Usage of inert construction materials (such as steel and concrete) will be maximized rather than treated wood.
- Conveyor design will ensure that spillage of rock will be prevented and no crushed rock will enter the marine environment at this foreshore crossing.
- During construction of conveyor and access path, project boundaries will be established and flagged to minimize areas of disturbance.
- Access to the path will be restricted by employees to unaltered portion of the peninsula after construction to limit further impact.
- All machinery will be in good working condition such that no fuels, lubricants or construction wastes will enter the marine environment.

- Construction activities will be timed to ensure no impacts on plants/animals/fish occur (e.g. avoiding main spawning windows); all relevant authorizing agencies will be contacted, and any advice and mitigative measures prescribed will be complied with.
- All works will be completed in a manner that prevents the release of construction waste, excavation waste, soil, concrete, concrete-laden water, oil, grease or any other substance deleterious to fish or other aquatic life into any water course or water body.

5.4 Loadout Stockpile Area

Crushed rock stockpiles will be located in the area between the main road and the foreshore. This area will be crossed by overland conveyors taking rock to the marine loadout. In the early phases of the mine, crushing will also be done in this area. These operations are discussed as follows:

a) Conveyor

- The conveyor crosses a number of ecosystem types, from young forested sites to open rock bluffs. Many of these sites have been disturbed through previous clearing, harvesting history and road construction.
- During construction of the conveyor, mitigation of potential impacts will include:
 - Tree and shrub removal will occur outside of bird nesting season.
 - All larger trees and snags will remain standing if possible.
 - Minimization of alignment widths
 - Cut trees will remain on site in long lengths as coarse woody debris as this valuable habitat is limited over the entire site.

b) Crusher Rock Stockpiles and Initial Crusher Site

- The initial crusher site and stockpile area is situated within an area of dry open stage young Douglas Fir – Lodgepole Pine – Arbutus and a richer Western Red Cedar - Douglas Fir – Kindbergia forest interspersed with Rock Outcrops.
- In some areas the shrub layer is dense (70%) and dominated by evergreen huckleberry and salal. Other shrubs include ocean spray, dull Oregon grape and baldhip rose.
- Numerous birds were observed during the field assessment. And deer will utilize these warmer sites with an abundance of shrubs during winter months.
- During construction and operation, mitigation of potential impacts in the initial crusher site and stockpile area will include:
 - Tree and shrub removal will occur outside of bird nesting season.
 - All larger trees and snags will remain standing if possible.
 - Any cut trees will be placed on adjacent sites in long lengths as coarse woody debris for habitat enhancement purposes
 - Restricted access by employees to unaltered portion of this area after construction to limit further impact.
 - Dust reduction measures in crushing, storage and loading of rock.
 - Containment and settling of storm water runoff from the operating area before it discharges into natural drainage courses.

5.5 Quarry Sites

The proposed mine areas are in the area upland of the main road where the quarries, crushing plant and haul roads associated conveyors will be located.

These operations will cover a previously disturbed mosaic of Western Hemlock – Douglas Fir – Kindbergia and Douglas Fir – Western Hemlock – Salal forests interspersed with Rock Outcrops.

- The forests vary from small shrub to young forests depending on the date of harvesting.
- Canopy coverage ranges from 15% to 50% and shrub layer ranges from 15% to 80%. Evergreen huckleberry dominates most sites.
- The site slopes are 10% to 60% and the stands are open in areas that are steep and rocky.
- Black-tailed deer are abundant
- Passerine bird species (songbird) diversity is abundant in the open canopy sites as there is a variety of forbs, herbs and berry producing shrubs providing forage.
- Migrating band tailed pigeons have been observed in these sites.

During construction and operation, mitigation of potential impacts in the main mine site area will include:

- Tree and shrub removal will occur outside of bird nesting season.
- Minimization of conveyor alignment widths
- Use of scrapers and belt overturn to minimize conveyor spillage and carry back
- Dust reduction measures in mining, crushing, storage and conveying of rock.
- Containment and settling of storm water runoff from the quarry, crushing plant and other operating areas before it discharges into natural drainage courses.
- Proper management of blasting, dust, fuels and hydrocarbons at these operations.
- Maintenance of environmental buffers around watercourses and wetland areas
- Implementation of progressive reclamation practices to minimize mine disturbances

5.6 Stromberg Creek Watershed and Fish Habitat

A small portion of the mine site will be in the watershed of a Stromberg Creek tributary known as Mossie Creek.

