April 16, 2012

The Honourable Terry French
Environmental Assessment Division
Department of Environment and Conservation
Government of Newfoundland and Labrador
P.O. Box 8700, West Block Confederation Building
St. John's, Newfoundland and Labrador
Canada A1B 4J6

Attention: Bas Cleary, Director of Environmental Assessment

Project: Iron Ore Company of Canada (IOC) Resource Development Exploration: Mineral Exploration Access Roads Project
Location: Labrador West

Dear Minister French,

The Iron Ore Company of Canada is pleased to submit this Environmental Assessment Registration for the proposed Mineral Exploration Access Roads Project in Labrador West, pursuant to the requirements of the Newfoundland and Labrador Environmental Protection Act (Part X).

IOC is proposing construction of approximately 34 km of access roads to ore exploration sites in three locations; Knight area, D'Aigle Bay, and White Lake in Western Labrador. The project will include development of up to four borrow pits less than 10 ha in area each and installation of culverts or bridges along 14-15 stream crossings.

As per the Environmental Assessment guidance document dated February 2009, enclosed are 40 copies of the registration document and the required fee.

We look forward to the governmental and public review of this Registration, and to your eventual decision.

Sincerely,

Lee Preziosi

Lee Preziosi
Social & Environment Manager – Expansion Projects
Iron Ore Company of Canada

IRON ORE COMPANY OF CANADA
RESOURCE DEVELOPMENT EXPLORATION
MINERAL EXPLORATION ACCESS ROADS PROJECT

Environmental Assessment Registration

Pursuant to the *Newfoundland and Labrador Environmental Protection Act*

Submitted by:
Iron Ore Company of Canada
1000 Sherbrooke Street West, Suite 1920,
Montréal, QC, Canada,
H3A 3R2

Prepared with the assistance of:
AMEC Environment & Infrastructure,
A division of AMEC Americas Limited
133 Crosbie Road, PO Box 13216,
St. John's, NL, Canada
A1B 4A5

April 16, 2012

AMEC TF1243031

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1.0 INTRODUCTION

Project Name: *Resource Development Exploration: Mineral Exploration Access Roads Project.*

1.1 Proponent

Name of Corporate Body:	Iron Ore Company of Canada (IOC)
Address:	1000 Sherbrooke Street West, Suite 1920, Montréal, QC, Canada, H3A 3R2
President and Chief Executive Officer:	Zoë Yujnovich
Principal Contact Persons for the purposes of Environmental Assessment:	Lee Preziosi Social & Environment Manager – Expansion Projects Cell: 514-764-8828 Tel: 514-966-2937 Email: Lee.Preziosi@ironore.ca

2.0 THE UNDERTAKING

2.1 Nature of the Undertaking

IOC is proposing the construction of approximately 34 km of access roads to ore exploration sites in three locations; Knight Area, D'Aigle Bay, and White Lake in Western Labrador. The project will include development of up to four borrow pits less than 10 ha in area each and installation of culverts or bridges along 14-15 stream crossings.

2.2 Purpose/Rationale/Need for the Undertaking

IOC is the largest producer of iron ore in Canada, and a leading global supplier of iron ore pellets and concentrates. IOC, whose majority shareholder is Rio Tinto, operates open pit mines, a concentrator and a pellet plant in Labrador City, Newfoundland and Labrador, and transports its products along a 418 kilometre railway to its port facilities in Sept-Îles, Quebec on the St. Lawrence Seaway. IOC has large quantities of ore reserves with low levels of contaminants.

IOC began extracting ore at its mine site in Schefferville, Quebec, in 1954. The current mine and process facilities, known as the Carol Project, began in 1962 and still has a significant resource base available. The concentrator annual capacity is 18 million tonnes of iron ore concentrate, of which 13 million tonnes are pelletized and the balance is sold directly as concentrate. IOC exports its concentrate and pellet products to major North American, European and Asian steel makers.

IOC has announced plans to study expansion of its current iron ore production. A key component to these expansion studies is IOC's Resource Development exploration work required to define potential new ore deposits in Labrador West. This is achieved by analysing core samples that are obtained through diamond drilling in each potential new ore zone.

Mine expansion will depend largely on the initial drilling results obtained from each deposit. The exploration work will potentially require further studies, such as geotechnical investigations and hydrogeology studies in order to determine the suitability of each area for future mining activities.

Ease of access to each drilling area is very important to maintaining a safe and efficient exploration program, as well as minimizing environmental disturbance. To achieve this, IOC is currently planning a Mineral Exploration Access Roads Project.

3.0 DESCRIPTION OF THE UNDERTAKING

3.1 Geographical Location

The undertaking is proposed to be located in the areas of White Lake, the Knight Area and D'Aigle Bay as shown in Figure 3.1.

The White Lake project area is approximately 7 km north west of Labrador City and adjacent to the existing Luce Pit to the east. Figure 3.2 presents the areas proposed for drilling that are adjacent to White Lake and the proposed site access road. The new access roads will connect to an existing road just south of Luce Pit as shown in Figure 3.2. Road materials associated with the construction and rehabilitation of these roads may be sourced from an existing quarry that can be accessed by the existing road. Other proposed potential borrow pits are located approximately 2 km and 3 km west of the existing road and will be accessed by the proposed access road.

The Knight Area is located approximately 7 km west of Labrador City. Figure 3.3 shows the drilling area proposed for the site and the proposed site access roads. Access to the site will be from Route 500 of the Trans-Labrador Highway (TLH) as shown in Figure 3.3. A single proposed borrow pit is proposed for this area which would be located approximately 2 km from the TLH and is to be accessed by the proposed access road.

D'Aigle Bay is connected to Wabush Lake and is located approximately 19 km north of Labrador City. Figure 3.4 shows the two areas proposed for drilling that are north and west of D'Aigle Bay, the proposed borrow pit and the proposed site access roads. The proposed borrow pit will be located along the road near the first proposed exploration area.

