3.0 PROJECT DESCRIPTION

Mining excavations will occur at James North, James South, Redmond 2B and Redmond 5 deposits. The following section describes major project elements and activities that are the subject of this EIS. Beneficiation will take place at the Silver Yard area and a 4.0 km rail spur will be re-established along the existing railbed in Labrador.

3.1 Project Features

The primary features of the Project are the open pits, the beneficiation site at the area known as Silver Yard, the railway spur line re-establishment, a project camp, and the access roads. Other features will include laydown areas and waste rock disposal sites. The Project features are shown on Figure 3.1.

3.1.1 Mineral Licenses

Two Mineral Rights Licenses in 71 claim units issued by the Government of Newfoundland and Labrador registered in the names of Labrador Iron Mines Limited are applicable to this Project. Details of licenses associated with the James and Redmond Deposits are provided in Table 3.1 and 3.2 and Figures 3.2 and 3.3. In addition, a surface lease will be applied for prior to the start of construction for the Silver Yard area.

LIM holds title to these Mineral Rights Licenses subject to the terms of an Agreement dated September 15, 2005 and as subsequently amended between Fonteneau Resources Ltd. and Energold Minerals Ltd. and LIM. These licenses are located in west Labrador covering approximately 1,775 hectares. The Project location and the location of the properties are shown on Figure 2.1.

The proposed development is to be executed in the mineral licenses registered to LIM and/or covered under the above mentioned Agreement, as well as some small areas of adjacent lands where the mineral licenses are registered to a third party, New Millennium Capital Corp. (NML). NML has acknowledged that these jointly held deposits will most likely be mined in accordance with the LIM mining schedule (see NML News Release 08-05, February 5, 2008, Appendix F). LIM is in discussions to negotiate some mutually satisfactory agreement with NML regarding the mining on the NML licenses and anticipates that agreement will be successfully concluded and, as such, the proposed development area covers this larger area.

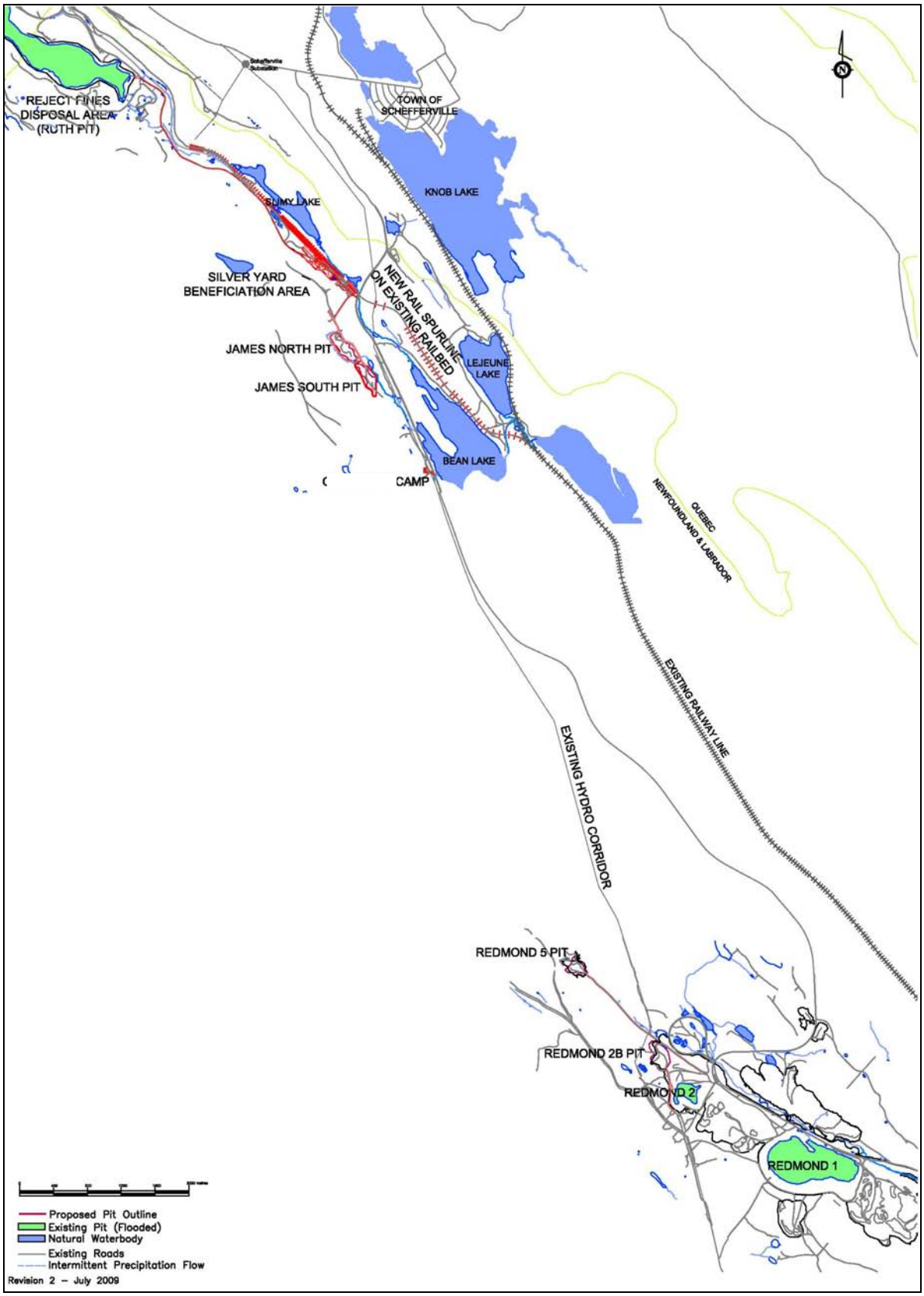

Figure 3.1 Project Features

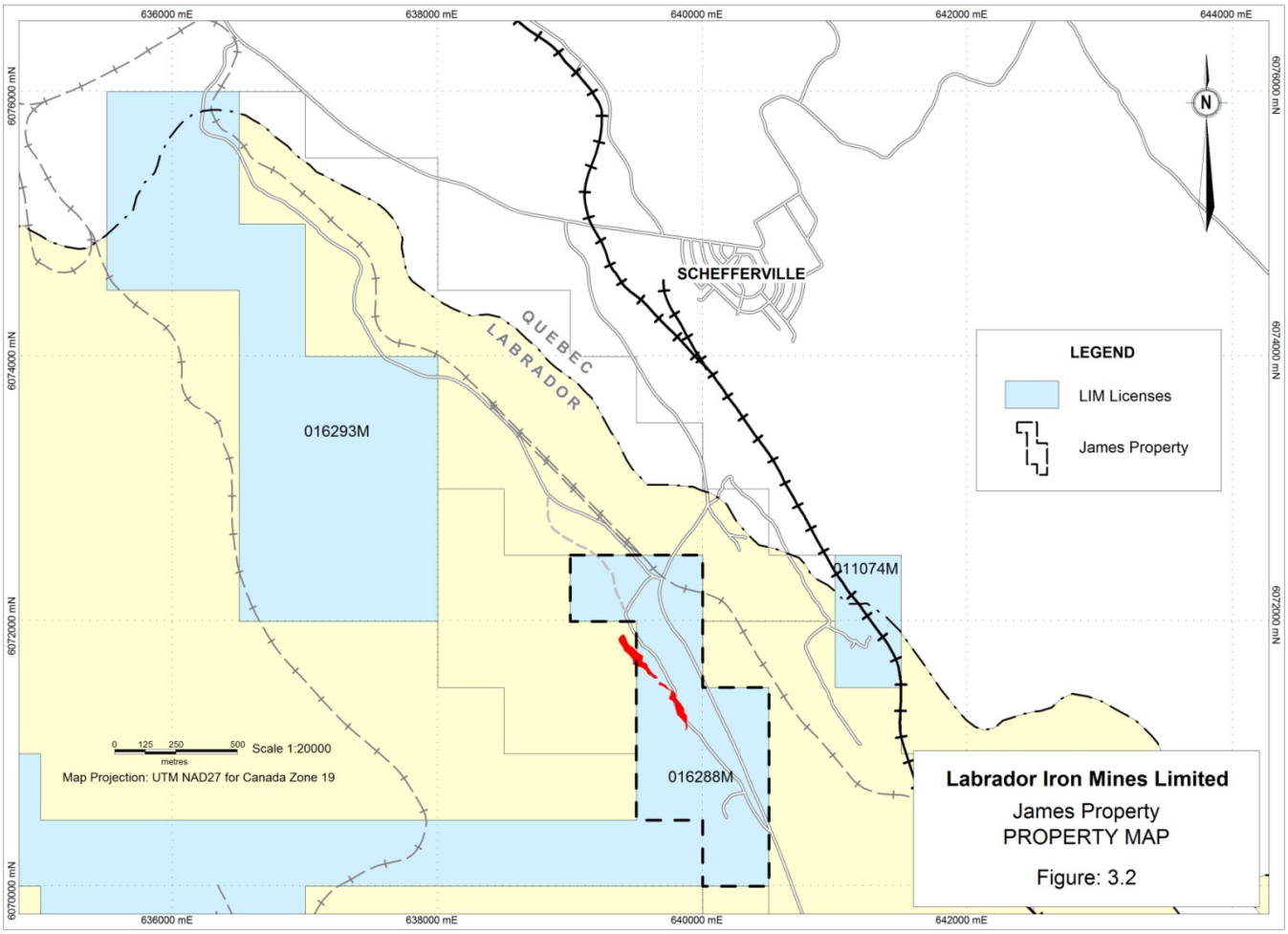

Figure 3.2 Mineral Licenses, James Property

3.1.1.1 James Deposit

The James deposit is located in the NE portion of the license 016288M; which covers an area of 6.75km^2. The license is held by Labrador Iron Mines Limited (Table 3.1). The James ore body is partially covered by the license 016288M, while the north-west end is covered by the license 010593M held by New Millennium Capital Corp. The James property delimited by the dashed line in Figure 3.2 was defined by licenses 010039M and 011231M prior grouping completed on June 1, 2009.

Table 3.1 James Property License

License No.	Holder	Issued	Claims	Extension (km^2)	Comments
016288M	Labrador Iron Mines Limited	Apr 12, 2004	27	6.75	This license replaces 011231M, 010039M, 012890M, 014497M and 014746M as of June 1, 2009
Total			**27**	**6.75**	

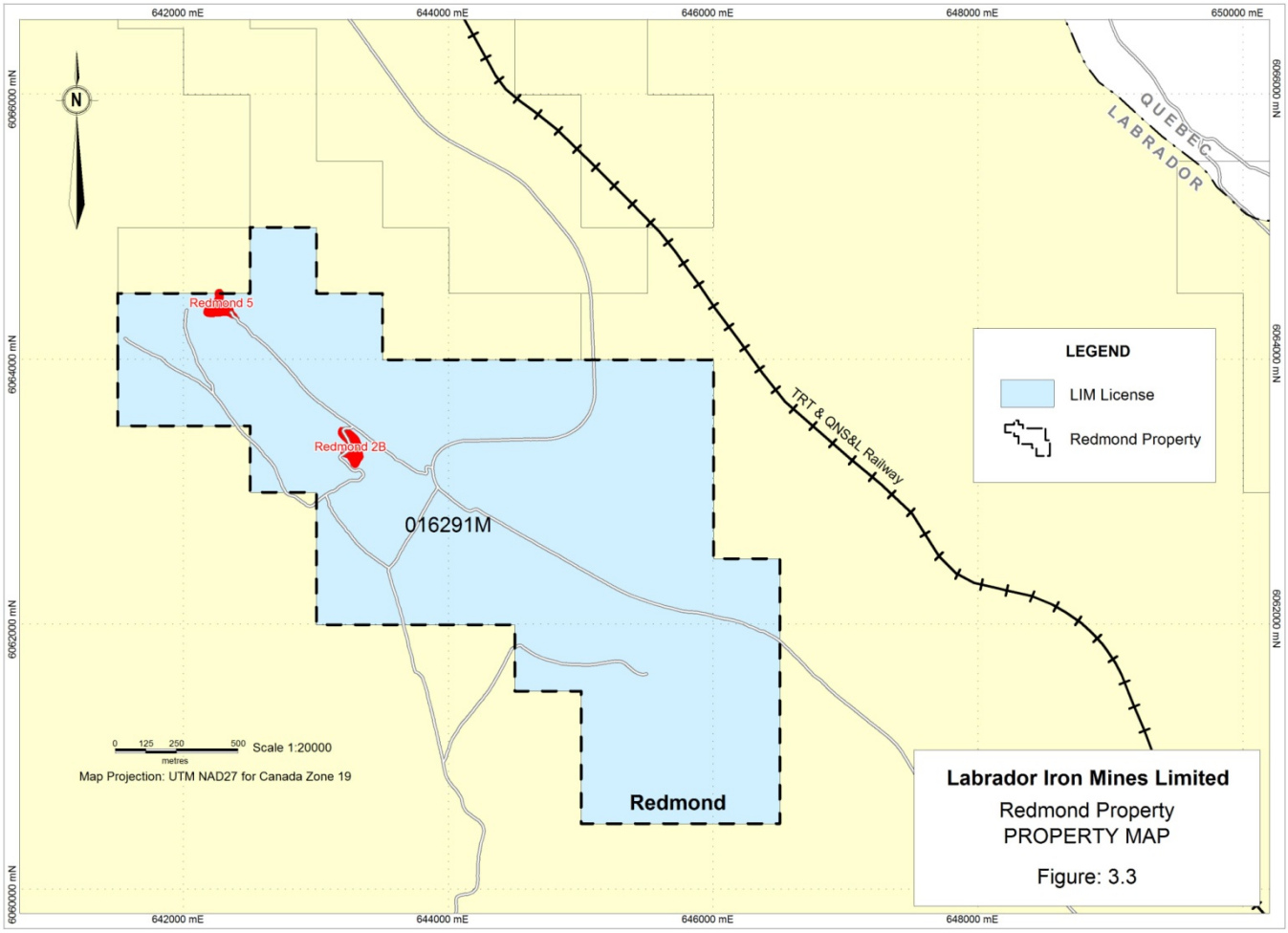

Figure 3.3 Mineral Licenses, Redmond Property

3.1.1.2 Redmond Deposits

The Redmond property comprises one license in 11.0 km^2 held by Labrador Iron Mines Limited (Table 3.2). The ore bodies considered by LIM for exploitation are Redmond 2B and Redmond 5 and both are covered by the license 016291M; however a small portion of the Redmond 5 ore body is covered by the license 013405M held by New Millennium Capital Corp.

Table 3.2 Redmond Property License

Licence No.	Holder	Issued	Claims	Extension (km^2)	Comments
016291M	Labrador Iron Mines Limited	Aug 25, 2005	44	11.0	This license replaces 011201M, 014495M, 014510M, 014512M, 014747M, 014748M and 014749M as of June 1, 2009
		Total	**44**	**11.0**	

3.1.1.3 Engineering Studies

Subsequent to the confirmation exploration program, an engineering study will be prepared. The study will examine the volume and value of the resources, production methods and costs, and the transport of the iron ore for shipment to markets.

Environmental baseline studies have been conducted and are summarized in this EIS. Discussions with rail transport companies and port operators are also being conducted.

3.1.2 Mine and Borrow Pits

3.1.2.1 James and Redmond Mines

Mining will occur at James North, James South, Redmond 2B and Redmond 5 deposits, where approximately 5.8 million tonnes of iron ore resources have been shown in historic documents. In addition to ore, approximately 5 million tonnes of overburden and waste rock will be excavated and disposed or stockpiled over the life of the individual properties. Excavation and transport to the beneficiation area will be done using conventional truck and excavator methods.

The pit designs for the referenced deposits will have overall pit wall angles that will range from 34^{o} in overburden to 55^{o} in competent rock. The face angles will range from 40^{o} in overburden to 70^{o} in competent rock. These angles are based on dewatered/depressurized pit walls and controlled blasting techniques. The excavations will be mined in 10m benches.

The pit haulage roads will be designed at 8 percent grade. All haul roads at the mine sites will be engineered and built to permit the safe travel of all vehicles and in accordance with provincial regulations (CNLR 1145/96). The running surface width of proposed haul roads will be designed to conform to current industry standards.

All pits will occur within the economic boundaries of the referenced deposits. Other minor excavations may be necessary and are discussed in the following sections.

3.1.2.2 Waste Rock Disposal

Waste rock storage areas and low-grade ore stockpiles will be required to support the recovery of saleable product to customers of lump ore and sinter fines ore. These storage areas and stockpiles will be located in close proximity to individual mine entrances/exits and/or the proposed beneficiation facility in order to optimize haulage distances and potential future stockpile recovery costs. In all cases, waste removal and stockpiling decisions will be made on the basis of environmental protection considerations, overall mining costs, iron ore marketability and the total quantity of material to be moved to access and produce the final products.

Other factors influencing the proposed location of waste rock storage areas include:

- location of ore bodies and potential exploration targets;
- topography to minimize storage area footprint;
- water drainage and proximity to watercourses; and,
- visual exposure to public roads and housing/ cottages.