Fish Habitat:

A survey of Stromberg Creek was undertaken to assess the extent of fish habitat near the mine development areas. The survey was done from the creek estuary to Stromberg Falls and along Grow Op Creek and Mossie Creek tributaries of Stromberg Creek above the falls.

The main stem of Stromberg Creek and the Grow Op Creek tributary are considered to be fish habitat. The lower reaches of the main stem below Stromberg Falls offer year round fish habitat with resident Cutthroat and potential use by Salmon (Coho and Chum).

No resident fish habitat was determined within the Mossie Creek tributary as it dries for several months in summer and is likely isolated by many barriers downstream through an increasingly steep and confined gully. The lack of summer flow and barriers on Mossie Creek indicate there is no fish habitat above the canyon upstream of its confluence with Grow Op Creek.

In summary there are fish in the Stromberg Creek main stem leading from the Grow Op Creek tributary to Stromberg Falls and below to the ocean. But there are no fish in the Mossie Creek tributary areas adjacent to the proposed mine development.

Water flow and quality;

A small portion of the mine site will be in the watershed of the Mossie Creek tributary of Stromberg Creek. While there is no viable fish habitat in this watershed, the creek does provide water flow to fish habitat in the main stem of Stromberg Creek and water flow to Stromberg Falls.

The vast majority of water flow into Stromberg Creek is from the Grow Op Creek tributary, with Mossie Creek providing a very minor portion of the combined flow in the main stem. Staff gauges will be installed in the tributaries to establish baseline flow rates and to monitor flow rates during the operation of the mine.

In order to ensure water quality of the Mossie/Grow Op Creek tributaries, all storm water runoff from the quarry and associated operations will be diverted away from the natural drainages, captured in settling basins and any silt removed prior to return to the environment. In addition, planning will be done to ensure good management of blasting, dust, fuels and hydrocarbons at these operations to eliminate contamination of runoff.

5.7 Atmospheric

Potential sources of dust emissions from the Texada South quarry will result from blasting, conveying, truck haulage and barge loading activities.

As a 3-inch-plus rock product will be the primary manufactured product, only a minor amount of fines will be generated that could cause fugitive dust.

Water sprays will be utilized when necessary, to attenuate crusher and conveyor transfer point dust generation. The permanent crusher plant at the 210 metre bench will also be provided with a proper dust collection system.

Dust generation along the overland conveying systems will be mitigated through the implementation of enhanced spill reduction measures and the maintenance of “close” forest cover as a natural wind break. Where the conveyors are exposed to wind at the marine loadout facility, enclosed conveyors will be utilized to minimize fugitive dust. All overland conveyors will be fitted with belt scrapers and a belt over turn system to minimize spillage and carry back, thus minimizing opportunities for dust remobilization.

Dust from quarry roads will be addressed through proper road surface maintenance and by applying water during dry weather.

Air emissions from marine transportation and loadout activities will be limited to short periods of time during barge delivery and barge removal. The conveyor barge will utilize an on board diesel generator for power but will be connected to the shore grid power once the infrastructure is in place. There will be no other stationary combustion emissions associated with the loadout operations.

Mobile equipment emissions will be minimized by reducing idling times and proper engine maintenance.

While there are no residents living in close proximity to the quarry operations, efforts will be undertaken to minimize noise generation so as to reduce impacts on the environment, Forest Service Road users and marine recreation.

Noise impacts will be mitigated through the following measures

- a) implementation of a work schedule that avoids night time, weekend and statutory holidays
- b) the provision and maximization of physical separation between the mine operations and publicly accessible areas
- c) use of rock boxes and lined chutes at conveyor transfer points
- d) maintenance of forest buffers between mine and public areas, whenever possible
- e) proper blast design and scheduling to avoid unfavourable atmospheric effects
- f) minimization of diesel power and use of the BC Hydro power grid
- g) use of alternative back up alarm systems if necessary
- h) installation and maintenance of high efficiency muffling systems on mobile equipment

5.8 Groundwater

Exploration drilling indicates that the groundwater underlying the proposed quarry development is in excess of 100 m below surface, although this most probably becomes shallower along the north perimeter adjacent to Mossie Creek. Groundwater is expected to flow in a westerly direction towards the ocean within the proposed quarry area.