It is possible that the actual routes within the three areas could be modified during the detailed design or during the construction of the roads. Such modifications would likely be minor and would reflect any environmental protection in culvert design changes. Any such changes would be described during the permit request stage of the project.

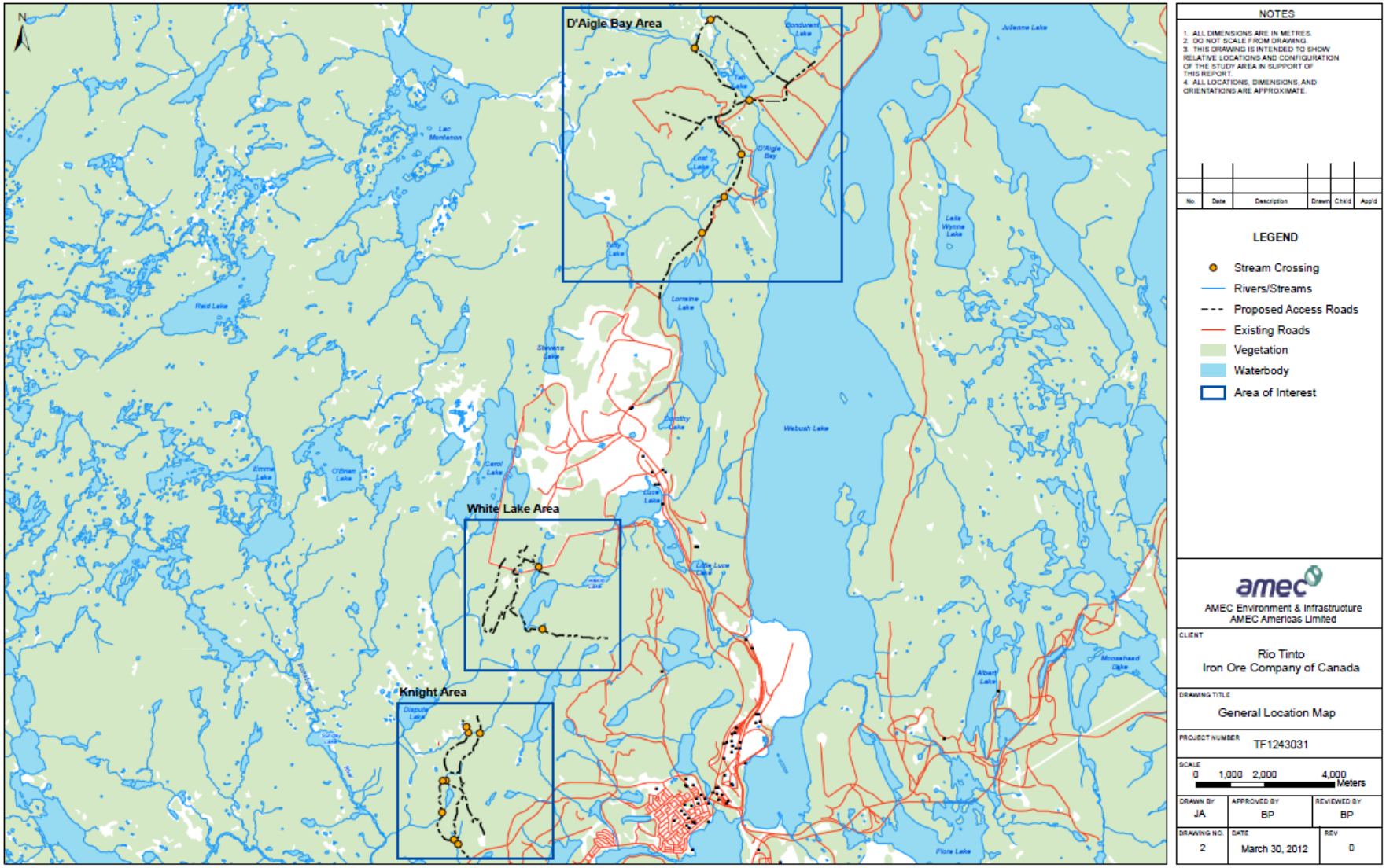

Figure 3.1 Overview Map of the Proposed Project Areas.