Where applicable, waste rock storage areas will be built up in lifts to limit the overall dumping height. While this will increase haul distance, it will stabilize the waste rock and minimize the risk of the storage area edge slumping.

Due to the very low probability of the presence of sulphide minerals in the waste rock and uneconomic mineralized zones (Section 4.1.3), waste rock storage sites should not need to be contoured or capped with clay to control any acidic runoff.

The proposed locations for the necessary waste rock storage and low-grade ore stockpiles are indicated on the respective mine drawings (Figure 3.4 and Figure 3.5). The waste rock disposal plan for the James mining area includes an option of storing the waste rock in an existing V-shaped valley and to a site east of the James North pit and south of the James South pit. The footprint for the waste rock storage and low-grade stockpiles at the James North and South sites requires an area of approximately 11.8 ha and 7.8 ha respectively. The slopes of the waste rock storage areas and stockpiles will be 1.5:1 and the average height for the quoted footprint is 15 m. In-pit disposal will be utilized wherever feasible.

The waste rock disposal plan for the Redmond deposits includes a combination of the use of the existing mined-out Redmond 2 pit, on-land stockpile area, and in-pit disposal wherever feasible. This will reduce the requirement for additional disturbance due to waste rock storage. There may be some new disturbance required for low-grade stockpiles. The use of existing stockpiles will be investigated and if shown to be economical will be the preferred method.

Waste rock and overburden will be stockpiled and contoured in a manner that conforms to provincial guidelines and regulations. These materials will be managed to limit the possibility of suspended solids being introduced into site drainage or adjacent waterbodies. Overburden will be used during site reclamation to support vegetation.

3.1.2.3 Minor Excavations and Borrow Pits

Additional minor excavations may be required to support ongoing mining activities. These excavations will include small borrow pits, quarries and side-hill cuts associated with the construction and maintenance of access roads, mine haulage roads, sumps and settling ponds, and railway spur line construction.

In recognition of regulatory requirements, any new excavations outside of approved mining leases for James North, James South, Redmond 2B and Redmond 5 deposits, will be subject to Newfoundland and Labrador regulatory and licensing processes, prior to the commencement of field activity. Where possible, LIM will attempt to make use of previously excavated quarries and borrow pits that were excavated in the past by IOC in order to prevent new ground disturbances. A number of such small pits exist along the road to the north of Silver Yard area and to the south of Silver Yard area near the previously mined area of Redmond (Figure 3.6).

Due to local climatic conditions in the proposed mining area, accumulations of water from natural rainfall and snowmelt will create a need for the excavation and/or construction of runoff water containment and sedimentation control structures. Such structures will insure that necessary discharge of accumulated surface water will meet current environmental standards.

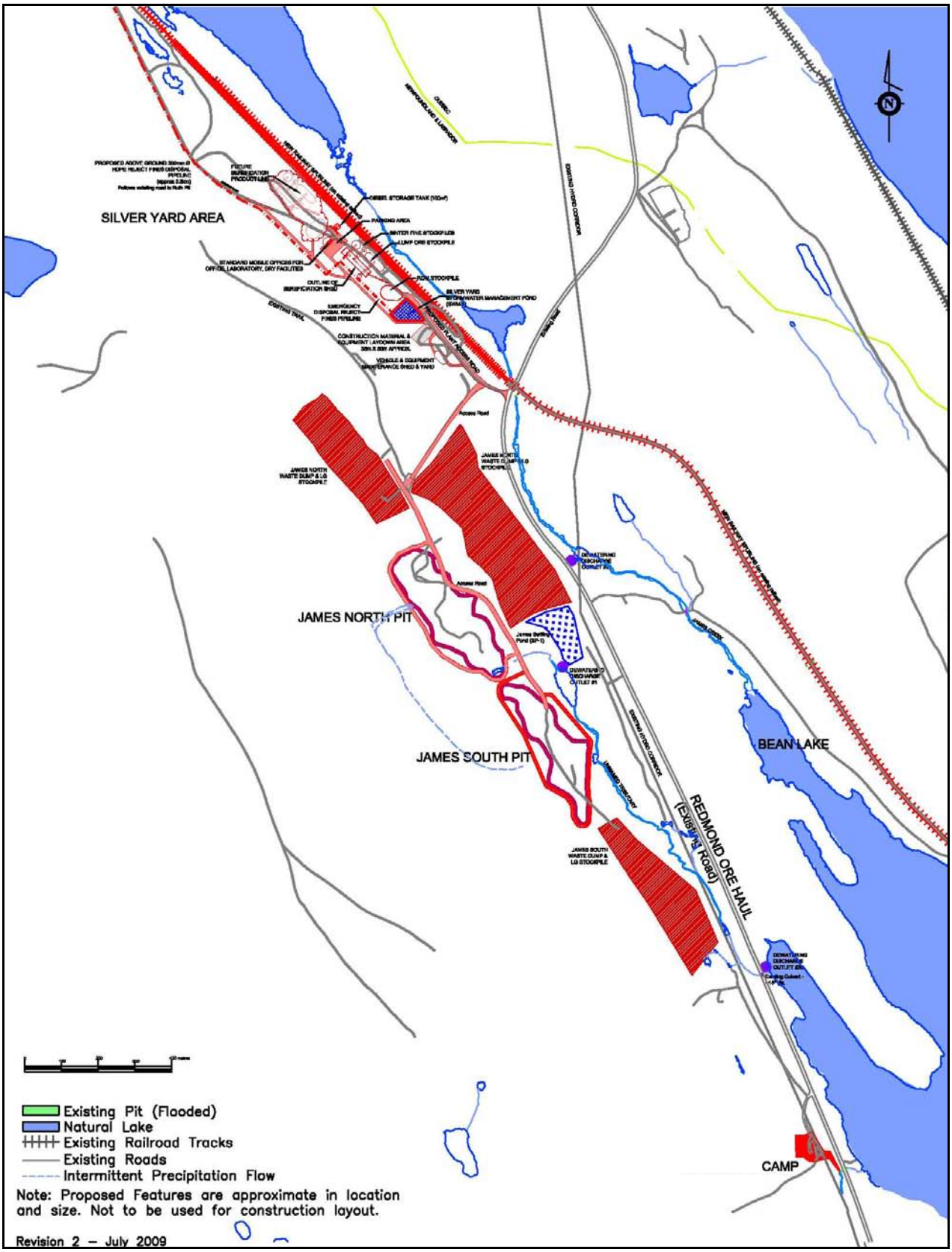

Figure 3.4 James and Silver Yard Infrastructure

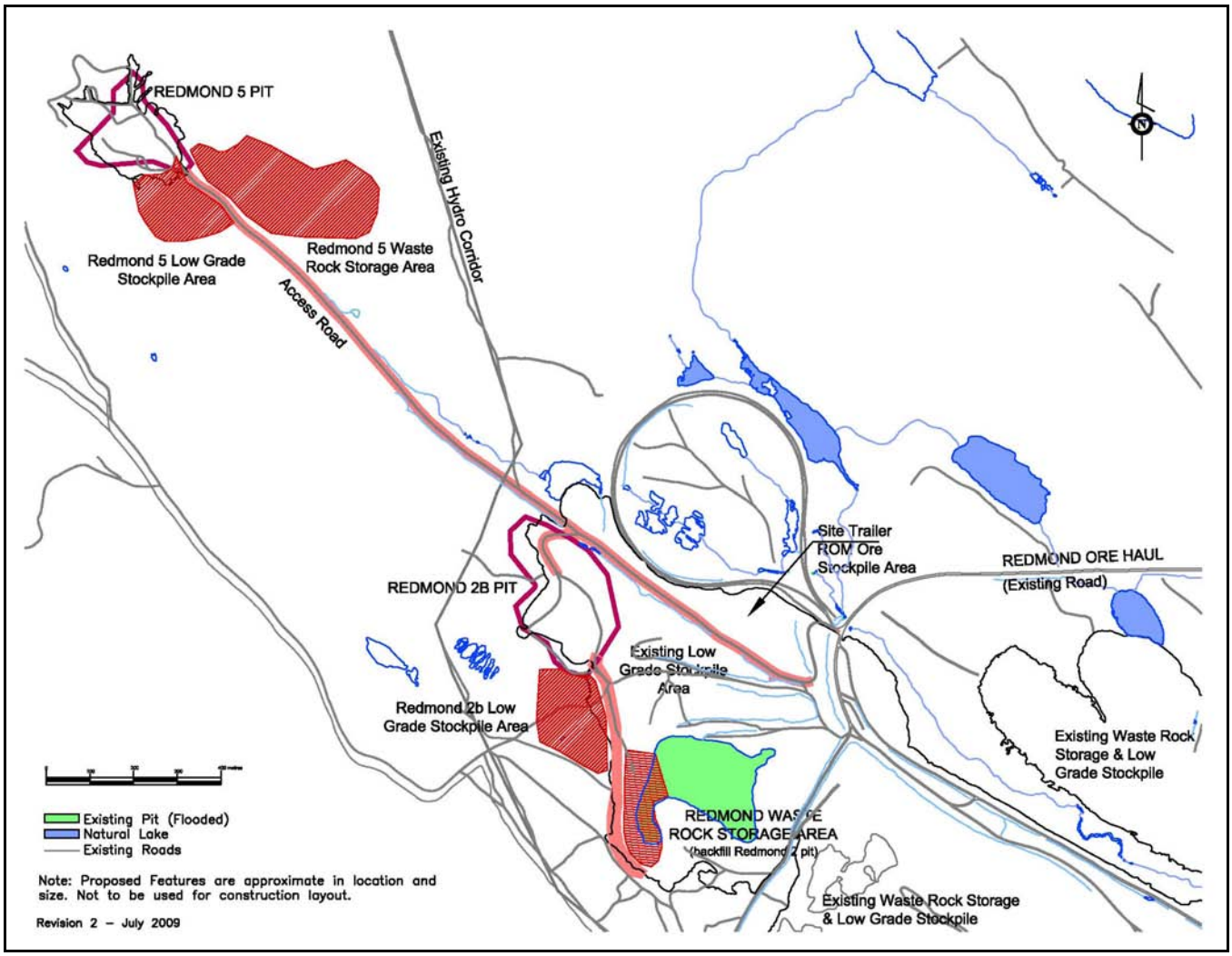

Figure 3.5 Redmond Infrastructure

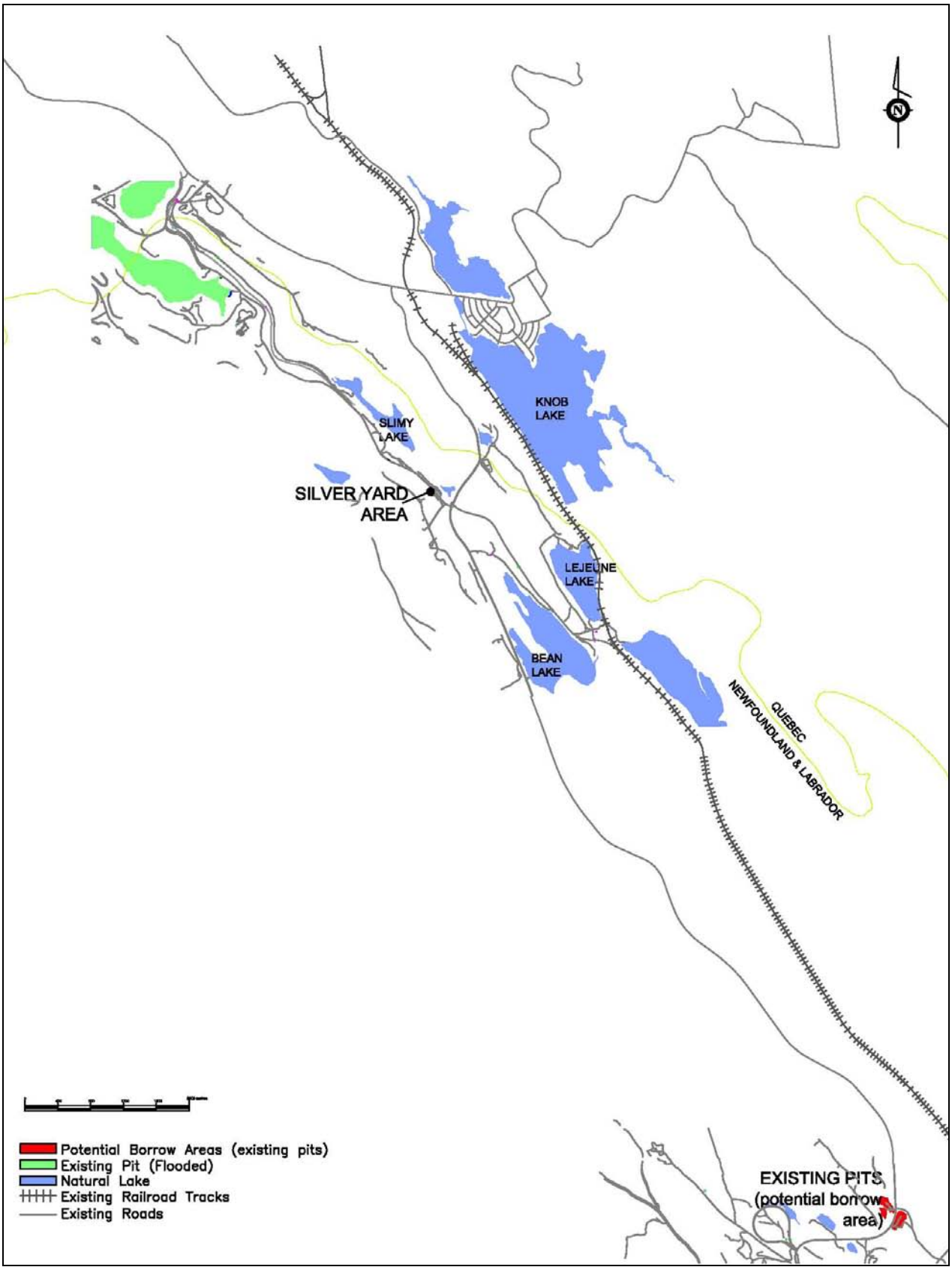

Figure 3.6 Existing Pits (Potential Borrow Areas)

Contractors may require borrow material for the construction of the spur line. The total number of borrow pits and amount of borrow material required for the Project has not been determined, as the quantity of material required depends on detailed design. However, as there are existing borrow pits in the nearby area, it is unlikely that additional borrow pits will need to be developed.

Vegetation will be cleared from the area and organic material stockpiled for use in site rehabilitation. Provincial environmental legislation and regulations will be applied during borrow area development, as well as a progressive restoration plan for the site, prior to decommissioning. Specific details on establishing, using and rehabilitating borrow pits will be outlined in the EPP.

3.1.3 Mine Infrastructure

All iron ore production from the James and Redmond properties will be beneficiated at the Silver Yard Area. Figure 3.4 illustrates the proposed infrastructure at the Silver Yard Beneficiation Area and includes the following:

- Beneficiation Area, which includes the Beneficiation Building, Primary Mobile Crushing Plant, various conveyors, Product Stockpiles;
- Water Supply Tank and Pump building module;
- Electrical building module, mobile diesel generators, and transformer;
- Diesel storage tanks and fuelling dispensing station for mobile equipment;
- Vehicle and Equipment Maintenance Shed;
- Standard mobile offices;
- Parking area;
- Raw Ore Stockpile Area;
- Stockyard and railcar loading area;
- Reject fines disposal pipeline;
- Stormwater Management Pond (SWM-1); and
- Security fencing and/or signage.

The infrastructure at the James Mining Area includes the following and is illustrated in Figure 3.4:

- James North Pit and associated haulage roads;
- James South Pit and associated haulage roads;
- James Low Grade and Waste Rock stockpile areas;
- James Settling Pond facility (SP-1)

The infrastructure at the Redmond Mining Area includes the following and is illustrated in Figure 3.5:

- Redmond 2b Pit and associated haulage roads;
- Redmond 5 Pit and associated haulage roads;
- Redmond 2b Low Grade Stockpile;
- Redmond 5 Low Grade Stockpile;

- Redmond Raw Ore Stockpile Area; and
- Redmond Site office trailer.

3.1.3.1 Beneficiation Buildings and Process

The building and contents will be semi mobile and modular to fit with the Project's long term plans. The beneficiation buildings will house the equipment needed for the beneficiation process. These include tumbling scrubber, secondary crushing equipment, primary screening equipment, secondary screening equipment, crane and various chutes, conveyors, and pumps. The beneficiation plant is designed to operate on average 7 to 8 months per year. This process description is illustrated in Figure 3.7. Details of the process flow and equipment is provided in Appendix G.