Groundwater protection measures will include the proper management and usage of explosives, proper fuel storage and spill containment protocols and the minimization of the quarry footprint through progressive reclamation initiatives. In addition, the upper quarry has been designed such that the final floor elevation is maintained above the Mossie Creek stream bed in order to minimize potential for impacts on the groundwater hydrology contributing to this natural drainage feature.

Other than the quarry, there are no groundwater users in the vicinity of the proposed quarry operations. A groundwater monitoring program is, however, proposed to monitor the status of the underlying hydrology and will consist of five monitoring wells in the upper quarry area. Water levels will be recorded monthly with water quality to be tested on a quarterly basis.

5.9 Karst

There are known karst features in the Davie Bay area which provide recreational value to some Island residents. These sites are not, however, within the immediate area of the quarry, the closest being approximately 480 metres south of the upper quarry and 40 metres in elevation below the lowest level of the proposed upper quarry development (210 metre bench).

Karst features in this area appear to be associated with the cross cutting of narrow limestone beds by the Grow Op Creek tributary of Stromberg Creek. The associated caves tend to occur at or near the limestone/volcanic contacts and at times, provide subsurface conduits for creek flow. With the inferred interdependence between these caves and the Grow Op watercourse, there is no expectation that the observed karst system would extend back into the main limestone occurrence. As such, the cave system would not be affected by the mining operations, particularly since Grow Op Creek sources the majority of its flow from a watershed located well north and east of the proposed quarry operation.

As a precautionary measure, points of access to the cave area will be posted when blasting is scheduled so as to prevent cavers from being underground when the blast is detonated. Cave explorers will also be encouraged to check in at the mine office prior entering the cave area for updates on production scheduling.

5.10 Monitoring Program

A monitoring program will be implemented to track steam flows, groundwater levels and water quality in the vicinity of the quarry operations to ensure that the adjacent environment is not adversely affect and to establish a better understanding of the Stromberg Creek hydrology.

The program will include the installation of five ground water monitoring wells, six stream flow measurement stations, and eight water quality sampling points. Settling pond overflows will also be sampled.

Monitoring locations are indicated on Drawing TS0039, with sampling parameters summarized as follows:

Environmental Monitoring

Station	Type	Measurement				Location
		level/flow	physical	metal scan	hydrocarbon	
MW 1	well	M	Q	Q	Q	north east of quarry midway to Mossie Creek
MW 2	well	M	Q	Q	Q	upper quarry 270 bench at Mossie Creek setback
MW 3	well	M	Q	Q	Q	down slope of upper quarry midpoint
MW 4	well	M	Q	Q	Q	south of upper quarry on Crown Land
MW 5	well	M	Q	Q	Q	north of quarry on boundary of DL 235
SW 1	Swamp outlet		Q	Q	Q	Upland Swamp at road crossing on north side of Hydro West FSR west of loadout stockpile
SW 2	Swamp outlet		Q	Q	Q	
U ST	stream		Q	Q	Q	upper Stromberg Creek at road crossing
L ST	stream		Q	Q	Q	Stromberg Cr above Shingle Beach Road crossing
GOC	stream		Q	Q	Q	above Grow Op Falls near base of slope
UGOC	stream		Q	Q	Q	Upper Grow Op Creek above Mossie Creek confluence
ST UC	spring		Q	Q	Q	upper spring below Stromberg Falls
ST LC	spring		Q	Q	Q	lower spring below Stromberg Falls
SP 1	pond overflow	M	Q	Q	Q	loadout stockpile settling pond west
SP 2	pond overflow	M	Q	Q	Q	loadout stockpile settling pond east
SP 3	pond overflow	M	Q	Q	Q	lower quarry
SP 4	pond overflow	M	Q	Q	Q	upper quarry 210 bench west
SP 5	pond overflow	M	Q	Q	Q	upper quarry 210 bench east
SP 6	pond overflow	M	Q	Q	Q	upper quarry 250 bench east