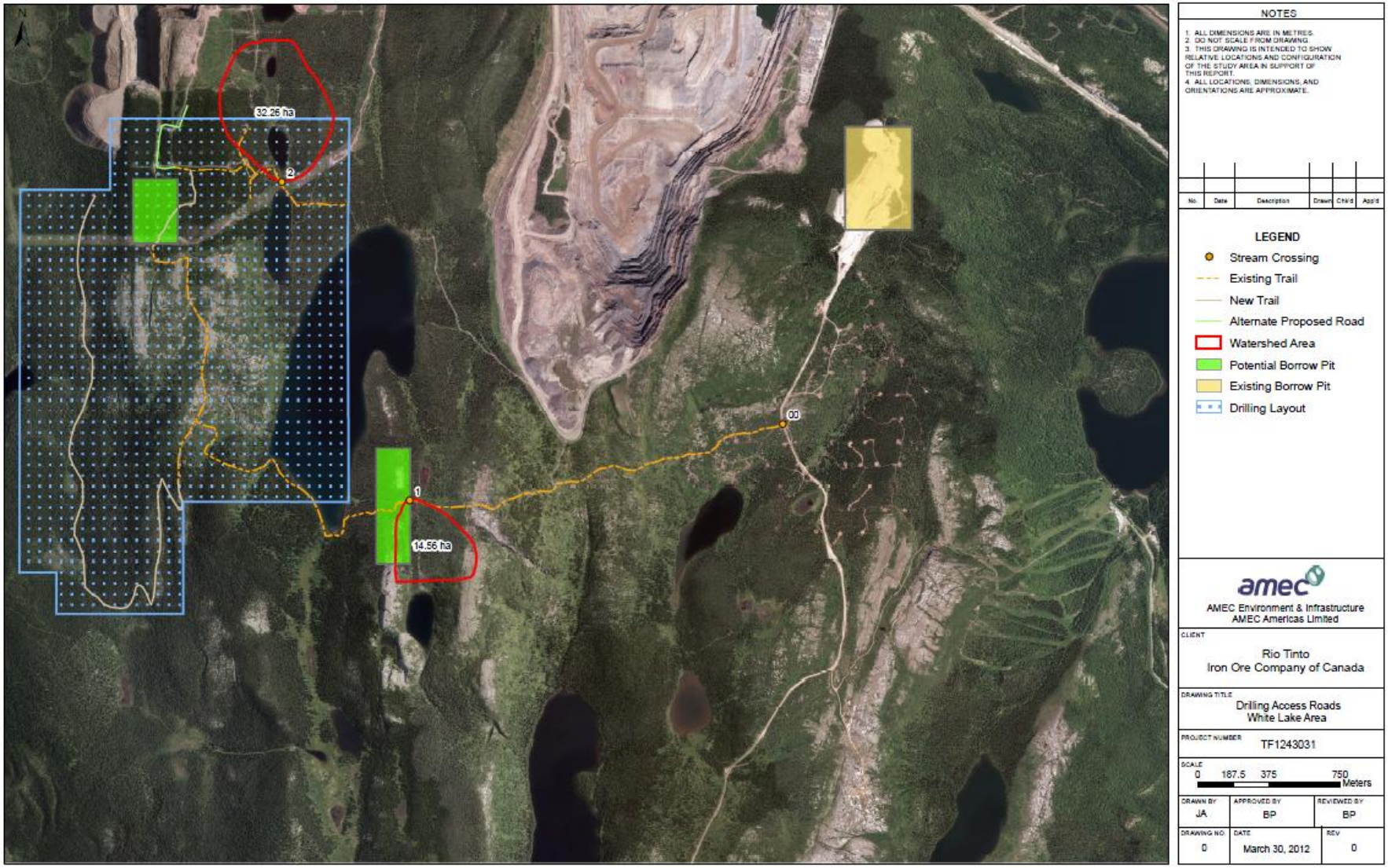

Figure 3.2 Proposed Drilling Access Roads for the White Lake Area.

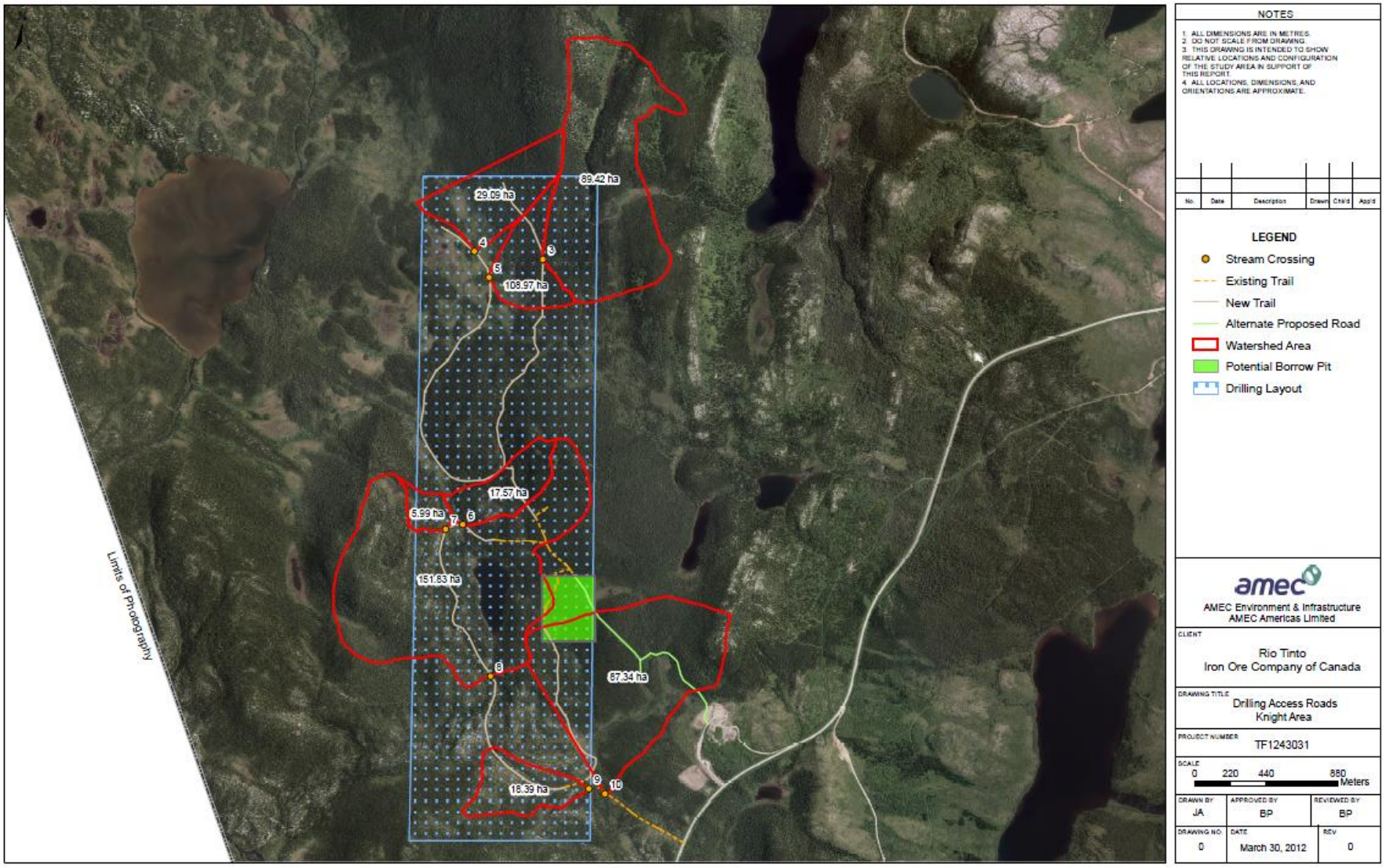

Figure 3.3 Proposed Drilling Access Roads for the Knight Area.