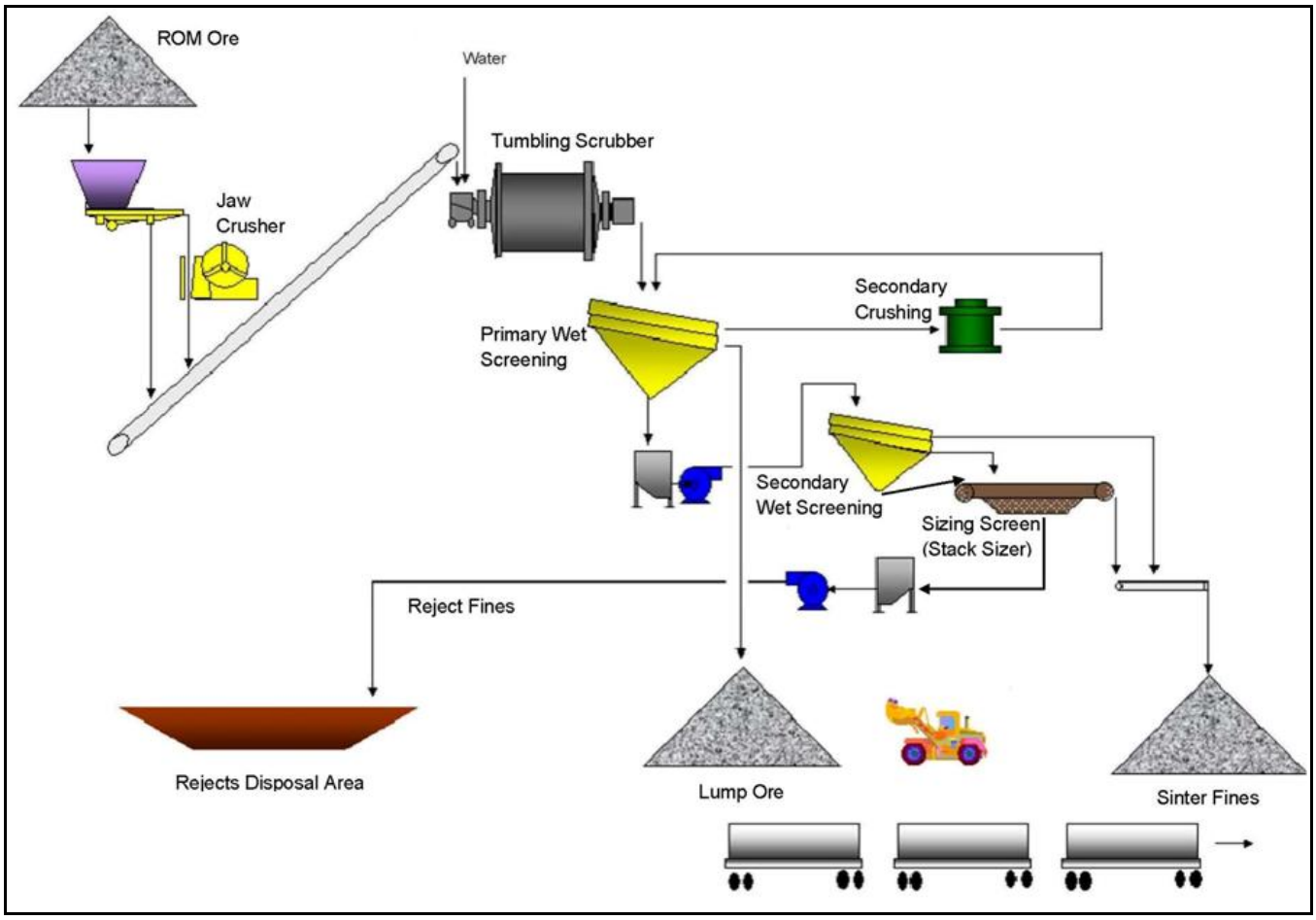

Figure 3.7 Overall Beneficiation Process Flow Diagram

Other buildings at the Beneficiation area include: mine dry, site offices and analysis laboratory, which will be standard mobile trailers/modular units; maintenance shed, which will be a sprung type structure; and warehouse facilities, which will be housed within containers.

3.1.3.2 Other Infrastructure

The other infrastructure that will be located at the Silver Yard Area include fuel storage tanks, mobile diesel generators, transformer, laydown areas, and process water pump building.

3.1.3.3 Fuel Storage

Fuel storage in Newfoundland and Labrador is regulated by the Storage and Handling of Gasoline and Associated Products Regulations, 2003. A Certificate of Approval for a fuel storage system must be obtained from the Department of Government Services and Lands. Fuel caches in remote areas of Newfoundland and Labrador should abide by the Environmental Guidelines for Fuel Cache Operations as stipulated by the Department of Environment and Labour.

Transportation, storage, and use of fuels at the Project site will be conducted in compliance with all relevant laws, standards and regulations. Before transporting or storing fuel at the Project site, contracted fuel suppliers will be required to provide a copy of a fuel spill contingency plan acceptable to LIM. LIM and its contractors are required to ensure that fuel and other hazardous materials are handled by persons who are trained and qualified in handling these materials, in accordance with government laws and regulations.

A 100 m^3 Diesel Oil Storage Tank and Diesel Vehicle Refueling Tank Truck will be used for fuel supply on site. The diesel fuel will be transported by rail to Silver Yard prior to being transferred to the above ground storage tank. The storage tank is of single wall design with a retention lined dike. The tank foundation is to be made of compacted sand and includes a geomembrane that covers the entire dike area. The dike retention volume will be able to retain at least 110 percent of the tank volume. The diesel vehicle refuelling tank truck will carry the diesel from the bulk storage tank to the equipment diesel day tanks. Any water rejected from the tanks will be directed into a closed circuit oil/water separator. The effluents from the oil/water separator will be disposed of as per environmental standards. The oil/water separator will require approval by Government Services Canada (GSC). Used and collected oil will be delivered to a licensed used oil collector.

These storage tanks will be designed according to API 650. Large storage tanks will be provided with one manhole on the side wall near the bottom level. One additional manhole will be provided on the roof of the tank for closed tanks. Drums of fuel oil, if required at the site, will be tightly sealed to prevent corrosion and rust and will be placed within appropriate secondary containment.

3.1.3.4 Electrical Power Supply

The Menihek Power Plant, owned and operated by Newfoundland and Labrador Hydro, is located 32 km southeast from Silver Yard and is the only provider of electric power to the area. The plant was built to support iron ore mining and services in Schefferville. The plant contains two 5 MW Westinghouse generators and one 12 MW unit. The main substation is close to Silver Yard lowering the voltage of distribution to Schefferville town.

The existing transmission corridor runs across and adjacent to the Redmond and James properties as well as the Silver Yard area. Refer to Figure 3.1 for locations. The expected peak demand load from the beneficiation process is currently estimated at 1500kW and total connected load is 3000kW. The expected peak demand load from the dewatering is currently estimated at 2000kW and total connected load is 3000kW.

The initial phase of the Electrical Supply Plan will have power generated by up to four mobile diesel generators located at Silver Yard. These generators will be continuous duty, 750 kW, 60 Hz, and 600 V and placed on concrete pads. A mobile generator will also be required at the field trailer at Redmond. Up to four additional 900kW mobile generators will be located nearby the dewatering wells at the

James site. An aerial transmission line at 4160V will distribute the power to each pump at the James Site. Local starters will control each individual pump.

As soon as it is possible, the second phase of the Electrical Supply Plan will be initiated. This phase involves drawing hydro-electric power from the existing regional power grid. A substation will be required and it is expected to be located near the Silver Yard area.

3.1.3.5 Water Supply

The Project's proposed water supply plan is shown in Figure 3.8. The figure shows existing and proposed flow rates.

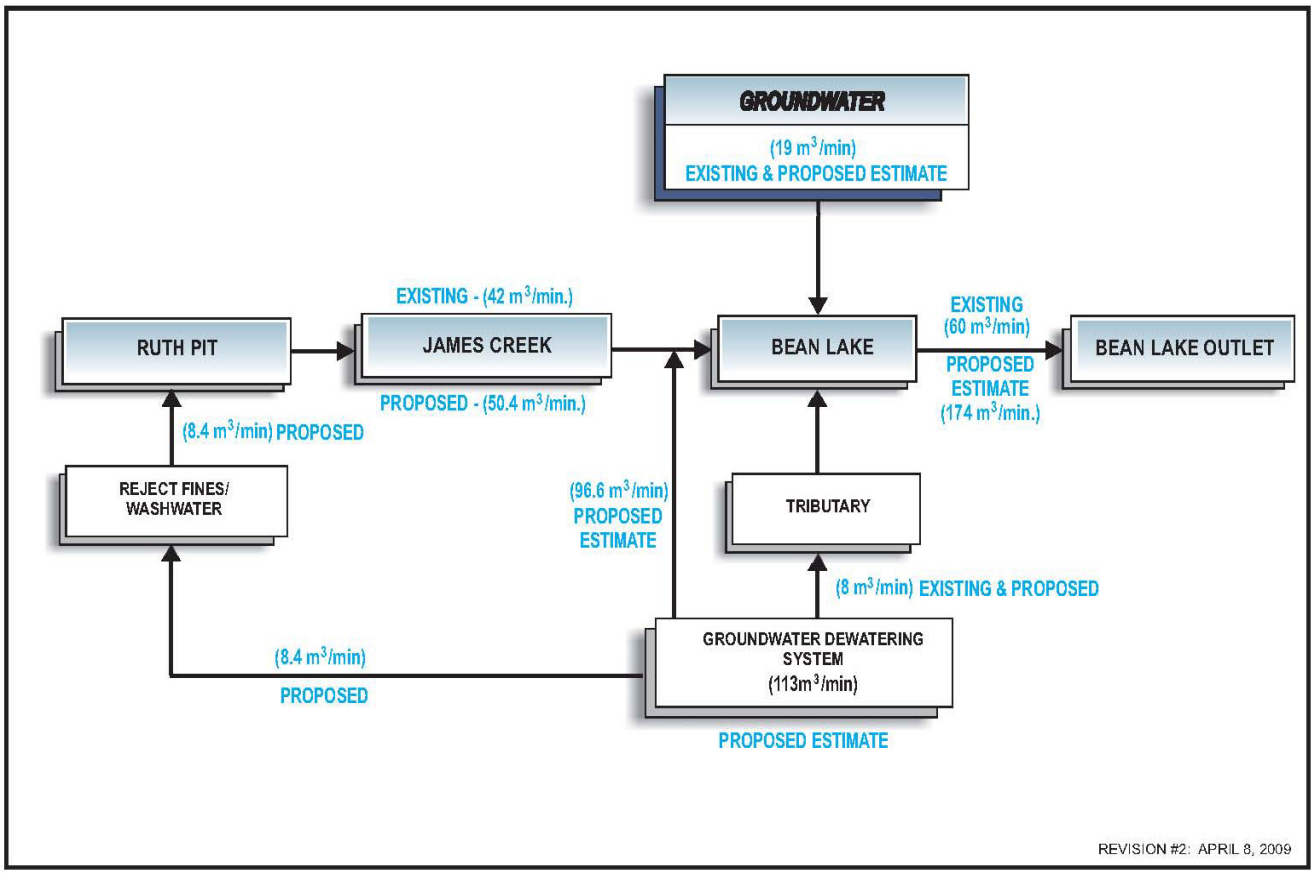

Figure 3.8 Preliminary Water Balance

Potable Water

Potable water will be required at the beneficiation building, various site office trailers at Silver Yard, and at the site trailer at Redmond. Initially, it is anticipated that potable water will be tanked to the site and/or bottled water will be transported to the Project. The water will be stored in the potable water distribution system. It is also recognized that existing ground water testing has shown that the water may be of suitable quality upon completion of well development and so it is possible that groundwater may be considered at some point in the future. If so, testing and use of groundwater for potable water use will be taken in accordance with applicable regulations and permit requirements. Testing of the potable water quality will be conducted regularly in accordance with provincial requirements. Potable water at the Redmond site trailer will be provided by bottled water.

Wash Water

Water for use in the beneficiation process will be sourced locally from within the Project area. Groundwater sourced from the dewatering system and not used to supplement the flow in the unnamed tributary may be diverted to the Process Water Tank at a current estimated flow rate of up to 8.4 m^3/min (2,187,000 m^3/year).

Although there will be some water loss in the washing process due to absorption by the ore, it is not possible to quantify this loss. Therefore, as a conservative measure it is assumed that all the used wash water will be pumped to Ruth Pit. Therefore, the estimated rate of wash water is 8.4 cu.m./min and the rate of flow to Ruth Pit is estimated at 8.4 cu.m./min.

The wash water will be transported to Ruth Pit by an aboveground pipeline that will follow an existing gravel road from the Sliver Yard Area to Ruth Pit. The location of the discharge end of the wash water fines pipeline into Ruth Pit will be chosen to maximize the retention time of the water in Ruth Pit. Given the size of Ruth Pit, it is anticipated that some storage will occur depending on seasonal and environmental conditions, etc.; however, using a conservative approach, it is assumed that the additional discharge of water from Ruth Pit will be equal to the discharge rate of wash water into Ruth Pit.

Further details of the impacts of the proposed flows on James Creek and Bean Lake are presented under Section 4 and Section 7.

Fire Water Supply

The fire protection systems design is based on good engineering practice, using National Fire Protection Association (NFPA) standards, IBC and IFC to provide appropriate life and loss protection. The fire protection system is based on the understanding that the beneficiation shed structures and lining are non-combustible and are providing easy exit on all sides.

The scope of fire protection involves: conveyors and material handling, beneficiation shed, utilities, and administrative, laboratory and dry facility trailers. The equipment and buildings will be protected by portable fire extinguishers.

Silver Yard Stormwater Management Pond (SWM-1)

The Silver Yard Stormwater Pond (SWM-1) will serve three functions:

- The primary function of the Pond will be to collect and treat stormwater from the beneficiation plant area.
- The secondary function of the Pond will be to receive the flush of water from the regular maintenance of the pumping/pipeline system. In order to complete regular Plant and/or pipeline maintenance (approximately once a week), the reject fines discharge pipeline to Ruth Pit will be flushed with clean water to push all reject fines wash water in the system to Ruth Pit. Once the pipeline is flushed and contains only clear water, the water will either be left in the pipe (typical for Plant maintenance under warm ambient temperatures) or the water will be released from the pipeline (as required for pump and pipeline maintenance or plant maintenance during freezing ambient conditions). The pipeline cannot be pumped dry; therefore, in order to clear the pipeline of water, it must be released to drain via gravity. The lowpoint on the line is the Silver Yard Stormwater Pond and this clean water will be released into this pond prior to discharge to the environment. Discharge to the SWM-1 will consist of clear water and will not require significant retention time in the pond.

- The third function of the pond will be to receive the emergency discharge from the pipeline during a power or pumping failure. The Beneficiation Plant will be interrupted during this event and therefore the volume of effluent discharge to the pond should only be the volume of effluent in the pipeline. In this case, the effluent discharged into the pond will be the same quality as the effluent being deposited in Ruth Pit except that due to the decrease in pumping pressure and therefore pipeline velocities, some larger fines particles will settle in the pipeline and not be discharged with the effluent.

In a general risk analysis, the probability of pipeline/pumping malfunction is typically low. In the case of the Silver Yard- Ruth Pit pipeline, the risk of malfunction is associated with freezing conditions and with the continuity of pumping operations. Therefore, there is no backup pipeline proposed for the Project. The pumping system will include a backup pump and backup power source. In the case of failure of either, the operation of the Beneficiation Plant will be interrupted and the pipeline will be automatically drained to the Silver Yard Stormwater Pond.

The Silver Yard stormwater pond will be designed as a multi-cell settling system to treat each of these effluent flows, to accommodate the varying effluent flows, and to ensure that release of the water/effluent to the environment (James Creek and the unnamed tributary) will meet the discharge requirements under the Certificates of Approval and MMER. This multi-cell design will also ensure maximum retention time and allow pond maintenance operations (removal and disposal of reject fines) to be carried out while the pond is still being used. Pumping the emergency discharge back to Ruth Pit is technically and economically impractical.

A detailed design of Silver Yard Stormwater Pond, which will integrate all effluent treatment requirements hydraulic design and controls to ensure discharge water quality to James Creek in compliance with all regulatory requirements, will be provided at the permitting stage (Development Plan as required under the *Newfoundland and Labrador Mining Act* and reviewed by Water Resources).

3.1.4 Supporting Infrastructure

It is not anticipated that any permanent structures will be erected for the mining and beneficiation operations at the Silver Yard area, although some temporary stores and workshops will be established. As this will be a beneficiation site, a workshop and warehouse will be established, as well as a small fuelling station nearby. A portable office and lunchroom facility will also be set up, which will include services such as washrooms and a first aid room. All of the buildings, including foundations if required, will be removed upon completion of operations. General services and infrastructures will be shared with the contractor.

3.1.4.1 Laboratory

It is planned to establish an on-site mobile laboratory in a portable modular building at the Silver Yard area. The laboratory will include a sample preparation section with a drier, crushers, screens, pulverisers and rifle splitters and an analytical lab section for daily ore control and exploration samples analysis. It is anticipated that the analytical methods used will be fusion (lithium metaborate) followed by XRF spectrometry.