1	Stromberg Cr	M	Stromberg Cr. at L ST
2	Stromberg Cr	M	Stromberg Cr below confluence of Grow Op Creek
3	Stromberg Cr	M	Stromberg Cr. at turn off to Grow Op Falls trail
4	Stromberg Cr	M	Stromberg Cr. at top of Stromberg Falls
5	Grow Op Cr	M	Grow Op Cr. at top of Grow Op Falls
6	stream	M	Mossie Cr. at SW 1
7	Stromberg Cr	M	Stromberg Cr. at U ST
8	Grow Op Cr	M	Grow Op Cr. at UGOC

Program will be updated periodically in response to ongoing sampling results, supplemental investigations and changing site conditions.

6. Socio-Community Considerations

6.1 Land Use

There is no zoning on Texada Island although mining and resource development are fully supported at the subject location under the provisions of the existing Official Community Plan

The proposed loadout and quarry development is not expected to affect other resource development and has been designed to ensure continued use of the existing log sort facilities. In addition the proposed quarry development does not preclude recreational use of the adjacent ocean beaches or the Stromberg karst areas.

6.2 Socio-Community Conditions

The location of the proposed loadout facility is considered remote with no neighbouring resident population.

Use of the Hydro West FSR is generally related to forestry and other industrial activities. There is, however, some recreational use of the road between Gillies Bay and the Forest Recreation Sites located south of the BC Hydro power transmission lines. The proposed operations will not restrict continued use of the road for any of these purposes. There will be minor increase in commute traffic on the Hydro West FSR and the Texada ferry and the quarry operation will require some material transport including fuel, explosives and other consumables. Aggregate materials will not be hauled on public roads although haul traffic will have to cross the Hydro West FSR during the initial quarry operations. This will cease to be an issue when the overland conveying system is brought on line.

The mine operation will employ 10 to 12 people. The preference would be to draw from available labour and services resident on the island

6.3 Public Health and Safety

There are no residents living in the Davie Bay area with the nearest resident being approximately 8 km to the north.

A crown land boundary lies approximately 200 metres north of the proposed quarry although this is considered to be a remote location with only a minimal public presence. Access will be restricted at this point with a gate and access advisories will be posted. Public exposure to noise and fugitive dust resulting from the proposed quarry operations will accordingly be minimal. Mitigative measures for both noise and dust suppression will, however, be implemented as part of the mine operating protocols.

Some recreational traffic is present on the Hydro West FSR, which provides access to several Forest Recreation Sites located south of the proposed quarry. The proposed development should not significantly increase traffic or present any appreciable hazard to the general population.

While there is no publicly accessible property within approximately 2 km of the marine loadout, the Davie Bay beaches can be reached legitimately by water. Island residents and visitors also access the beaches by crossing Lehigh's private property on a regular basis. Signage indicating quarry contact information, access restrictions and safety advisories will be posted along the waterfront in proximity to the marine loadout installations.

Crew amenities will be provided on DL235 as part of the quarry development. Water for the dry and office, fire fighting and dust suppression will be derived from existing water sources on DL 235 and 400.

6.4 First Nations

It is recognized that the loadout site lies within the Sliammon FN traditional territory.

An archaeological overview, commissioned as part of the project planning initiative, suggests that there is no indication of aboriginal activity within the proposed quarry area. An archaeological site was previously documented on the "campsite" beach located on DL 400 just south of Davie Bay. Development of the campsite by previous owners has effectively eradicated this feature.

A potential archaeological site was documented as part of the overview investigations near the northwest corner of DL400. This too has been significantly compromised by the log sort and booming ground operations. The proposed mining operations and associated marine loadout lie beyond the archaeological site and as such, will not result in any further degradation of the feature. Prior to commencing construction the potential archaeological site will be flagged off and access will be restricted.

Should artifacts be discovered as part of the loadout construction, the Archaeological Branch will be notified and work will be suspended until the site can be assessed. Work will resume only when authorized to do so by the Archaeological Branch.