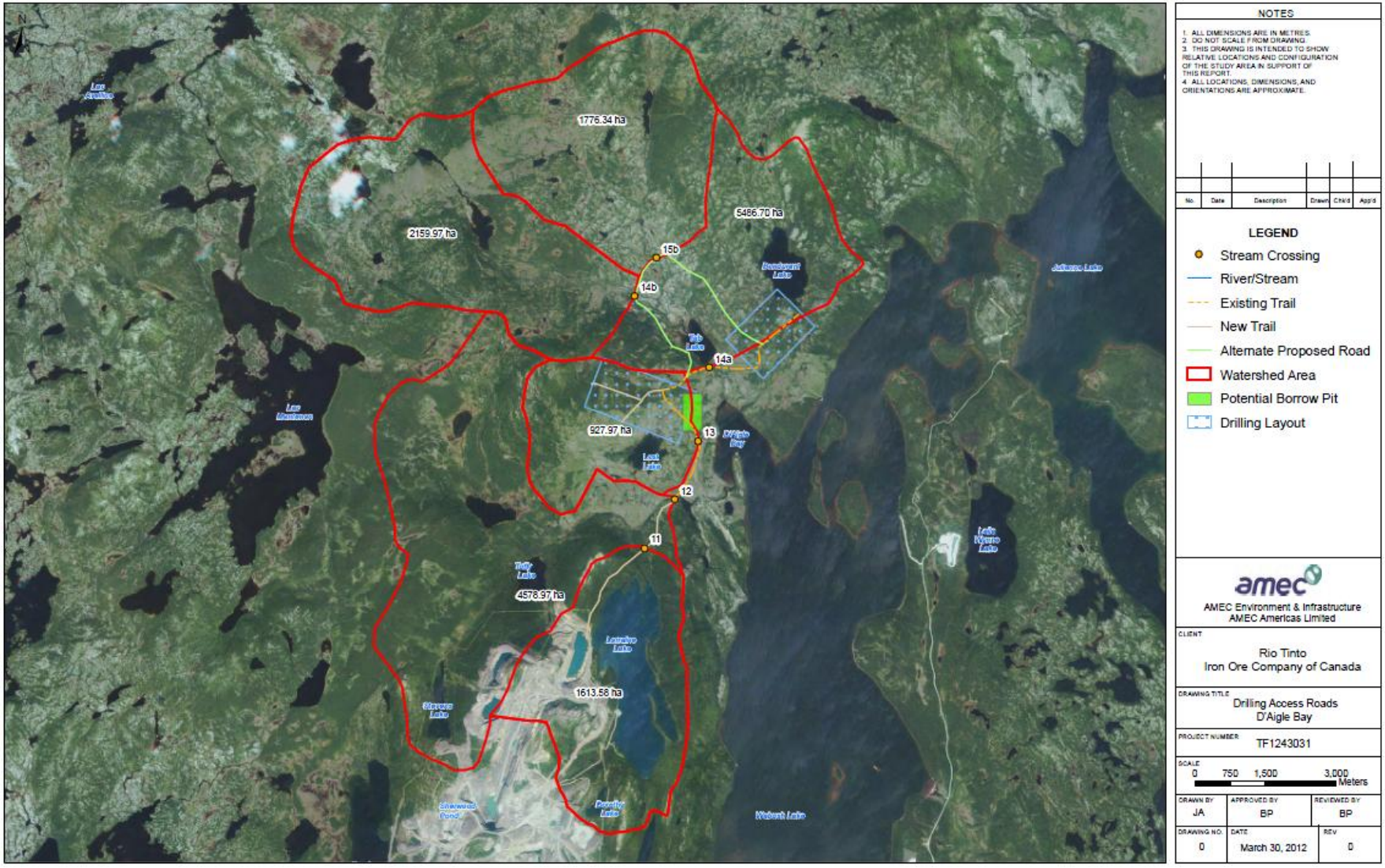

Figure 3.4 Proposed Drilling Access Roads for the D'Aigle Bay Area.

3.2 Physical Features

3.2.1 Biophysical Environment

Previous baseline studies in the general area have been conducted in relation to IOC projects.

The sites are located within the extensive *Mid Subarctic Forest* ecoregion (Meades 1989; 1990), which encompasses the upland plateaus of central and western Labrador. This area has a very continental, subarctic climate with cool, short summers and long, severe, cold winters. At Wabush Lake, daily average temperatures range from - 22.7 ^{o}C in January to + 13.7 ^{o}C in July, with 482.6 mm of rainfall and 445.7 cm of snowfall per year and prevailing westerly winds (Environment Canada 2004).

The proposed exploration roads, quarry and borrow pit sites and associated drilling areas are generally dominated by dense black spruce forests, common to western Labrador, underlain by a continuous moss carpet. Balsam fir is also found throughout the area in low numbers. Shrubs found in the understory include lambkill, Labrador tea, low-bush blueberry and mountain alder. In addition, areas to the northwest of the White Lake project area have stands of alder thickets and alpine shrubs (JWEL 1999).