3.1.4.2 Workshop

A maintenance/workshop shed (sprung type structure on concrete pad) and maintenance yard will be provided to conduct routine maintenance and non-major repairs for the mine and beneficiation

operations. The building will be equipped with the necessary tools and equipment to maintain the mobile fleet. It is expected that the workshop would be equipped with compressed air and related tools, tire changing equipment, and hydraulic hose preparation. A closed-circuit wash bay and oil-water separator will be developed within the concrete-floored Maintenance Building and collected material will be pumped out on a routine basis for disposal by a licensed and experienced contractor at an approved facility. There will be no discharge of this into the surrounding environment. Solvents may be used for parts cleaning and if so, will be properly stored and disposed of in accordance with applicable regulations.

It is anticipated that onsite storage of small retail-size quantities of hydraulic oils and other materials may be required for the limited mine vehicle/equipment maintenance. In addition, diesel storage associated with local or emergency back-up power generation may be required. Petroleum/oil/lubricant (POL) transport, storage, use and disposal will be conducted in accordance with applicable legislation and all workers will be trained in the appropriate Environmental, Health & Safety (EHS) approach to working with these materials. Spill kits will be available at key locations on site and workers will be trained in their use and other emergency response procedures.

It is anticipated that major repairs would be conducted elsewhere at the contractor's discretion.

3.1.4.3 Warehouse

The warehouse will contain critical components for the vibrating screens and ware parts for crushers and conveyors. The contractor may want to store tires, filters, retail quantities of lubricants/oils and brake parts for trucks and drill steel, bits and parts for drill rigs.

3.1.4.4 Explosives Storage and Mixing Facilities

Iron ore extraction will be conducted by a Labrador-based mining contractor. Mining methods will be left to the Contractor's discretion. Mechanical methods will be used, where possible, to break up the rock. The contractor may also require the occasional use of explosives. The contractor will be responsible for complying with the required permit and/or approvals under the Natural Resources Canada Explosive Regulatory Division. The Contractor will ensure that blasting will follow all provincial regulations, including the Occupational Health and Safety Regulation, under the *Newfoundland and Labrador Occupational Health and Safety Act* 1165 and the Mine Safety of Workers under Newfoundland and Labrador Regulation 1145/96. The Contractor will hire experienced/licensed blasters.

3.1.4.5 Communication

All mining equipment and mine vehicles will be equipped with two-way radio system. This radio system will be available within the beneficiation building, maintenance building, and offices. A transmitter/receiver station including antenna tower and housing for radio communication equipment may be required. The location of the tower would be selected to optimize communication transmissions between the James – Redmond – Silver Yard sites.

Telephone and internet services would be provided through satellite services.

3.1.4.6 Camp

Camp accommodations will be constructed for workers at a previously developed former ski hill lodge location in Labrador. The camp will have an overall footprint of approximately 7,000 sq. m. and will be

located on the site of a former ski hill and lodge (Figure 3.9, Also referred to in Air Quality sections as “Cabin 1”). The site for the camp was previously cleared and developed for facilities associated with the ski hill, and an abandoned ski lodge (also referred to as “Cabin 1”) remains on the site. Camp structures will consist of mobile to semi-mobile pre-fabricated modular trailers and will accommodate approximately 60 workers seasonally, from approximately April to November on an annual basis. The construction and operation of the camp will utilize NL workers, materials, goods, and services where possible.

The proposed dormitories will be comprised of single rooms and will include an adequate number of rooms for the number of people on-site at any given time. Men and women’s accommodations will be separate and the women’s accommodations will be situated near the Women’s Sanitary and Dry Trailers. The camp will include a kitchen (with catering), dining room, laundry facilities, and a recreation area. The recreation facilities may include such features as a pool table, television lounge, exercise equipment, and access to outdoor recreation. The camp will also have wireless internet and telecommunications access.

Initially, up to two diesel generators (125 and 175 kw) will be used as a temporary power source for the camp until electricity can be connected from the nearby grid. Grid access is nearby and no significant construction is anticipated to facilitate the grid connection. Minimal quantities of generator fuel will be temporarily stored in a double-walled storage tank in accordance with applicable regulations until the permanent grid connection is in place (Figure 3.9).

Gensets, installed outdoors (including trailer mounted), will be equipped with noise attenuating enclosures providing a combustion exhaust muffler, air supply silencer(s) and air exhaust silencer(s).

Water requirements for the seasonally operated camp are anticipated to be supplied from a nearby groundwater well. Sanitary waste at the camp will be collected and treated using a domestic wastewater treatment system that uses a Rotating Biological Contactor (RBC) form of aeration. This system produces minimal sludge, which will be removed at an estimated rate of once per operating season and disposed of at an NL-approved facility by a licensed contractor. Surface water drainage, consisting of site drainage and the RBC system, will be contained and directed to a settling pond downgradient of the camp. Proposed locations of these features are shown in Figure 3.9.

Any domestic waste will be collected on-site and delivered to an experienced Labrador-based contractor and placed in a landfill facility in Labrador West, in accordance with applicable regulations. Food storage and handling will be conducted in accordance with applicable regulations and any organic waste generated will be stored in animal-proof containers prior to offsite disposal in NL. Where and when possible, a Reduction, Reuse and Recycling policy, will be implemented to minimize waste generation at the camp.

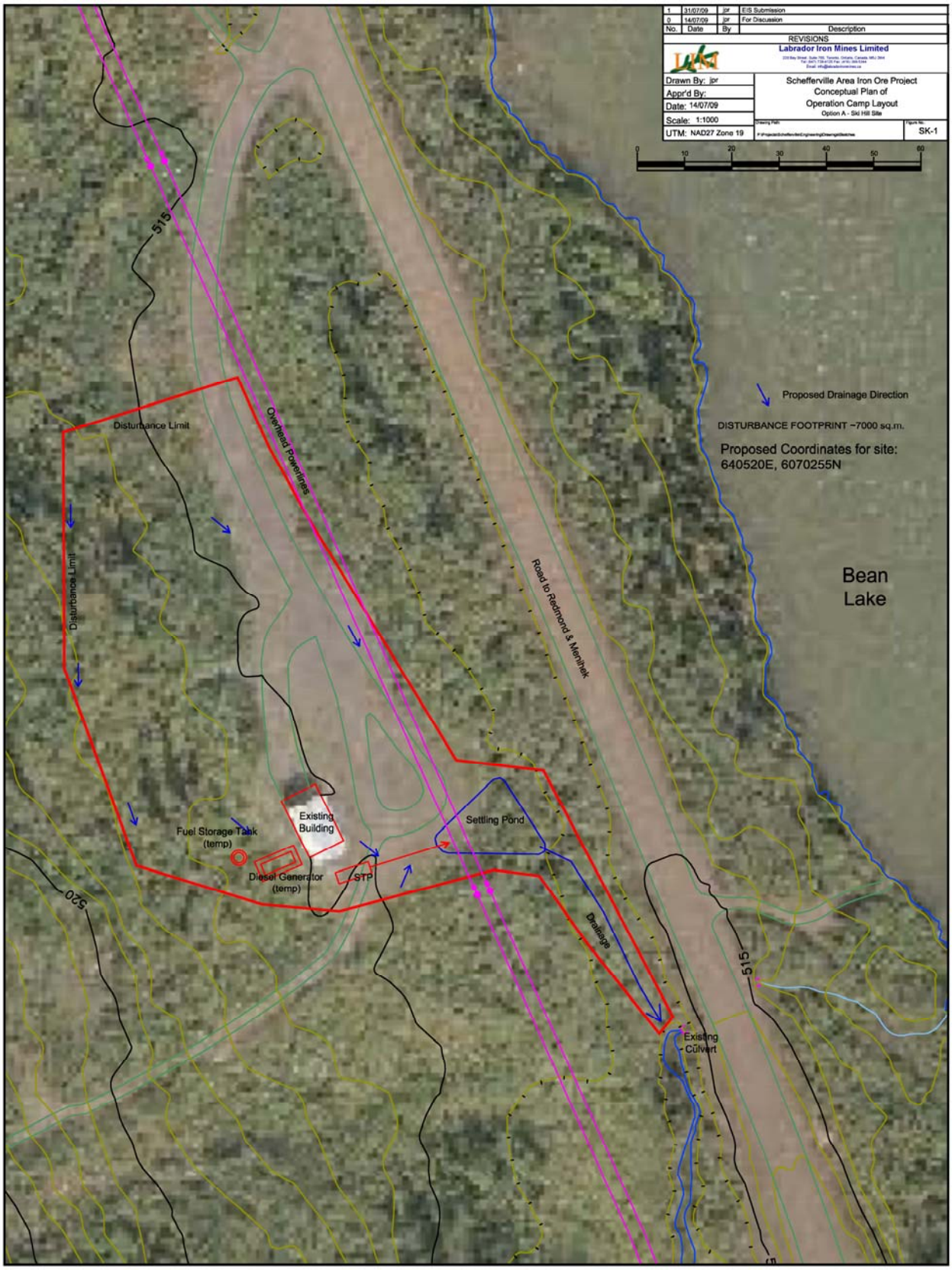

Figure 3.9 Camp

3.1.4.7 Site Access

Primary access to the James mineral deposit is by an existing gravel road which is located approximately one km southwest of the Silver Yard area. The James property straddles an existing road connecting Silver Yard with the Redmond property, and continues to the Menihek hydroelectric dam, where the road is terminated. The existing roads are in reasonable condition and may require brushing to improve visibility and grading to establish road surface.

The access roads will require proper signage. The signage will include posted speed limits, stop signs at intersections, and caution signs about the co-use of mine and public traffic. Adequate numbers of signs will be posted in all local languages.

Within the pit designs, the access roads will be limited to only mine personnel. The haulage roads will be designed and built to permit the safe travel of all of the vehicles in regular service by following accepted industry standards and following Section 27 of the Mines Safety of Workers Regulations.

Although all of LIM's properties are located in the Province of Newfoundland and Labrador, they will utilize, to some extent, present connecting roads and possibly some of the services available from the town of Schefferville and the surrounding communities.

3.1.4.8 Lighting

All buildings will include sufficient perimeter lighting with outdoor fixtures. Exterior lighting will be timer or photocell controlled. Lighting will also be provided at doorways and overhead doors. There will be no street lighting on any access roads. Portable lighting plants and lights on mobile equipment will be used within the pit areas to illuminate working areas.

3.1.4.9 Railway Infrastructure

In order to deliver product, LIM must transport by rail, approximately 568 km to the port of Sept Îles for further shipping by marine transport. LIM will operate a short spur line linking the Silver Yard with the existing rail system. The existing rail system includes:

- a 208 km link from Schefferville to Emeril Junction (near Ross Bay Junction) that is owned and operated by Tshiuetin Rail Transportation Inc.(TSH), a company jointly owned the Innu Nation of Matimekush-Lac John, the Naskapi Nation of Kawawachikamach, and the Innu Takuaikan Uashat mak Mani-Utenam;
- the 360 kilometres of rail from Ross Bay Junction to Sept Îles that is operated by Québec North Shore and Lab Railway (QNS&L) a wholly owned subsidiary of the Iron Ore Company of Canada (IOC); and
- at Sept Îles, the rail link from Arnaud Junction to Pointe-Noire that is operated by Arnaud Railways, (AR), a wholly owned subsidiary of Wabush Mines.

A new Labrador Iron Mines Holdings Limited subsidiary company, LabRail, has been incorporated under the laws of Canada which could operate the railway at the mine site and coordinate LIM's rail transportation to the marine terminal in Sept Îles. Initially, LabRail could own or lease and operate the rail loading facilities and all associated rail infrastructure, rolling stock and power.

Arrangements will need to be entered into with other railroad companies regarding access and transport requirements over the various rights of way between Silver Yard and the Port. It is possible

that these arrangements could also include other potential commercial and mining operations wishing to utilize some or the entire transport route. This rail facility will be available for use by other companies and will improve the commercial viability along and in close proximity to it. LabRail will cooperate in any future mineral development by others in the facility use and, if necessary, in the realignment of the line.

Existing and proposed railway infrastructure is detailed in Figures 3.10 and 3.11.

3.1.4.10 Infrastructure

A 4.0 km spur line previously operated and abandoned by IOC will be restored for use by LabRail. Including sidings to the spur line, 7,800 m of new track will be laid. The infrastructure components include:

- ballast - the existing railbed and most of the necessary ballast are already in place and some grading and levelling will be done in preparation to the laying the track. Some additional ballast will be required;
- culverts - all necessary culverts are in place and require no immediate maintenance;
- ties;
- rails;
- turnouts and switches;
- bumping posts and derail; and
- other track material (OTM) - spikes, rail anchors, tie plates and joint bars, track bolts, nuts and spring washers.

The new track and associated infrastructure will be installed in conformance with the latest edition of the American Railway Engineering and maintenance-of-way Association (AREMA) recommended practices.

There may also be a split platform static railway scale and scale house, to weigh the loaded ore cars.

3.1.4.11 Rolling Stock

LabRail will operate with sufficient power units and rolling stock to meet the operational needs of the Project. The numbers of locomotives and ore cars will be initially determined on the start-up operations (i.e., the first year production level), and by the outcome of ongoing negotiations on railway operation). Locomotives will be SD40-2 type diesel locomotives or similar and the rolling stock will be 40-foot gondola iron ore cars with a nominal capacity of 93 tonnes of ore.