Wildlife species that are known or likely to occur in the general region include red fox, marten, voles, porcupine, lynx, wolf, moose and black bear, as well as various resident and migratory species of birds, including raptors, waterfowl, passerines and upland game birds. The presence of large-scale mining activity in and around the Project area for the past five decades has, however, limited the use of the site itself by most wildlife.

Although individuals from the migratory George River caribou herd have occasionally and sporadically entered the region in past years, the Project site is outside of the herd's current range (IFWD 2010). The area is also outside the range of the threatened Lac Joseph woodland caribou herd (Schmelzer *et al* 2004), as confirmed through an aerial census conducted by the provincial government in March 2009 (Schmelzer 2010). A February 2012 aerial survey completed by IOC likewise did not find any caribou throughout a 40 x 40 km regional study area that encompassed the Project site (study report in prep.).

Previous aquatic baseline surveys have identified the common fish species that inhabit the ponds and rivers in the area. Species present may include brook trout, lake whitefish, ouananiche (land locked Atlantic salmon), northern pike, burbot, mottled and slimy sculpin, longnose and white sucker (EcoMetrix 2006). An estimation of the potential for fish habitat has been determined based on Orthophotography / Resolution Imagery, topography, water body locations, previous work in nearby areas, and fisheries knowledge of the area. As presented in Table 3.1, of the 15 potential crossings, only seven are potential fish habitat. Stream surveys will be conducted during the summer of 2012 to verify the desktop determinations and to comply with DFO requirements.

No species that are listed under the Newfoundland and Labrador *Endangered Species Act* (NL ESA) or the Canadian *Species at Risk Act* (SARA) are known to occur within or near the proposed Project area.

Table 3.1 Analysis of Potential Fish Habitat and Navigable Waters along the Proposed Drilling Access Road Crossings.

Area	Crossing	Coordinates		Watershed Size (ha)	Width (m)	Slope (%)	Potential Fish habitat (Y/N)	Potential Navigable Waters (Y/N)	Notes
		Northing	Easting						
White Lake	1	5873105	636071	15	<0.5	15	N	N	White lake was a fishless pond and unless natural access is available to other ponds upstream (or fish were implanted there), these would continue to be fishless. Based on topography and steep slope, crossing location is not considered fish habitat or navigable waters.
	2	5874903	635964	32	<0.5	19	N	N	White lake was a fishless pond as noted above. Based on topography and steep slope crossing location is not considered fish habitat or navigable waters.
Knight Area	3	5870090	634262	89	<1.0	18	N	N	Based on stream survey work in nearby areas, streams with small drainages (<450 ha) can be frozen to the bottom in winter (or with diminished flow). Due to steep slope and small watershed, crossing locations unlikely as fish habitat or navigable waters.
	4	5870273	633875	28	<1.0	2.6	N	N	Due to small watershed with no headwater standing water to buffer against low flows during winter and mid-summer, crossing location unlikely as fish habitat or navigable waters.
	5	5870111	633934	109	<0.5	1.8	N	N	Based on small watershed with no headwater standing water to buffer against low flows during winter and mid-summer, and small stream width, unlikely as fish habitat or navigable waters. Surrounding area likely composed of bog with fine substrates.
	6	5868721	633284	18	<0.5	<1	N	N	Due to small stream width and small watershed with no headwaters, unlikely as fish habitat or navigable waters.
	7	5868710	633188	6	<0.5	<1	N	N	Based on small stream width and small watershed with no headwaters, unlikely as fish habitat or navigable waters.
	8	5867803	633177	152	0.8-1.5	1	Y	N	Based on small watershed size and small stream width, unlikely as navigable waters. As the drainage area includes a water body, the stream is considered as potential fish habitat.
	9	5867008	633505	18	<0.5	2	N	N	Based on small watershed with no headwaters and small stream width, unlikely as fish habitat or navigable waters.
	10	5866880	633633	87	<0.5	6	N	N	Based on small watershed with no headwaters and small stream width, unlikely as fish habitat or navigable waters.
D'Aigle Bay	11	5884579	640688	1614	12*	3	Y	Y	With large watershed size, stream width* and upstream waterbodies, the stream is considered potential fish habitat and potential navigable waters.
	12	5885616	641328	4579	15*	2	Y	Y	With large watershed size, stream width* and upstream waterbodies, the stream is considered potential fish habitat and potential navigable waters.
	13	5886854	641826	928	10*	3	Y	Y	With large watershed size, stream width* and upstream waterbodies, the stream is considered potential fish habitat and potential navigable waters.
	14a	5888418	642059	5,487	20*	2	Y	Y	With large watershed size, stream width* and upstream waterbodies, the stream is considered potential fish habitat and potential navigable waters.
	14b	5889932	640473	2,160	18*	3	Y	Y	With large watershed size, stream width* and upstream waterbodies, the stream is considered potential fish habitat and potential navigable waters.
	15b	5890748	640935	1,776	18*	5	Y	Y	With large watershed size, stream width* and upstream waterbodies, the stream is considered potential fish habitat and potential navigable waters.

**Photography and topography information has lower resolution in the D'Aigle Bay area. Width is based on riparian width which is the distance between vegetation to vegetation on either side of the stream (i.e. more likely representative of overall channel width). Stream width is likely smaller.*

3.2.2 Human Environment

All three areas related to this road construction, quarry site and borrow pit development and associated drilling are at least 7 km from Labrador City and 2.5 km from any cabins or industrial infrastructure. Due to the distance from surrounding infrastructure it is not expected that access road construction will have any negative community impacts.

3.3 Construction

Project construction will include the expansion of existing trails into access roads, construction of new access roads, development of borrow pits and the installation of culverts and bridges. IOC will follow construction guidelines set out by Fisheries and Oceans Canada (DFO) and applicable Rio Tinto Standards and all conditions and requirements in Provincial Permits and Certificates of Approval and DFO Letters of Advice to reduce or avoid any environmental effects to the environment and fish and fish habitat. To avoid sensitive periods for fish populations, any instream work will be conducted between June 15 and September 15, unless otherwise approved by DFO. Mitigation of environmental effects associated with the construction phase will also be outlined in a project specific Environmental Protection Plan (EPP) that is currently under development and will be completed before construction begins.

Table 3.2 presents a summary of the proposed construction phase including development of existing trails and new access roads and all associated water crossings. Approximately half of the road construction is scheduled for completion in 2012 and the remaining half for 2013 (See Section 6: Scheduling for more details).

There are currently two proposed access road routes for the latter part of the D'Aigle Bay area. Both optional routes are presented in Figure 3.4. Proposed Option A route would have four crossings and proposed Option B route would have five crossings. The route will be selected during the road construction planning phase and will be dependent on minimizing or avoiding impacts to aquatic life.

Table 3.2 Summary of Proposed Access Road Expansion and Construction.

Deposit	Existing trails (m)	New roads (m)	# water crossings
White Lake	7,230	4,230	2
Knight	2,750	7,590	8
D'Aigle Bay	6,400	5,900	4-5
Total	16,380	17,720	14-15

3.3.1 Access Roads

Road construction will follow DFO guidelines on resource road construction and ditching to ensure minimal effects to the environment and fish habitat.

Construction of the access roads will entail tree clearing and brush removal along the proposed routes. Clearing practices will follow all applicable provincial guidelines. Trees will be cut as close to the ground as possible to minimize uprooting as a result of equipment movement. Felled trees with

a nominal trunk diameter greater than 9 cm shall be stored and potentially used as corduroy for access to drilling sites, for usage at local sawmills or donated to local clubs and residents. Brush along with trees whose nominal trunk diameter does not exceed 9 cm shall be mulched and mixed with the existing topsoil.

Access roads will be cleared to a width of 7 m, with a roadbed width of approximately 4.5 m. Turn-offs that are 4.5 m wide by 25 m in length will be developed every 250 m to allow for passing. Maximum road grade will be limited to ±8%. Organic soil will be removed along the road via excavator and drainage ditches will be excavated adjacent to the road. All efforts will be taken to minimize the footprint of the access roads and maximize erosion control. Drainage ditches will be constructed in a way to direct water away from the roads and into surrounding vegetation (DFO 2010a). Soil will be stockpiled for future rehabilitation / remediation work and excess material (including trees and brush) will be disposed as required. In areas where the roads run adjacent to watercourses, a 15 m buffer zone of vegetation will be maintained between the roads and the streams (DFO 2010b).

Roadbed materials will be hauled and placed along the proposed road routes and soil stabilization materials (i.e. geotextiles) will be installed where required. Engineering analysis of the regional soil types was undertaken to develop an appropriate roadbed design. Roadbed materials and thicknesses are as follows:

Standard Road:	
Running surface:	150 mm of 0-20 mm crushed stone
Road bed:	200 mm of 0-56 mm crushed stone
Separation material:	non-woven geotextile

Soft Conditions:	
Running surface:	150 mm of 0-20 mm crushed stone
Road bed:	400 mm of 0-56 mm crushed stone
Separation material:	non-woven geotextile

Environmental protection measures including dust control measures, silt fences and erosion control devices will be utilized or installed as required and will be determined during the detailed road design/construction. Prevention and mitigation practices regarding petroleum products spills, including proper storage and use of spill kits, will be employed and described in the EPP.

All equipment and vehicles will have the appropriate emissions controls and will undergo regular inspections and maintenance to minimize effects to the local environment and comply with all regulatory requirements.

3.3.2 Culverts and Bridges

The crossing of streams and rivers will require installation of bridges and open bottom or cylindrical culverts to allow for fish passage and drainage. Each stream crossing in the Knight and White Lake areas has been assessed through a desktop review of High Resolution Orthophotography with a resolution of less than 1 m. The D'Aigle Bay area was assessed with similar methodology using Rapid

Eye 5 m Resolution Imagery. An estimation of the potential for fish habitat has been determined based on Orthophotography / Resolution Imagery, topography, water body locations, previous work in nearby areas, and fisheries knowledge of the area.

The fish habitat / navigable waters analysis are provided in Table 3.1. Out of 15 potential crossings, seven streams were considered potential fish habitat and six were considered potential navigable waters. Stream surveys will be conducted during the summer of 2012 to verify the desktop determinations and to comply with DFO requirements. The stream crossing surveys will determine if water bodies are inhabited by fish and will verify that appropriate sizes and types of structures have been chosen to avoid or reduce environmental effects to fish and fish habitat. For precautionary purposes for project registration, crossing analyses and planning are based on using culverts which may have higher environmental effects compared to bridges.

Table 3.3 presents categories of watercourse crossings used to classify potential crossings for the project. Table 3.4 presents the sizes of the proposed culverts for each of the potential 15 crossings based on hydrologic and hydraulic analyses. The analyses take into account potential peak flows with regards to watershed area and precipitation data for the area. The culverts are designed with respect to a 1 in 25 storm event and a design life of 10 years.

Culvert installations will adhere to construction and mitigation guidelines outlined by DFO to ensure minimal disturbance to fish and fish habitat. Culverts will be aligned to existing water channels on firm ground. They will also be installed such that scouring of the stream bed does not occur with peak water velocities. The culvert placement will be of appropriate depth to maintain water velocity to allow for fish passage (DFO 2010c). The use of open bottom culverts can potentially reduce or avoid environmental effects compared to cylindrical culverts. Decisions on which type of culverts will be used will be made during the detailed roads design. The stream crossing methods chosen during the detailed design and construction phases will focus on those with the least in-water impact, so as to minimize potential effects on the aquatic ecosystems.