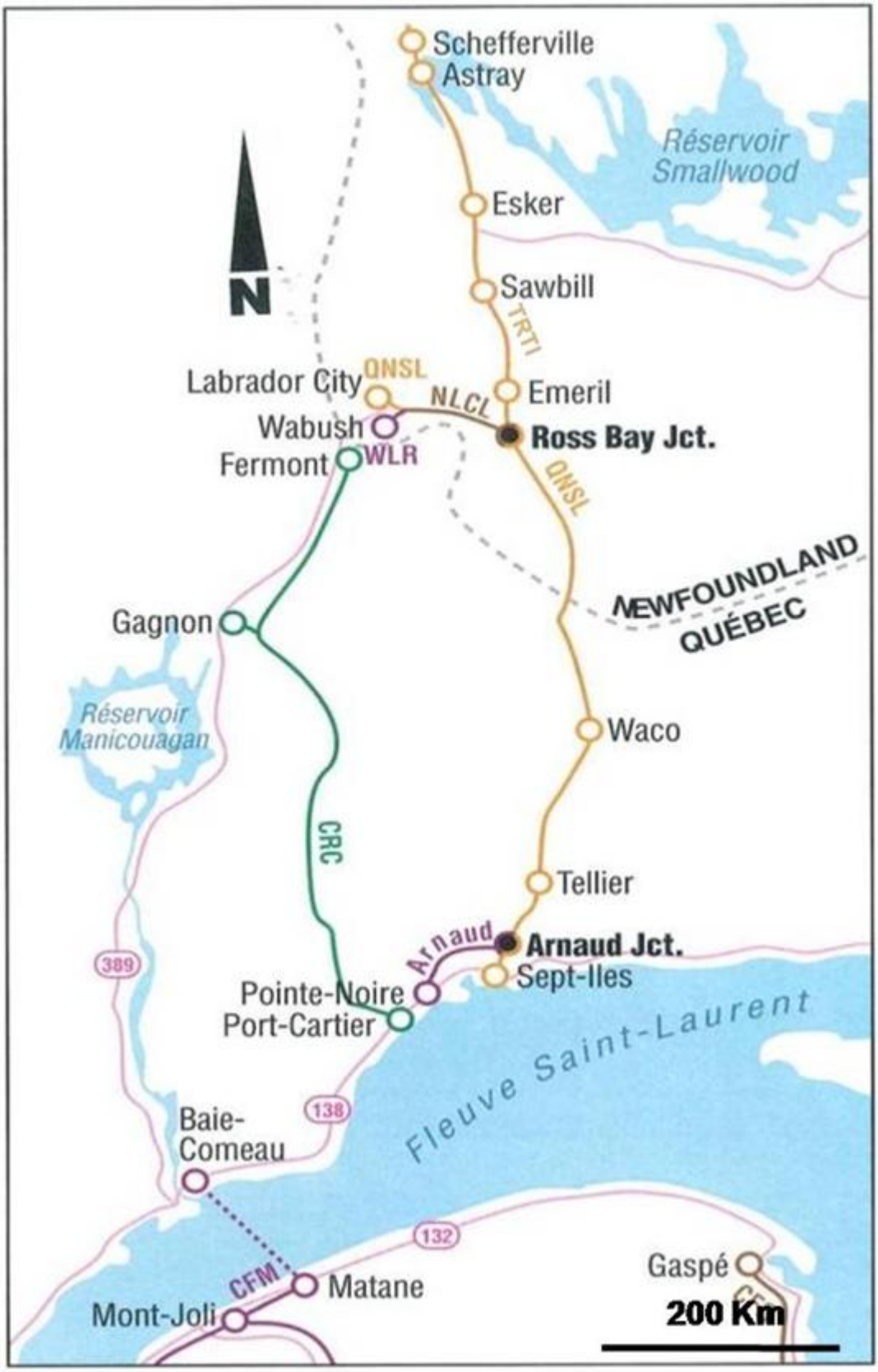

Figure 3.10 Existing Railway Infrastructure

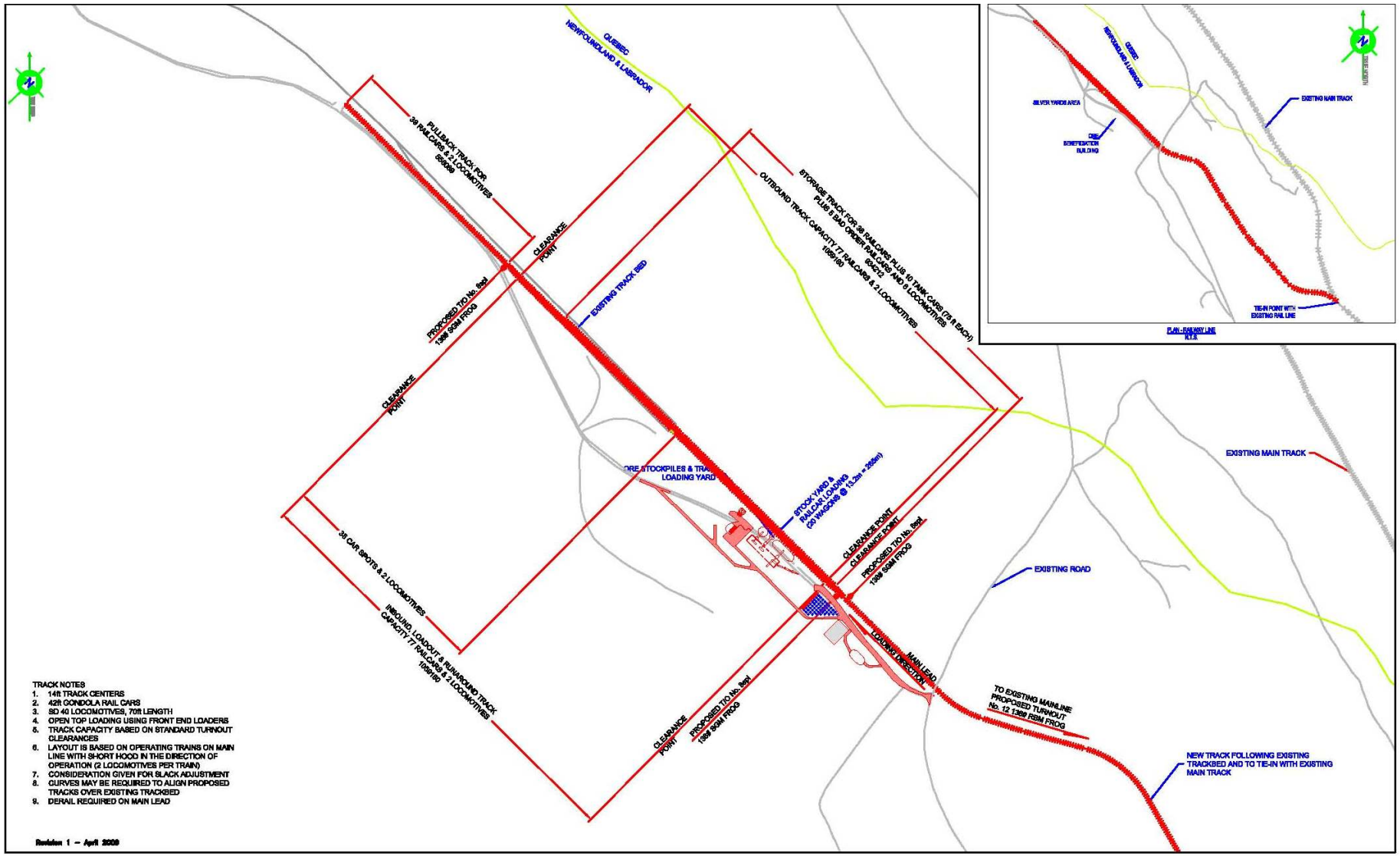

Figure 3.11 Proposed Railway Infrastructure

3.1.4.12 Storage, Loading, and Shipping

After beneficiation, saleable products will be stockpiled at the Silver Yard site and loaded into ore cars with a front end loader. The loaded cars will be hauled by LabRail to the main line and then hauled to Emeril Junction. The cars will be hauled from Emeril Junction to Sept Iles by QNS&L.

The initial operation of the Project is scheduled to produce 1,500,000 tonnes of ore in the first year through a haulage season of approximately 7 to 8 months per year.

3.1.4.13 Regulatory Framework

LabRail will operate entirely within Labrador and as such will be regulated under the provincial *Rail Service Act* 1993. The regulatory provision of this act is that the railway construction and operation must be approved by the Lieutenant-Governor in Council (Cabinet). Cabinet would then assign additional regulatory function to one or more government departments such as the Department of Transportation and Works.

As LabRail will only operate within the Province of Newfoundland and Labrador, it will therefore not, at least initially, be required to be designated as a Common Carrier under the provisions of the *Canada Transportation Act* 1996. Nevertheless LabRail will agree that it will operate as if it were a common carrier for the purposes of ensuring that other potential users of LabRail track and facilities will be granted a suitable level of service.

3.1.5 Surface Water Management

3.1.5.1 James North and James South Deposits

There are two surface water features within the James North and James South properties:

- James Creek flows along the eastern edge of the sites; and
- An unnamed tributary which originates from a spring situated between the James North and James South mine pits areas flows southeast into Bean Lake. The spring is located approximately 30 m west of the existing road crossing.

Surface water features of relevance on and in the immediate vicinity of the James Property include Bean Lake (east of site), James Creek (which flows from east of Ruth Pit to Bean Lake), and several springs that originate on the James property and form an unnamed tributary that flows southeast from the site to Bean Lake. Details regarding flows and water balances for these features are presented in Section 4.1.4. The locations of the two springs at the James deposit (James North and James South Springs) are such that they will likely be affected by pit dewatering, and since they are the source of water for the unnamed tributary, it is also likely that the unnamed tributary will be affected unless mitigation measures are put in place. A mitigation strategy to deal with this is outlined in detail in Sections 4.1.4 and 7.3, but in summary, it will involve diverting a portion of the pit groundwater dewatering water (after settling) to the unnamed tributary to make up for the water lost from the springs. The source of the springs is groundwater and the source of the pit dewatering water will be groundwater, therefore, the mitigation strategy involves using the same source of water as is currently supplying the tributary.

Surface water collected in in-pit sumps within the James North and James South pits will be pumped to the nearby James Settling Pond area and managed separately from the groundwater dewatering

system water at Settling Pond Area SP1. It is currently anticipated that this area would include two settling ponds, one for the pit water management and one for groundwater dewatering management. The ponds will be engineered to ensure that in-pit dewatering and well dewatering effluent will be of suitable quality for discharge to the environment.

Further details of water management at the James North and James South properties are provided under Section 3.3.5.

3.1.5.2 Redmond Deposit

The Redmond deposit area contains isolated ponds and pits, primarily created from past mine workings. There are currently flooded abandoned mine pits on-site. There are natural small waterbodies present and a small stream is located approximately 5 km from the proposed mine operation. The stream flows in a southeasterly direction through existing abandoned ore stock piles towards Redmond Lake.

The main surface water features in the vicinity of the proposed Redmond 2B pit are a wetland/pond area located north of the proposed pit which serves as a source for a stream that runs southeast past the north side of Redmond 1 Pit and ultimately discharges into Redmond Lake. Details regarding flows in this stream are presented in Section 4.1.4. A groundwater discharge appears to be the main source of water discharging from the wetland at the headwater of this stream.

Other surface water features of note include the now flooded Redmond 1 and Redmond 2 pits, located southeast of the proposed Redmond 2B pit. The groundwater water table at Redmond 2 is approximately 25 m below ground surface in the proposed Redmond 2B pit area. Therefore, pit dewatering may be required after the first year of mining to lower the water table in the immediate vicinity of the pit to allow mining to occur to the base depth of the proposed pit. Further discussion of the Redmond dewatering program is presented in Sections 4.1.4 and 7.3.

Surface water collected from pit dewatering activities within the Redmond 2b and 5 pits will be pumped to the existing Redmond 2 pit. Further details of the water management activities for the Redmond 2b and Redmond 5 pits are presented under Section 3.3.5.

3.1.5.3 Silver Yard

The surface drainage water from the catchment area of the beneficiation plant will be diverted to the Silver Yard Stormwater Management Pond (SWM-1), before release into the environment. The reject fines disposal pipeline and beneficiation plant emergency drainage is also located at that pond. Details of the SWM-1 pond were presented earlier under Section 3.1.3.5.

3.1.6 Clearance and Condemnation Work

Investigations of the old IOC stockpiles have shown that preferred stockpile locations were near pits and loadout areas which were underlain by rocks that were not part of the Sokoman Iron Formation. If there was no such convenient location then stockpiles would be placed on top of the iron formation, if it were to be found uneconomic (by their standards).

3.1.6.1 Redmond 2b

Geological mapping indicates that there is a band of Wishart quartzite running northwest to southeast on the west side of the Redmond 2B deposit and this was supported in the drill holes from LIM's 2008 drill program. The area to the west would be small, with the Menihek power lines being approximately 150 m away. This western location would offer an area that is approximately 150 x 200 m.

The area to the north would be quite small, being hemmed in by the pit itself, the Menihek power lines and the Redmond 5 access road.

There is an existing waste rock storage pile immediately to the east of the deposit that could also be considered for stockpiling. This area is underlain by rock units other than the Iron Formation.

An existing waste rock and low-grade ore stockpile is located between the Redmond 2b deposit and the existing Redmond 2 pit. Drill holes from LIM's 2008 drill program indicate that these stockpiles are located on top of Wishart Quartzite (waste). This pile could be enlarged.

The area immediately to the west of this low-grade stockpile (and still between the 2 and 2B deposits) is an area that should be considered for future exploration and not covered over. The potential for exploration in this area was deduced from the apparent ore material in the NW wall of the Redmond 2 pit.

In addition, the mined out Redmond 2 pit could be backfilled with waste rock.

3.1.6.2 Redmond 5

The geology map shows that there is a barren northwest to southeast trending band of Wishart quartzite immediately to the east of the deposit and additional mapping will be conducted in order to determine its coverage.

There is a broad band of Iron Formation to the west of the Redmond 5 deposit which is still open for exploration and could have some potential for economic mineralization.

3.1.6.3 James North

The proposed James North waste rock storage area appears to be on top of uneconomic Fleming Formation (chert breccias), Denault Formation (dolomite) and Wishart formation (quartzite) all of which have been mapped immediately to the east of the proposed pit. This information is from IOC Geology Maps and Wardles 1982 Geology Map of the area. In addition to the geological mapping, IOC 1:40 feet scale cross sections covering the proposed area supports the uneconomic or absence of mineralization and suggests a suitable place for stockpiling. Mapping and possibly trenching/drilling could further expand this area to the north.

3.1.6.4 James South

The proposed area for the James South waste rock storage area is underlain by the Sokoman Iron Formation, which within this area is considered to be uneconomical, and is southeast along strike of the James Deposit.

There is an area south of the proposed James South pit that has a potential economic interest and as such has been avoided in the footprint for the James South Waste Rock Storage and Low-grade Stockpile area.

3.1.7 Waste Management

The objectives of waste management are to prevent, minimize, and mitigate the impact of the waste materials on the environment. The plan is to control the on-site management and final disposal of wastes during the construction and operation phases. Where and when possible, a Reduction, Reuse and Recycling policy, will be implemented to minimize waste generation.

3.1.7.1 Wastewater and Sewage

Wastewater and sewage collection will be required at the Silver Yard area, at the Redmond site, and at the work camp. At the Redmond site, washroom facilities will be provided within a mobile trailer unit. Wastewater and sewage will be handled by holding tanks and transported to the Silver Yard wastewater treatment module.

As indicated in Section 3.1.4.6, sanitary waste at the camp will be collected and treated using a domestic wastewater treatment system that employs biological oxidation of wasterwater using a rotating biological contactor (RBC) form of aeration. This system produces minimal sludge, which will be removed at an estimated rate of once per operating season and disposed of at an NL-approved facility by a licensed contractor.

At the Silver Yard area, wastewater and sewage will be handled and treated by a similar system as that proposed for the camp. Grey water is sterilized before its final discharge at the outlet of the wastewater treatment module. It is proposed that sterilization of grey water will be by means of UV disinfection in the waste water's last section of the treatment system. After sterilization, this water will be transferred to Ruth Pit.

During the construction phase and until the sewage treatment is operational, wastewater and sewage will be collected in holding tanks, emptied by vacuum truck and disposed of at a licensed facility. All management will be conducted in accordance with applicable regulations.

3.1.7.2 Domestic and Solid Waste Disposal

There is no on-site landfill proposed for the Project. It is planned that garbage and litter will be collected on-site and delivered to an experienced Labrador-based contractor and placed in a landfill facility in Labrador West, in accordance with applicable regulations. Any food or organic garbage onsite will be held in animal-proof containers to prevent attracting bear, birds, and other wildlife.

No wastes will be deposited in or near watercourses or wetlands. A recycling program is being considered for the area and LIM will support and participate in this initiative, where possible.

3.1.7.3 Hazardous Waste

It is not expected that the mine will generate large quantities of hazardous waste. Should any hazardous wastes be generated, they will be stored, transported, and disposed of according to federal and provincial waste disposal regulations.

LIM will require contractors to follow provincial waste diversion regulations or policies, including provincial programs for beverage containers, tires and waste oil and other petroleum products. Discarded tires will be handled according to the requirements of the provincial tire recycling program established by the Waste Management Regulations and used oil will be collected for recycling or reuse

according to the Used Oil Control Regulations. In addition, any scrap metals will be taken to a scrap metal recycling operation.

3.1.7.4 Beneficiation Plant Waste Effluent

The production of the “direct shipping” ore requires only a simple process of crushing, screening, and washing. Effluent originating from the beneficiation area will contain rock fines but will have no chemical constituents. Current mine plans anticipate that the washwater will be directed into existing mine pits to settle out solids. For the properties addressed in this study, the existing pit to which the washwater will be directed is the existing Ruth Pit.

Although the Ruth Pit outflow is the start of James Creek, environmental baseline information, including a preliminary aquatic habitat assessment, confirms that the abandoned pit has no surface connectivity to existing fish habitat. The outlet at Ruth Pit is a submerged culvert that is located in the southwest portion of the pit. Historical pit wall rock debris has partially blocked the pit-side end of the culvert, and the pit water level is approximately 2 m above the top of the culvert. Water still flows through the culvert but more by infiltration rather than surface level flow due to the blockage. However, the discharge end of the culvert is perched approximately 1 m above the James Creek inlet, therefore, fish cannot enter Ruth Pit from James Creek because the culvert is perched and is blocked by coarse rock.

Further to recent discussions with regulators (DFO, February 2008), the 2008 baseline program has provided additional confirmation that the existing pits do not contain self-sustaining fish communities.

LIM is evaluating the existing outlet structure at Ruth Pit and it is anticipated that upgrades to this structure may be required at some point in the future. The details of the upgrades will be developed with the overall detailed design stage of the Project, and final design will be provided as part of the Development Plan and permitting stage. LIM acknowledges that permitting for any upgrades, if required, will be subject to Section 48 of the *Water Resources Act* and that monitoring will be required.

3.1.7.5 Waste Rock

Waste rock will be hauled from the pit and disposed of outside the pit limits at a sufficient distance from the active pit limits, rivers and lakes. The location of the waste rock storage areas has been selected to provide sufficient capacity as close as practical to the source of waste, and on moderate slopes to minimize the risks of failures. Precipitation infiltration and site drainage during construction may result in run-off water containing suspended solids. As a result, stockpile construction and mine design will include prevention and mitigation strategies for control and treatment of the suspended solids, as required (e.g., ditch blocks, filter cloths, settling ponds, etc).

Any off-grade product from the beneficiation process will be hauled to a nearby stockpile location.

3.2 Construction

Construction will comply with all applicable standards and regulations, environmental protection guidelines and regulations. A series of environmental protection measures will also be implemented in accordance with the potential Project effects identified through the environmental assessment process (Chapter 7). An Environmental Protection Plan (EPP) will be prepared for each construction phase. An outline of an EPP is contained within this document.

The Contractor's field engineer will ensure that all construction activities comply with the EPP and all regulations, permits, approvals and authorizations. An Environmental Coordinator will provide technical support to the Contractor's field engineer, as well as perform environmental inspections and liaise with regulatory agencies.

3.2.1 Project Schedule

Subject to approval, construction is scheduled to start in 2009. The Project areas are already partially pre-stripped and a limited amount of iron ore product could be readily developed for shipment on a limited basis using the existing railway (Section 3.1.4.9).

The Estimated Production schedule is shown in the following Table 3.3.

Table 3.3 Estimated Production Schedule

	Tonnes of Product by Year				
Deposit Area	**2010**	**2011**	**2012**	**2013**	**2014**
James	1,000,000	1,000,000	1,000,000	750,000	500,000
Redmond	500,000	500,000	250,000	250,000	100,000
Total	1,500,000	1,500,000	1,250,000	1,000,000	600,000

The life of the Project is five years. A Project schedule is shown in Figure 3.12.

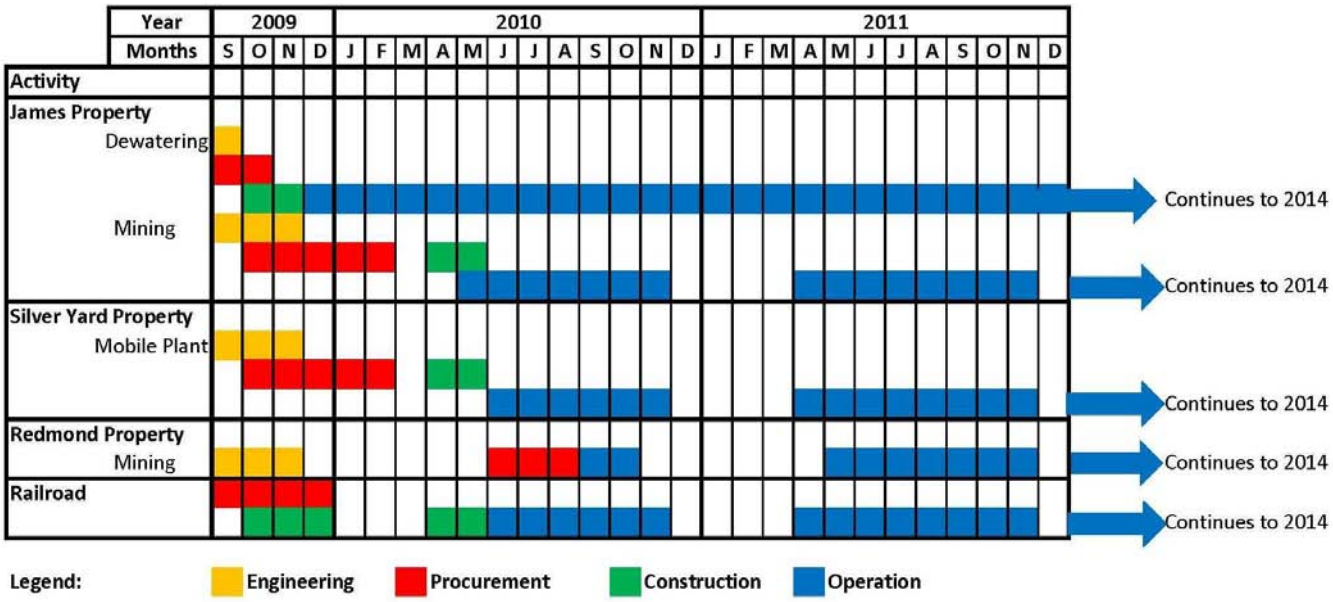

Figure 3.12 Project Schedule

3.2.2 Site Preparation

3.2.2.1 Clearing

Trees and shrubs will be cleared with chain saws or other hand-held equipment. Mechanical clearing methods may be used in areas where terrain disturbance will not cause topsoil loss or sedimentation of watercourses and waterbodies.

Vegetation clearing (e.g., trees and shrubs) will be required in advance of some access road construction, building construction, pit development, and other site preparation activities. Refer to Figures 3.13 and 3.14 for extent of area. Current environmental studies have not identified the presence of merchantable timber within the areas of clearing. Prior to site clearing, migratory bird nests will be identified and appropriate buffers applied. Any trees that are large enough will be salvaged and cut for firewood and/or put through a chipper. Available organic material will be used to help revegetate areas in the future. The remaining trees will be burnt or mulched.

All work will be carried out following all applicable government legislation including the *Forestry Act* and *Cutting of Timber Regulations*.

3.2.2.2 Grubbing and Debris Disposal

Grubbing of the organic vegetation mat and/or the upper soil horizons will be limited to that necessary to meet the Project engineering requirements. Topsoil and organic materials will be stockpiled and used in site rehabilitation.

A minimum 15 m buffer zone of undisturbed natural vegetation will be maintained between watercourses and areas of grubbing activity. If specific site conditions require modification to the buffer zone, this will be undertaken in consultation with the DFO Area Habitat Biologist. Any work within the 15 m buffer of a water body showing on a 1:50,000 scale map will also need a permit from the Department of Environment and Conservation, Water Resources Management Division.

Following release from the environmental assessment process, and once all the required government permits have been received, the construction phase would be initialized. General construction will employ best practices, incorporating and following the guidelines provided in “Environmental Guidelines for Construction and Mineral Exploration Companies” and LIM’s site and task-specific EPP.

3.2.2.3 Pre-Stripping

Grubbing of the organic vegetation and/or the upper soil horizons will be kept to the minimum but is necessary within the Project footprint. Erosion control techniques and devices will be used to stabilize easily eroded areas. Topsoil and overburden will be stored in separate stockpiles for later use in reclamation activities.

Any unsuitable material will be placed in an approved stockpile area. Runoff of sediment-laden water during grubbing will be minimized by using measures such as settling ponds, ditch blocks, interception ditches and filter fabrics. Erosion control measures such as rip-rap, filter fabrics, drainage channels, and gravel or wood chip mulches will be implemented, as appropriate, in areas prone to soil loss. Erosion and Sediment Control measures will be installed in accordance with manufacturer’s recommendations. These features may include, but are not limited to, silt fencing, sediment control ponds, and gabion blankets. All work will be in accordance with the “Environmental Guidelines for Construction and Mineral Exploration Companies” and LIM’s site and task-specific EPP.

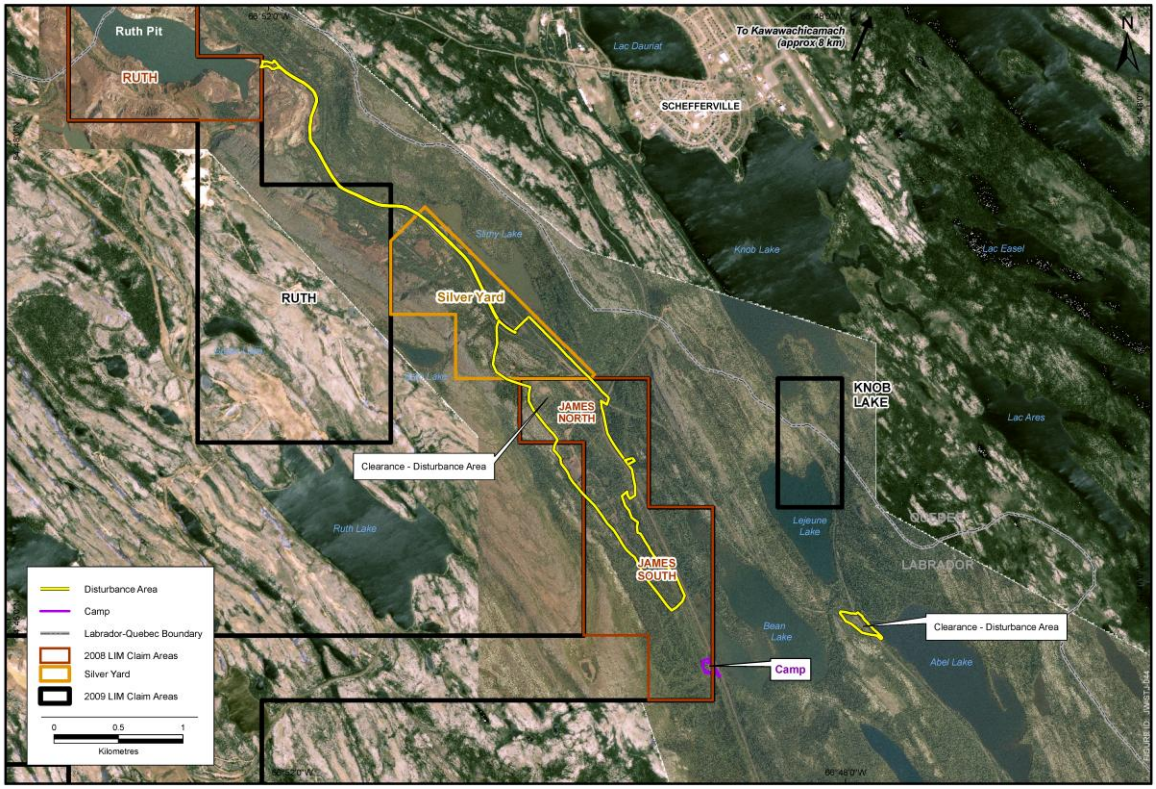

Figure 3.13 Extent of Vegetation Clearing, James

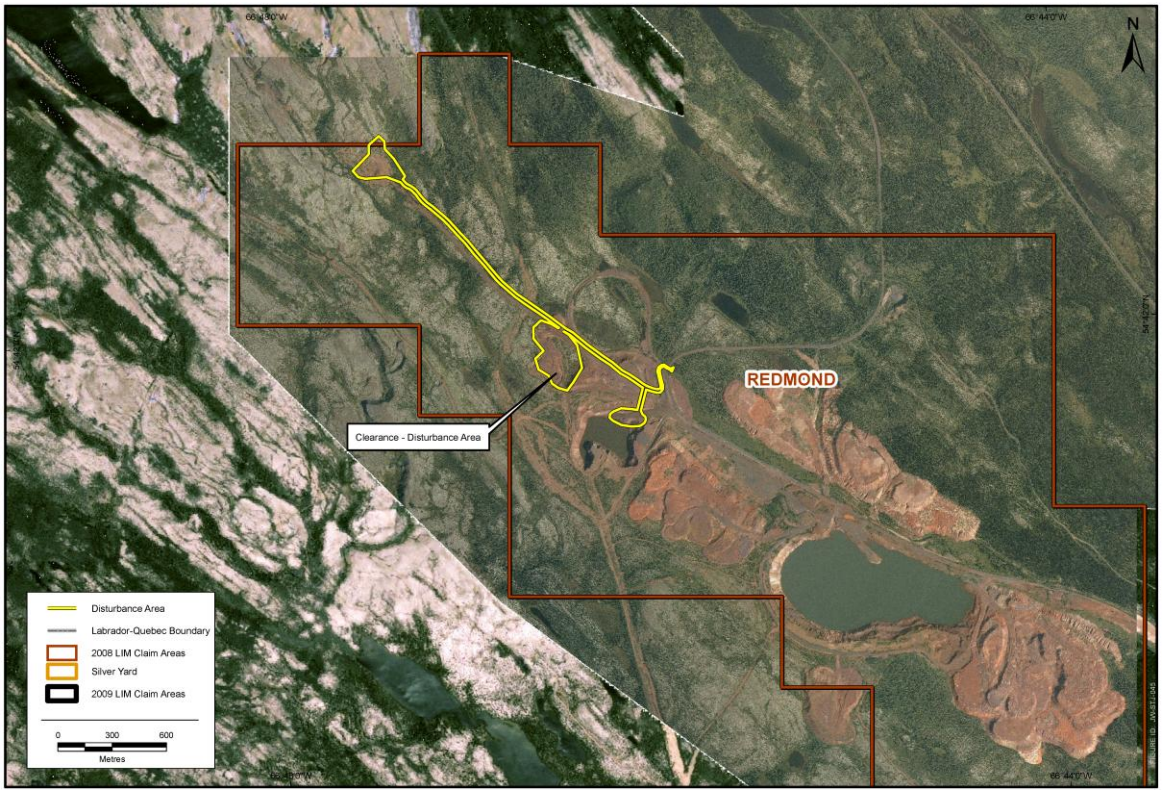

Figure 3.14 Extent of Vegetation Clearing, Redmond

3.2.2.4 Site Preparation Activities for Beneficiation Plant and Railroad Facilities at Silver Yard

The Silver Yard area is the location of the railway marshalling yard previously operated by IOC. With minor exceptions, the original railway subgrade and track ballast remains in place although the steel tracks were removed sometime after IOC terminated its mining operations in 1982. The LIM beneficiation plant will be located in the Silver Yard area and related disturbance of the natural environment will be managed to limit the overall size of the facilities footprint. Structures will include the beneficiation building itself, along with related support infrastructure such as finished product stockpiles, run-of-mine ore stockpiles, laydown yards, office facilities, plant access roads, the railroad marshalling yards and associated ore car loading facilities. Further details of the infrastructure are provided in Section 3.1.4.

Excavated volumes have been utilized to backfill areas required for ore stockpile pads, the rail car loading area, site access roads, etc. When cut and fill volumes are balanced, a total of only 15,000 cubic meters will need to be borrowed (from James deposit area). That is, there will be no net surplus of excavated material from the Silver Yard site preparation.

Topsoil material salvaged from the Silver Yard site preparation will be stockpiled around the site for future reclamation purposes. These areas will be seeded to provide stability to the stockpile.

The James Property requires clearing and grubbing within the waste rock storage and low-grade stockpile footprints and pit footprints. The Redmond Property requires minimal clearing and grubbing within the possible low-grade stockpile and waste rock dump storage footprints. No clearing and grubbing is required for the waste rock dump storage option. Stripping within the pit footprints has already been done by IOC during previous mining operations. Suitable reclamation material from the clearing and grubbing will be stockpiled in strategic locations for future reclamation purposes.

3.2.3 Construction Infrastructure and Activities

Construction within the Project area will involve the following activities:

- transporting equipment, construction materials and related supplies to construction sites, including transporting, storing and handling hazardous materials, fuels, lubricants and explosives;
- establishing and operating laydown areas;
- excavating, including disposing of excess waste rock and overburden
- establishing and operating borrow pits, including identifying sources of borrow material;
- railway construction;
- activities in and around watercourses;
- erection of buildings for wash plant, maintenance shop, and other buildings (offices, lab, camp, etc.). Note that these buildings will be of temporary/portable structure complying with appropriate building codes, etc.; and
- site rehabilitation and environmental monitoring.

Power supply during the construction phase will be by diesel generators and will be supplied by the contractors conducting the work.

It is anticipated that there will be no blasting required for any of the construction activities.

There are no upgrades planned for the haul road to Redmond, with the exception of minor maintenance. Material will sourced from the James and Redmond waste rock.

During the construction phase, excavations will occur in the following areas: primary crusher, settling and stormwater management pond. The expected vehicle types during construction include dozers, graders, rear-dump trucks, hydraulic shovels, boom trucks, and pick-up trucks. The expected hours for equipment use during construction range from 300 hours to 2,000 hours.

Construction activities are expected to be conducted on both day shift and night shifts.

3.2.3.1 Construction Yard Areas

A construction trailer yard has been provided for in the site layout design. The yard covers an area of approximately 75 m x 50 m. The yard will include a number of standard mobile trailers and a gravel parking area for 50 vehicles. Adjacent to this yard will be a construction material and equipment lay down yard. The lay down yard will be approximately 75 m x 50 m. These yards are more than 50 m from any natural waterbody. These yards will remain after construction and be used as additional lay down areas for the operational phase.

3.2.3.2 Truck Routes

Road traffic during construction will include deliveries of material from the nearby train station. Materials will include steel, concrete, and equipment. Vehicles and equipment will follow established routes when travelling to or from the site. All entrances and exits to the site will be designed so that incoming and outgoing vehicles may merge safely with other traffic, and oversized modules will be provided with escorts as required. A traffic control plan will be created for the Project. Hazardous materials will be transported and stored as required by the supplier's Material Safety Data Sheets (MSDS).

3.2.3.3 Sources of Aggregate

The aggregate required for the concrete will be sourced locally. All other aggregates required for the construction will be taken from the excavation material on-site or from waste rock at the mine.

The waste rock from the James and Redmond sites will generally be acceptable for use in road building and maintenance. The onsite mobile crushing plant would be used to create acceptable crushed material.

As indicated in Section 3.1.3, there are existing excavations in close proximity to the Project that are identified as sources of acceptable material.

3.2.4 Pit Dewatering

3.2.4.1 James Property

The water drawn from the proposed dewatering wells around the James pit is estimated to be discharged at a rate up to 113 m^3/min (SNC 2008). This flow rate is based on early calculations and limited data and is considered to be very conservative. Currently, it is proposed to have dual filters at the dewatering pump outlets with one dual filter per two pumps. These filters will treat the groundwater by removing the sediment prior to discharging to the natural environment. A settling pond (Settling Pond Area SP1) will also be constructed to provide additional settling/retention time, as required.

A small quantity of water will be discharged to the unnamed tributary and the remaining majority of water will be directed to the Silver Yard for use in the beneficiation process, discharged to Bean Lake, and/or via James Creek. The preferred location for the large quantity outlet will be designed during the detailed design phase.

The settled (removal of suspended solids by settling/filtering) pit dewatering water, which will be discharged to the south portion of James Creek near where the creek discharges into Bean Lake. Measures will be put in place to minimize any potential erosion or hydraulic effects from this discharge. The stream bed is rocky in this area so erosion is not likely, however the flow will be discharged over a diffuser bed before entering the creek as an additional erosion control measure.