The sizes given in Table 3.4 are minimum sizes to carry peak river flows. The culvert sizes may be increased to correlate with the width of the stream. The assumptions that were made for the culvert analysis can be found in Appendix A.

Cylindrical drainage culverts will be also installed intermittently along the proposed access roads to facilitate drainage and minimize erosion alongside the proposed access roads. Locations and sizes of these drainage culverts will be determined during the detailed roads design.

Table 3.3 Size Categories of Potential Watercourse Crossings

Watercourse Type	Watershed Size (km^2)
Intermittent (N)	<2.6
Small (S1)	2.6 to 50
Small (S2)	50 to 200
Small (S3)	200 to 500
Intermediate (I1)	500 to 1,000
Intermediate (I2)	1,000 to 10,000
Large (L)	>10,000

Table 3.4 Culvert Sizes for Potential Watercourse Crossings for Exploration Access Roads.

Area	Crossing	Coordinates (UTM)		Watercourse Type	Watershed Size (ha)	Cylindrical Culvert size (mm)	Open bottom culvert size (mm)[1]
		Northing	Easting				
White Lake	1	5873105	636071	N	15	700	1,000
	2	5874903	635964	N	32	800	1,000
Knight Area	3	5870090	634262	N	89	1,200	1,700
	4	5870273	633875	N	28	700	1,000
	5	5870111	633934	N	109	1,200	1,700
	6	5868721	633284	N	18	600	800
	7	5868710	633188	N	6	400	600
	8	5867803	633177	N	152	1,200	1,700
	9	5867008	633505	N	18	700	1,000
	10	5866880	633633	N	87	1,200	1,700
D'Aigle Bay	11	5884579	640688	S1	1,614	3,990	6,200
	12	5885616	641328	S2	6,193	4,300	6,400
	13	5886854	641826	S1	928	2,700	4,000
	14a	5888418	642059	S2	5,487	4,000	5,900
	14b	5889932	640473	S1	2,160	2,700	4,000
	15b	5890748	640935	S1	1,776	2,700	4,000

Note: 1. Assumes Rise/Culvert Span=0.5

Bridges are being considered for the D'Aigle Bay area based on the hydrological analyses, stream widths and potentially large sizes of culverts required to reduce or avoid environmental effects. Potentially four to five bridges may be installed in the D'Aigle Bay area at the crossings shown in Figure 3.4.

Bridge installation will adhere to construction and mitigation guidelines outlined by DFO to ensure minimal disturbance to fish and fish habitat. The size of bridges will not exceed 30 m in length or 20 m in width as per the Exclusion List Regulations under the *Canadian Environmental Assessment Act* (CEAA). Construction of bridges will be carried out on level dry land outside of the watercourse footprint. Bridges will be installed across straight stretches of stream. Precautionary measures will be employed to prevent entry of silt and chemicals into the watercourses to mitigate effects to aquatic life (DFO 2010d).

If stream crossings are determined to be navigable waters, a Request for Work Approval will be made to Transport Canada (TC). The work approval could trigger CEAA at which the project would be registered and submitted for a screening level review under the Canadian Environmental Assessment process. This would include a public review period. Work around navigable waters would follow approval guidelines to mitigate or minimize effects to navigable waters. If streams are deemed minor navigable waters by TC under the Minor Works and Waters Order of the *Navigable Waters Protection Act*, then an Approval through the Navigable Waters Protection Program is not required.

3.3.3 Fording and Temporary Bridges

Fording and temporary bridges may be used during construction for short term access to road construction areas. These temporary activities will follow DFO guidelines to ensure minimal effects to the environment and aquatic habitat.

Fording sites will be established during the construction planning phase. The use of either fording or temporary bridges will be determined based on, suitable sites, the size of the stream crossing and determination of the least environmental impacts.

For fording and construction / decommissioning of temporary bridges, mitigative measures will be developed and implemented to prevent erosion and entry of silt and chemicals into the watercourses to mitigate impacts to aquatic life.

Where possible, fording locations will be in areas of large rubble and bedrock and will be at right angles to the watercourse. Closure of fording locations may involve stream repair of wheel ruts to ensure restoration to original condition (DFO 2010e).

Temporary bridges will be constructed outside of the watercourse footprint and placed across straight stretches of the watercourse. These activities will be conducted in areas of stable banks and low slope. Closure of the temporary bridges will involve removal of the temporary bridge materials and reparation of stream banks that may have been affected by construction activities (DFO 2010f).

3.3.4 Quarries and Borrow Pits

Road construction materials will be acquired from new and existing quarries and borrow pits. Where possible, IOC will source granular material for road construction from existing quarries. This will aid significantly towards minimizing the environmental footprint of the project. Consultation with the project contractor (to be determined) shall aid in evaluating the suitability of each option for the sourcing of granular materials. Quarry development for the crushed aggregate will most likely be constructed in quartzite deposits. New borrow pits will potentially be developed as sources of road bed materials. All quarries and borrow pits will be less than 10 ha. Figure 3.2 shows the existing quarry (Shabogamo Quartzite) and potentially two new borrow pits that will be used to supply road construction materials in the White Lake area. In the Knight and D'Aigle Bay areas there are proposed borrow pits shown in Figures 3.3 and 3.4 respectively.

Construction of new borrow pits will follow conditions of quarry permits that will be obtained from Department of Natural Resources (DNR). Minimization of the quarries and borrow pit footprint will be a key focus in their development. A minimum 100 m buffer zone will be established between quarries / proposed borrow pits and existing water bodies. Construction of these pits will start from the existing road in the White Lake area and from the constructed access roads in the Knight and D'Aigle Bay areas. Trees and brush will be cleared from the areas and organic soil will be excavated and stockpiled for future rehabilitation/remediation work. Water trainers and settling ponds will be developed as sedimentation control measures. Other environmental protection elements, including dust control, silt fences, and erosion control devices, will be utilized or installed as required.