Further discussions on dewatering activities are presented in Section 3.3.5.

3.2.4.2 Redmond Property

Pit dewatering water from the Redmond 2B and 5 pits will be pumped to the historical Redmond 2 pit for suspended solids settling. Note that Redmond 2 Pit is not connected by surface flow to any outside water bodies and it is planned to maintain this hydraulic isolation during operations. Dewatering rates for Redmond 2B and 5 have not been determined yet. Additional design details, including but not limited to dewatering rates, retention times, flow rates, and hydraulic controls, will be provided at the permitting stage.

Further discussions on dewatering activities are presented in Section 3.3.5.

3.2.5 Housing and Transportation

The great majority of operations workers will commute to and from the mine site on a rotational basis, alternating between periods of work, during which they will live in LIM provided camp accommodations and periods living in their home communities. The camp will include a kitchen (with catering), dining room, laundry facilities, and a recreation area. The recreation facilities may include such features as a pool table, television lounge, exercise equipment, and access to outdoor recreation. The camp will also have wireless internet and telecommunications access. An estimated 60 workers are anticipated to use the camp at any one time from approximately April to November on an annual basis during operations. Workers will be transported to and from the work site by buses/vans/pickup trucks.

3.2.6 Predicted Construction Emissions

As discussed in Section 3.2, construction activities at the site will include railway track installation, railbed grubbing, the clearing/grubbing for site services area, and the erection of buildings. All construction activities would occur in the short-term and potential emissions would be generated from tail pipe emissions from vehicles and combustion emissions from diesel generators (i.e., combustion emissions such as nitrogen oxides (NO_X), carbon monoxide (CO), and sulphur dioxide (SO_2)), and from fugitive dust (i.e., particulate matter (PM)) due to earth moving activities and vehicle traffic.

Heavy construction activities at the site will include erecting the crushing facility, the placement of the required generators and tanks, and the installation of conveying systems and rail lines. Emissions during construction are expected to occur intermittently over the duration of the construction period as opposed to emissions during operation, which will occur continuously. Also, the amount of fugitive dust emitted due to operational activities (crushing, ore loading/unloading, conveying, and stockpile erosion)

will be greater than those observed during construction activities. Therefore, the maximum emissions during operation provide a conservative envelope for those occurring during construction.

Fugitive dust emissions during construction can occur due to land clearing, ground excavation, and equipment traffic on site.

Generally, fugitive dust emissions are:

- proportional to the disturbed land area and the level of construction activity;
- limited to periods of the day and week when the construction activities take place; and,
- vary substantially from day to day with varying meteorological conditions.

Fugitive dust emissions during construction are expected to be localized in extent, limited in duration, and smaller in magnitude than those occurring during operation. Fugitive dust emissions can be minimized by considering mitigation measures such as dust suppressants (e.g., water) on vehicle haul routes, tire washes, operational controls, and other control measures such as landscaping screens.

Emissions due to fossil fuel combustion are also expected to occur during construction in the beneficiation area through the use of diesel generators and as tail pipe emissions from on-site traffic. As is the case for the fugitive dust releases, emissions including NO_X, CO, PM, and SO_2 are expected to be localized in extent, smaller in magnitude, and will occur for shorter durations than the potential emissions during operation. Further details on emissions occurring during construction are provided in Appendix H

3.2.7 Site Rehabilitation and Monitoring

LIM is committed to progressive site rehabilitation during the construction and operation phases of the Project. Progressive rehabilitation is defined as rehabilitation completed, where possible or practical, throughout the mine development, construction and operation stages, prior to closure. This includes activities that contribute to the rehabilitation effort that would otherwise be carried out at mine closure.

All aspects of mine development including mine design, infrastructure location and design, and operations planning have and will be conducted with full consideration of available progressive rehabilitation opportunities and closure rehabilitation requirements. Baseline environmental studies conducted prior to site construction works will continue, or be refined as required, through the mine development and construction stage. The Project has been planned and designed to minimize the disturbed area of the site, to incorporate areas disturbed by previous mining activities where possible, and to minimize the environmental impact prior to mine operations.

A comprehensive environmental monitoring program will be conducted as part of the mine development and this data will be utilized to evaluate the progressive rehabilitation program on an ongoing basis.

3.2.8 Employment

Occupations during the construction phase, including NOC-2006 codes, are presented in Table 3.4. Certain management positions will be required throughout construction. Others will only be required on-site for limited periods (between about 2 days and 4 weeks on site). Given the small numbers of trades-persons involved, it may be difficult to employ apprentices for some trades in the journeyperson to apprentice ratios determined in accordance with the provincial general conditions concerning

apprenticeship. However, LIM will strive to maintain the journeyperson to apprentice rations where possible.

Detailed information on project employment is provided in the NL Benefits Plan, which was developed in consultation with Natural Resources and other departments (Appendix D).

Table 3.4 Construction Phase Employment

Position	Number	NOC
Site Manager	1	0711
Clerk	1	1441
Lead Foreman	1	0721
Surveyor	1	2254
Equipment Operator – heavy	4	7421
Equipment Operator – light	3	7421
Truck Drivers	3	7411
Labourers-specialized	2	7611
Labourers	6	7612
Carpenter	2	7215
Welders	2	7265
Electricians	1	7241
Electrical Helper	1	7611
Crane Operator	1	7371
Boilermakers	1	7262
Ironworkers - steel reinforcement	1	7264
Ironworkers - steel reinforcement-helper	1	7611
Cement Finisher	2	7282
Structural Steel Workers	2	7263
Structural Steel Worker – apprentice	1	7611
Pipe Fitters	2	7252
Pipe Fitter-helper	1	7611
Total - Construction	**40**	

3.2.9 Goods and Services

The construction phase of the Project will see the procurement of goods and services, most of which are available in Newfoundland and Labrador. They include:

- earthworks;
- site construction;
- buildings construction;
- camp supply;
- plant construction;
- mine preliminary works and overburden stripping;
- fuel and refuelling services;
- welding and machining goods and services;
- land surveying;
- catering services

- vehicle rental;
- blasting;
- pipe-laying;
- road construction;
- electrical and mechanical contracting;
- miscellaneous tools and small equipment;
- heavy equipment rental (cranes, excavators, loaders);
- independent environmental monitoring; and
- air transportation.

LIM will ensure that construction management, engineering, procurement and project service activities for the construction phase of the Project shall, to the greatest extent possible, be carried out in the Province. LIM recognizes the existence of significant construction, fabrication and assembly infrastructure within the Province and will encourage utilization of such infrastructure. Specifically, LIM will require that potential contractors bid work on the basis of utilizing qualified, competitive provincial suppliers of construction, fabrication and assembly services, where available. All major construction and supply contracts will be advertised within the Province and potential provincial based contractors and suppliers will be given every opportunity to provide competitive quotations.

3.2.10 Newfoundland and Labrador Benefits Strategy

As is detailed in its Benefits Policy (Section 2.2.3), LIM understands the importance of the Project to the people of the Province of Newfoundland and Labrador and is committed to the delivery of associated benefits, including education, training, and economic development, to the existing communities in Labrador. LIM is also committed to the principles of local procurement of supplies and services.

Consistent with this Policy, LIM will ensure residents of and companies based in the Province receive full and fair opportunity and first consideration for employment and business respectively, where practically and commercially achievable on a competitive basis and in accordance with the IBA entered into with the Innu Nation of Labrador.

In implementing the Benefits Plan, LIM will:

- Communicate all material Project labour, contracts, goods and services requirements on its website and in newspapers in the Province, and especially in Labrador, and require its contractors to comply with this policy;
- Establish targets for Project employment and for goods and services procurement, for both project construction and mine operations. The targets will represent minimum levels of participation by residents of the Province in Project employment and for business opportunities for Newfoundland and Labrador companies in Project activity and the Company commits to achieve or exceed these targets. Residents of Newfoundland and Labrador, at point of hire,, will be determined according to the principles established in *The Elections Act*, SNL 1992, CE-3.1 as being “ordinarily resident.”
- Include a copy of this Benefits Plan in all Project calls for expressions of interest, requests for proposals or contracts, and require that its contractors do the same.

- Require that prospective contractors indicate in bids how they would address the requirements of this Plan.
- Monitor Project employment and the supply of goods and services and, on a quarterly basis, prepare concise reports assessing actual outcomes relative to the Benefits targets.
- Provide copies of the above-noted quarterly employment and business reports to the Department of Human Resources, Labour and Employment and to the Department of Natural Resources in a timely manner, and be available to discuss these reports, including LIM's level of success in meeting targets, and appropriate responses.
- Review and, as necessary, revise LIM's benefits procedures and initiatives to ensure that LIM's commitments under this Benefits Plan, including the attainment of minimum targets, have been achieved.

Project employment and contracting are discussed in Section 7.4. This section also discusses the nature, scale and duration of employment and business opportunities. Given the small numbers of trades-persons involved, it may be difficult to employ apprentices for some trades in the journeyperson to apprentice ratios determined in accordance with the provincial general conditions concerning apprenticeship. However, LIM will strive to maintain the journeyperson to apprentice rations where possible.

More detailed information on employment the nature of employment opportunities has been incorporated in the NL Benefits Plan (Appendix D), developed in consultation with Natural Resources and other departments. This includes plans for liaising with relevant groups and agencies, criteria for ensuring full and fair access to Project-related opportunities, and descriptions of the timing and nature of employment opportunities that will flow from the Project. A Women's Employment Plan has also been developed in consultation with the Women's Policy Office for submission independent of the EIS, and has also been provided in an appendix to the EIS (Appendix D).

3.3 Operation and Maintenance

3.3.1 Operation and Maintenance Activities

The operation schedule will likely begin towards the end of April of each year and continue through to mid November, operating 24 hours per day. All operation and maintenance activities will be undertaken through separate contractors.

3.3.1.1 Excavation

The product will initially be excavated at 3,000 t/day per deposit site. It is anticipated that excavation will be conducted with the following types of mobile equipment:

- Komatsu WA600 loader (or equivalent); and,
- Komatsu PC800, PC750, PC400 type excavators (or equivalent).

3.3.1.2 Haulage

James ore and waste will be hauled with Komatsu HD605 type off-highway trucks or equivalent. Redmond waste will be hauled with the same type of truck. Redmond ore will be hauled from the pit by Komatsu HD605 type off-highway trucks (or equivalent) and stockpiled outside the pit. The raw ore will

be reclaimed with a wheel loader or shovel and loaded into road trains (currently 45T) and hauled to the beneficiation area.

3.3.1.3 Drilling and Blasting

Drilling will occur for both ore quality control and for blasting purposes. Based on historic experience in the area, the drill pattern size for blasting is expected to be a 7.5 – 9 m square pattern. Blasting at James and Redmond will be episodic as the deposits are softer in nature and may be excavated without much blasting, although provisions for blasting will be available. It is planned that blasting will initially be done with packaged/cartridge type explosives. Table 3.5 depicts the expected equipment types and numbers:

Table 3.5 Equipment Types and Numbers

Equipment Type	Number of Units				
	Year 1	Year 2	Year 3	Year 4	Year 5
Wheel Loader	2	2	2	2	1
Mine Truck (Off-highway)	4	6	6	6	3
Track Dozer	1	2	2	2	1
Motor Grader	1	1	1	1	1
Haulage Truck	0	0	10	15	5
Blaster Truck	1	1	1	1	1
Explosive Truck	1	1	1	1	1
Pick Up Trucks	5	5	5	5	3
Fuel/Lube Truck	1	1	1	1	1
Drill Rig	1	1	1	1	1
Water Truck	1	1	1	1	1

3.3.1.4 Processing

The processing or beneficiation activities were presented in Section 3.3.1.4.

3.3.1.5 Product Export

The finished products of Lump Ore and Sinter Fines ore will be exported to markets likely outside of Canada.

3.3.1.6 Rock Fines Disposal

As presented in detail in earlier sections, the reject fines from the beneficiation process will be directed by pumping to Ruth Pit (see Section 3.1.9).

3.3.1.7 Maintenance Activities

A maintenance shed (sprung type structure on concrete pad) and maintenance yard will be provided to conduct routine maintenance for the mine and beneficiation operations. The building will be equipped with the necessary tools and equipment to maintain the mobile fleet. The building will have a concrete foundation and closed-circuit wash bay and an oil-water separator, which will be emptied by a licensed contractor on a routine basis and managed in accordance with applicable regulations. Small retail quantities of solvents may be used for parts cleaning and if so, will be properly contained, stored and disposed of accordingly. There will be no discharges to the environment.

It is expected that major repairs will be conducted off site at a location left to the Contractor’s discretion.

3.3.2 Predicted Operational Emissions

Potential emissions during operation are expected to be similar to those described in Section 3.2.6 for construction and include the products of combustion, such as NO_X, CO, PM and SO_2, from diesel generators and onsite traffic, and fugitive dust from ore loading/unloading, crushing, and stockpile erosion.

Emission estimates for the Project during operation were developed for all potentially substantive sources using the list of potential sources provided in the EIS Guidelines as a basis. Where emission sources indentified in the guidelines were found to be not substantive or not applicable, emissions were not estimated. All source and emissions estimates were based on preliminary design data for the Project. The potential emission sources during operation can be broadly grouped as either combustion emissions of fugitive dust emissions. Emissions were estimated for numerous non-negligible sources including generators, on-site vehicles, ore loading, ore crushing, stockpile erosion, and on-site conveyor systems.

The following subsections provide a qualitative overview of the anticipated emissions during operation. More details on Project emissions during operation (including, where applicable, detailed estimates and calculation methodology) is provided in Appendix H.

3.3.2.1 Emissions from Beneficiation Facility

Products of Combustion

Diesel generators will be used initially on-site on a continuous basis to provide power for the on-site equipment until the second phase of the electrical power supply is implemented. Emissions from combustion arise from the burning of fuel and are dependent on fuel flow rate, fuel type, combustion equipment and the efficiency of pollution control devices. The primary products from combustion include NO_X, SO_2, CO, and PM, which include both visible and non-visible emissions. Nitrogen oxide formation can be directly related to the high pressures and temperatures observed during the combustion process. Other emissions, including various hydrocarbons, CO, and PM, are primarily the result of incomplete combustion.

Standard techniques were used to estimate emissions which included using design specifications for the generators, along with accompanying emissions factors from the U.S. EPA, to estimate potential emissions due to diesel combustion.

Fugitive Dust

Fugitive dust emissions at the site will occur from several different sources during operation. Potential sources include ore loading/unloading, ore crushing, stockpile erosion and dust from conveyor systems around the site. Potential fugitive dust emissions at the site were estimated using emissions factors from the U.S. EPA AP-42 guidance documents.

Fugitive dust emissions from loading and unloading operations depend on the parameters of the storage pile being disturbed. Emissions due to stockpile wind erosion are highly dependent on local wind speeds and precipitation levels at the site, along with the type of material and its erosion potential. Larger aggregate material will have a tendency to form stable stockpiles, while finer material will erode over time.

Emissions from ore crushing and conveying depend on the amount of material being treated as well as the controls in place. Emissions control from the crushing operation at the site includes the use of a dust control system which will limit emissions from the main beneficiation area. Emissions from conveyors were estimated with no controls; however, covered conveyors may also be used to limit fugitive dust emissions during transport to and from the various storage piles at the site.

On-Site Traffic

Potential emissions from on-site traffic sources may include tail-pipe emissions due to fossil fuel combustion and fugitive dust. Emissions from combustion arise from the burning of fuel and are dependent on fuel flow rate, fuel type, combustion equipment and the efficiency of pollution control devices. The primary products from combustion include NO_X, SO_2, CO, and PM. Fugitive dust emissions due to on-site traffic would be proportional to the amount of property disturbed and the frequency of disturbance. Neither the tail-pipe emissions nor the fugitive dust emissions from on-site traffic are considered substantive compared to the other activities occurring at the facility during operation.

Locomotive Emissions

Combustion emissions are expected from the diesel locomotive used for transporting ore from the beneficiation area. Similar to on-site traffic emissions, emissions from combustion arise from the burning of fuel and are dependent on fuel flow rate, fuel type, and the type of combustion equipment. The primary products from combustion include NO_X, SO_2, CO, and PM.

Due to the infrequent nature of the source at the site (one trip is expected per day), emissions from the locomotives used on-site are not considered substantive compared to the other activities occurring at the facility during operation.

3.3.2.2 Emissions from Ore Hauling from Mine Site to Beneficiation Area

Emissions from the ore hauling activities are similar to the potential emissions due to on-site traffic as discussed above. Potential emissions may include tail-pipe emissions due to fossil fuel combustion and fugitive dust emissions.

Dust emissions would occur along the haul routes between the James or Redmond mine areas and the beneficiation area. These are all existing dirt roads and would be prone to dust emissions from any type of vehicle traffic. When a vehicle travels along an unpaved road, the vehicle's wheels travelling on the road generate dust which is then lifted and exposed to passing winds.

Emissions due to ore hauling were estimated using standard techniques including equations found in the U.S. EPA's AP-42 guidance documents. Fugitive dust emission estimates varied from 221 – 325 kg/day for the one km hauling route between the James deposit and the beneficiation area and 2869 – 4225 kg/day for the thirteen km hauling route between the Redmond deposit and the beneficiation area.

Particulate matter emissions from the ore hauling trucks travelling on a small on-property section of roadway (approximately 250 m) were estimated for input into the air dispersion model.

3.3.2.3 Emissions from Mining

Potential emissions due to the mining operations at the James and Redmond deposits include fugitive dust from loading and blasting operations and combustion gases from vehicles.

Fugitive dust emissions from loading operations depend on the condition of the storage piles being disturbed. When freshly processed material is loaded onto a pile, there is a greater potential of fine particulate emissions. Over time, as the pile is weathered, or if the material has high moisture content, potential emissions will be greatly reduced. Other factors influencing fugitive dust emissions during loading and unloading include the frequency of the operation and the local meteorological conditions, including wind speed, humidity, precipitation, and temperature.

The removal of ore and surrounding waste rock involves drilling and blasting. A dust cloud is produced during blasting. Due to the nature of open pit mining, the dust cloud will partially be retained in the pit, although some portion of it will rise out into the local surroundings. However, it should be noted that the elevated levels of particulate matter will be limited in spatial extent and short lived, as the majority of the fugitive dust will settle within a short distance (i.e., contained within the pit).

3.3.3 Operation Discharges

Disposal and treatment of discharges is presented in Sections 3.1.7 and 3.3.5.

3.3.4 Chemical Storage/Management

The beneficiation process does not require the use of any chemicals or reagents. XRF with lithium metaborate as a flux to produce glass disk will be used for Ore Control. Procedures for safe and appropriate handling will be developed using WHMIS and MSDS and in accordance with applicable regulations.

3.3.5 Water Management

3.3.5.1 James North and James South Property

During operations, the water management activities for the James North and James South properties are anticipated to include a combination of perimeter pit dewatering wells and in pit sumps. The water collected from these activities will be pumped to the nearby James Settling Pond area (SP-1) and managed separately. It is currently anticipated that this area would include two settling ponds, one for the pit water management and another for the groundwater dewatering management.

It is anticipated that water collected from the in-pit sumps and/or dewatering wells may require monitoring for such parameters as TSS, ammonia, and metals such as iron, copper, and zinc.

The main source of nitrogen and ammonia in mine waste waters is from nitrogen components in explosives that can be present in mine blast residues. When a blast is completely detonated, there are no blast residues. Therefore, the objective of reducing the amount of ammonia and nitrate levels in the mine waste water from blasting activities would be to implement actions that contribute to the complete detonation of a blast and reduce the amount of undetonated explosives. This can be achieved by:

- Controlling explosive losses through storage, spillage, and handling controls. Bulk ANFO and bulk emulsions can be spilled during storage, transfer, and loading. It is LIM's plan to initially use packaged explosives (and not bulk explosives) for their periodic blasting requirements. The use of the packaged explosives is expected to reduce the amount of explosive spillage to handling and loading practices.

- Implementing engineered blasting practices that minimize to the extent possible, the amount of blasting material used and residue produced. These practices include, but are not limited to, the drill pattern design, explosive type and load, initiation method, delay timing, stemming heights, stemming material, burden and spacing sizing.

Additional discussion of approaches LIM has reviewed to reduce the potential of ammonia and nitrates in water is presented in Appendix T, *Methods to Control Ammonia and Nitrate Levels in Mine Waste Water*.

A properly designed, operated, and maintained settling pond is considered to represent best practicable technology for treating mine wastewater. The in-pit sumps, which are the first stage of mine waste water collection, could offer an initial pre-settling and retention time depending on the capacity of the sump.

The settling ponds will be engineered to ensure that in-pit dewatering and well dewatering effluent will be of suitable quality for discharge to environment. As a contingency, a temporary pump/pipeline system will be available to convey the effluent from these ponds to the Beneficiation area to be used for washing or it will be pumped to Ruth Pit via the ore wash water pipeline. If the water is used in the beneficiation process then it will reduce the amount of process water required. The wash water pipeline will be designed to accommodate this additional flow if required.

The water drawn from the proposed dewatering wells around the James North and James South pits has been estimated at a discharge rate of up to 113 m^3/min (SNC 2008). This flow rate is based on early calculations and limited data and is considered to be very conservative.

The results of the samples collected from the groundwater monitoring wells and during the pumping tests in 2008 at the James property indicate that the low levels of metals detected in the groundwater samples were associated with the suspended solids, and the filtered metals results were low. Observations made during the groundwater sampling and pumping were that initially the sampled water would be turbid and red but in less than 24 hours the suspended solids in the water tended to settle and the water cleared up. According to a former IOC engineer involved in dewatering operations at nearby historic mining operations, the water from the IOC dewatering wells generally cleared up within a week or so of pumping, after the wells had become well developed. No existing pits will be dewatered prior to mining (D. Hindy, pers. comm..).

Currently, it is proposed to have dual filters at the dewatering pump outlets with one dual filter per two pumps. These filters will treat the groundwater by removing the sediment prior to discharging to the natural environment. Directing the filtered dewatering water to the settling pond at SP1 will also provide additional settling/retention time, as required. Based on surface water quality monitoring results to date it is likely that the water from the perimeter dewatering wells will clear up over time as the wells become highly developed. This will lead to a further improvement in water quality.

From the James Settling Pond area (SP1), the collected and treated water will be discharged to the environment. A small quantity of water will be discharged to the unnamed tributary as part of a mitigation strategy, while the remaining majority of water will be discharged to Bean Lake and/or via James Creek. The preferred location for the large quantity outlet will be designed during the detailed design phase as part of the permitting stage.

The estimated wash water use rate in the beneficiation process is up to approximately 8.4 m^3/min, the source of which could be diverted from the pit dewatering volume. The water required to make up water

potentially lost from the springs feeding the unnamed tributary can also be diverted from the pit dewatering volume. The net effect of this is that more water will be sent to Bean Lake (as a result of groundwater pumping) than currently flows into Bean Lake from surface water and groundwater inputs. Sections 4.1.4 and 7.3 provide information on the capability of Bean Lake to accommodate this additional flow without major hydraulic effects.

3.3.5.2 Redmond Property

During operations, water management activities at Redmond 2b and Redmond 5 are anticipated to include a combination of in-pit sumps and perimeter dewatering wells. Pit dewatering from the Redmond 2B and 5 pits will be pumped to the historical Redmond 2 pit for suspended solids settling.

Hydrogeological work conducted in 2008 determined that the depth of ground water is approximately 25 m below ground surface in the pit area at Redmond 2b. Although Redmond 5 pit will likely require some degree of dewatering, based on existing hydrogeological and other baseline data, the extent of the dewatering requirements for this pit are anticipated to be minor compared to other pits because this pit is higher in elevation and there are no surface water bodies nearby. It is expected that the depth to the water table will be relatively deep at this location (approximately 30 to 40 m below ground).

The subsurface hydraulic conditions suggest that dewatering rates should be significantly lower than at James pits. Based on the hydrological and mining details currently known, the historical Redmond 2 pit will be able to accommodate the dewatering water from Redmond 2b and Redmond 5.

Redmond 2 pit, which currently has no surface connectivity to nearby surface water bodies, will therefore be used as a settling pond for pit dewatering from the proposed Redmond 2b and Redmond 5 open pits. It will also be a waste rock storage area for some portion of the waste rock from Redmond 2b and Redmond 5. It is planned to maintain the non-connectivity of Redmond 2 to nearby surface water bodies. In order to maintain this hydraulic isolation at Redmond 2, the water level in Redmond 2 will be monitored during operations and once the water level reaches a pre-determined level, waste rock disposal from the proposed pits into Redmond 2 will cease and be stockpiled in other locations. In this manner, no overflow will occur.

3.3.5.3 Wash Water

Water requirements are modest, with the beneficiation process water (wash water) being drawn from groundwater wells. The water balance flows were estimated from similar process plants. The flows in the water balance are typical for average conditions for a wash plant producing 2 Mtpy of direct shipping product. The reject fines slurry concentration was assumed to be 21 percent by weight. There will be a number of pumps required, which will maintain a distribution of water within the beneficiation process and have enough capacity to allow for surge conditions such as plant start-up or line flushing.

Fresh clear water will be required for gland water use, potable water, fire water and miscellaneous users. Occasionally the process water reservoir may have a deficit of water which will have to be made up of fresh water. However the overall average water balance does not require fresh water for process water make-up. Fresh water will be supplied from similar groundwater wells. Water for dust suppression will come from beneficiation plant fresh water.

3.3.5.4 Sanitary (Non-Potable) Water System

Storage and management/disposal of sanitary wastewater and greywater will be conducted in accordance with applicable legislation. Wastewater and sewage will be handled and treated by biological oxidation of wastewater using a rotating biological contactor as form of aeration. Grey water is sterilized by means of UV disinfection in the waste water's last section of the treatment, before its final discharge at the outlet of the wastewater treatment module. After sterilization, grey water from the beneficiation area will be directed to Ruth Pit. Testing of sterilized water will be conducted routinely to ensure effective operation of the system.

It is estimated that the flow rate from the sanitary water systems at Silver Yard and at the camp will be a combined 17,000 L/day.

3.3.5.5 Potable Water

Potable water will be required at the beneficiation building, various site office trailers at Silver Yard, and at the site trailer at Redmond. Initially potable water will be tanked to the site and/or bottled water will be transported to the Project area. Existing ground water testing has shown that the water is of suitable quality, and therefore, groundwater use for drinking water may be considered at a future date. Testing of the potable water quality will be conducted regularly. Potable water at the Redmond site trailer will be provided by bottled water.

3.3.5.6 Dewatering Water

Dewatering at the James deposit will be conducted using a combination of perimeter dewatering wells and in-pit sumps. The water from the in-pit sumps will be directed to a settling pond separate from the perimeter well water settling pond at the SP1 settling pond area. The Redmond dewatering system is planned to consist of perimeter wells and in-pit sumps which will direct water to an historical pit, Redmond 2, which has undergone confirmation of the absence of permanent fish habitat and which is hydraulically isolated from any nearby surface water features.

Details are presented under Section 3.3.5.1.

3.3.6 Progressive Rehabilitation

Once the mines advance from the development stage to the operational stage, progressive rehabilitation activities can commence. Progressive rehabilitation is defined as rehabilitation completed, where possible or practical, throughout the mine operation stage, prior to closure. This includes activities that contribute to the rehabilitation effort that would otherwise be carried out at mine closure. Progressive rehabilitation opportunities identified for this Project include:

- Rehabilitation of any construction-related buildings and laydown areas;
- Rehabilitation of the Waste Rock Storage stockpiles;
- Development and implementation of an integrated Waste Management Plan;
- Rehabilitation, if required, of exploration drilling sites;
- Re-vegetation studies; and
- Some backfilling of selected existing open pit areas left by previous mining operations.

A comprehensive environmental monitoring program will be conducted as part of the mining operations and this data will be utilized to evaluate the progressive rehabilitation program on an ongoing basis. Additional studies, such as revegetation trials, will be conducted over the operational phase of the mine which will be integrated into ongoing progressive rehabilitation activities and will be used in the development of the final closure rehabilitation design.

Part of the rehabilitation and closure activities conducted during mine operations will include scheduled review and updates of the Rehabilitation and Closure Plan, as required. These scheduled reviews will incorporate any new or revised data gained from operating experience, progressive rehabilitation activities, environmental monitoring, and rehabilitation-related operational studies.

3.3.7 Employment

The Project operation phase employment by occupation, including NOC-2006 code, is presented in Table 3.6. It is expected that most workers will generally be employed on a four weeks on and two week off schedule. With the exception of the owner management positions, which will be full-time office positions, these personnel will be employed on a full-time seasonal basis.

Table 3.6 Operation Phase Employment

Positions	Number	NOC Code
Mine Operations		
Mine Operation Foreman	1	8221
Foreman	3	8221
Drill Operator	3	7372
Blaster	2	7372
Blaster Helper	1	8411
Loader Operator	3	7421
Haulage Truck Operator	9	7411
Dozer Operator	3	7421
Grader Operator	3	7421
Sampler	3	8614
Subtotal	31	
Mine Engineering		
Mine Engineer	2	2143
Mine Technician	1	2212
Surveyor	2	2254
Draftsman CAD	1	2253
Subtotal	6	
Beneficiation Operation		
Plant Manager	1	0721
Process Technician	1	2243
Chemical Technician (Lab)	3	2211
Labourer	1	7612
Administrative Assistant	1	1441
Warehouse Person	3	1472
Maintenance Foreman	1	7211
Utility Crew (pipeline, pumps, etc.)	1	7442
Primary Crusher Operator	6	9411
Secondary Crusher Operator	3	9411
Secondary Crusher Helper	2	9611
Belt Filter & Load-out Operator	6	9411

Positions	Number	NOC Code
Mechanic	2	7312
Mechanic Helper	1	7612
Safety/First Aid personnel	3	3234
Electrician/Instrumentation	2	7241
Locomotive Engineers	3	7361
Brakemen	3	7362
Yard Workers	3	7432
Subtotal	46	
Owner Management		
General Manager	1	0721
Geologist	3	2113
Environmental Technician	1	2231
Clerk	1	1441
Mine Engineer	1	2143
Innu Liaison	1	4212
Labrador offices	3	
Subtotal	11	
Contractor Management		
Site Manager	1	0711
Secretary	1	1241
Bookkeeper/Accountant	1	1231
Camp Operations	12	
Subtotal	15	
TOTAL - OPERATION	**109**	

Given the small numbers of trades-persons involved, it may be difficult to employ apprentices for some trades in the journeyperson to apprentice ratios determined in accordance with the provincial general conditions concerning apprenticeship. However, LIM will strive to maintain the journeyperson to apprentice rations where possible.

Additional information on employment during operation is provided in the NL Benefits Plan, which was developed in consultation with Natural Resources and other departments (Appendix D).

3.3.8 Goods and Services

Mine operations will require a wide range of goods and services, the majority of which are available in Newfoundland and Labrador. A review of local capabilities indicates that the following will be available on a commercial basis from within Newfoundland and Labrador:

- fuel and refuelling services;
- welding and machining goods and services;
- catering services and camp management;
- vehicle rental, rail passenger and air transportation services;
- maintenance operations;
- hardware stores miscellaneous tools and small equipment;
- heavy equipment rental (e.g. cranes, excavators and loaders);
- local contracting services (e.g. construction, electrical and mechanical);
- Mine contractors;

- Beneficiation Equipment operation; and
- Power Supply.

Some other goods and services will be available from elsewhere in the Province. Specific targets with respect to procurement of goods and services are provided in the NL Benefits Plan (Appendix D).

3.4 Decommissioning

3.4.1 Closure Rehabilitation

As described in Section 3.2.7, comprehensive environmental monitoring programs will be conducted as part of the mine development and operations and these data will be utilized to evaluate the Rehabilitation and Closure Plan, required under the *Newfoundland and Labrador Mining Act*, on an ongoing basis. Additional studies, such as re-vegetation trials, will be conducted over the operational phase of the mine which will be integrated into ongoing progressive rehabilitation activities and will be used in the development of the final closure rehabilitation design.

Part of the rehabilitation and closure activities conducted during mine operations will include scheduled review and updates of the Rehabilitation and Closure Plan, as required. These scheduled reviews will incorporate any new or revised data gained from operating experience, progressive rehabilitation activities, environmental monitoring, and rehabilitation-related operational studies.

Typically, the final review and update of the Rehabilitation and Closure Plan is conducted approximately one year prior to the cessation of operations. The final review of the Plan will provide the detailed closure rehabilitation design and procedures to fully reclaim the mine site. This Plan will be developed to a contract ready stage and would include Contract Documents and Drawings, as well as, a detailed cost estimate for construction (±15 percent).

Once mine operations have ceased, closure rehabilitation activities will commence as per the 'final' Rehabilitation and Closure Plan. Closure rehabilitation will generally include:

- increase in activities associated with rehabilitation of disturbed areas involving replacing overburden and re-vegetation of abandoned areas;
- removal of buildings and structures and clean-up at all work areas (i.e., beneficiation buildings, conveyors, crushing plant, laydown areas, fuel storage areas, open pits, etc.);
- clean-up, removal and proper disposal of all process and potentially hazardous materials;
- water treatment and monitoring for approximately two years;
- rehabilitation of reject fines disposal area's outflow infrastructure;
- re-establishing surface water drainage patterns in the Silver Yard Area, including re-engineering of existing diversion channels;
- final contouring and re-vegetation of stockpile and waste rock areas;
- water pipelines, dewatering wells, and building foundations will be removed; and
- overall execution of the Rehabilitation and Closure Plan reviewed and approved by the Government of Newfoundland and Labrador.

Additional information on site rehabilitation and closure is presented in Section 8.4 of this document.