Lay down areas may be required for certain areas not in close proximity to current IOC operations. Dimensions for lay down areas will be approximately 60 m x 60 m. Planning work will focus on minimizing both potential soil erosion as well as environmental effects to existing water bodies and wetlands. The choice of location and design of these lay downs areas will also consider all of the mitigative measures stated within this section.

3.3.5 Environmental Protection Plan

An EPP is a comprehensive document, which is designed to be field usable. This facilitates the mitigation of predicted environmental effects. In parallel with the environmental assessment process, IOC is currently preparing an EPP, which will serve as the framework for the implementation of environmental requirements and mitigative measures. The EPP will be developed in full consultation with appropriate regulatory agencies and submitted to these agencies for approval.

The EPP will consider all aspects of the road construction activities as well as the activities associated with the subsequent drilling / exploration programs.

3.4 Operation

This is a small scale operation and no permanent facilities will be constructed at this time. During the construction / operation phase, roads will be used to access Resource Development's drilling sites. Inspections and routine maintenance of these roads and culverts to ensure proper drainage will be part of ongoing operations. Sedimentation control measures will also be inspected and maintained to ensure they are functioning properly.

3.5 Decommissioning

Ongoing consultation with stakeholders will aid in determining future rehabilitation requirements or to evaluate the potential use of the roads by the community, in the event that the deposits are not deemed suitable for mining.

If these roads are to be rehabilitated, standard restoration measures would be followed. All culverts would be removed and stream banks restored. Erosion control measures would also be engineered, constructed and left until proper root anchoring occurred. To promote revegetation, the access roads would be ripped, stockpiled overburden and salvaged topsoil would be spread evenly over the area, and a seeding campaign would be conducted.

Rehabilitation of quarries and borrow pits will follow standard restoration measures upon completion of quarry activities. Slopes will be graded to 30 degrees and all other areas will be graded to blend in with the natural contour of the land or as directed by DNR. Stockpiled overburden and salvaged topsoil will be spread evenly over the pit to encourage the regrowth.

Consultations will be held with DNR regarding the decommissioning phase to determine if further revegetation efforts are needed. All permitting requirements needed for rehabilitation will be obtained prior to decommissioning.

3.6 Occupations

It is estimated that road construction in the three areas will require 8 personnel for the project team, 33 personnel for the road building crew and 28 personnel for the quarry crew in the occupations listed in Table 3.5.

Table 3.5 Summary of Occupations for the Drilling Access Road Construction Project.

Project team		Road building crew		Quarry crew	
Occupation	**No. of personnel**	**Occupation**	**No. of personnel**	**Occupation**	**No. of personnel**
Project manager	1	Foreman	1	Foreman	1
Field personnel	5	Surveyor	1	Labourers / maintenance	4
Technicians	2	Labourers	3	Operators	5
-		Operators	6	Drillers/Blasters	4
Total personnel / crew	8		11		14
No. of crews	1		3		2
Total personnel	8		33		28

To achieve maximum employment and training benefits for the region, IOC is committed to the creation and implementation of employment equity practices. This includes and is not limited to the recruitment, training, and advancement of aboriginals, women and other underrepresented groups.

4.0 PROJECT RELATED DOCUMENTS

The hydrological assumptions used to determine culvert sizing are presented in Appendix A.

5.0 APPROVAL OF THE UNDERTAKING

In addition to approvals under the provincial and environmental assessment processes, the proposed Project will also require a number of other permits and authorizations. A listing of permits, approvals, authorizations and letters of advice that may / will be sought prior to the commencement of the proposed undertaking is presented in Appendix B. Throughout construction, operation and decommissioning, IOC will follow all guidelines and regulations associated with each permit, approval and authorization.

6.0 SCHEDULE

The undertaking will be completed in two phases. Access road construction will be scheduled for all three areas from 2012 to 2013. A summary of road construction scheduling is presented in Table 6.1.

Table 6.1 Schedule Summary of Road Construction for 2012-2013.

Deposit	Total (m)	Construction (m)		# of crossings	
		2012	2013	2012	2013
White Lake	11,610	6,200	5,410	1	1
Knight Area	10,340	2,350	7,990	2	6
D'Aigle Bay	12,300	6,500	5,800	3	1-2
Total	34,250	15,050	19,200	6	8-9

The schedule for the entire project is as follows:

Registration Document Submission	April, 2012
Government Review and Decision	May, 2012
Access Road Upgrades and construction (All three areas)	June, 2012*
Resource Exploration Program	November, 2012
Access Road Upgrades and construction (All three areas)	June, 2013
Resource Exploration Program	November, 2013

Access road construction must take advantage of the short summer period in order to maximize jobsite productivity. Prioritizing of the work will respect the following priorities:

1. White Lake
2. Knight Area
3. D'Aigle Bay

*or as soon after EA release as possible.

7.0 FUNDING

IOC will be responsible for the funding of this project. No funding will be required from any level of government.

Apr 16, 2012
Date

Lee Preziosi
Social & Environment Manager – Expansion Projects

8.0 REFERENCES

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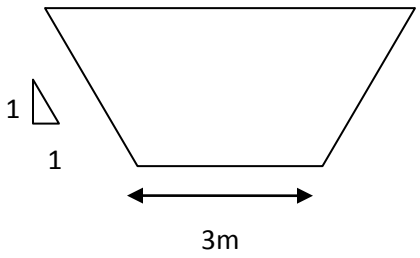
Appendix A

Hydrology Assumptions for Culvert Sizing

1. 1/10 year and 1/25 year storm events were used for this study.
2. The City of St. John's "Subdivision Design Manual" was followed for the design storm data for the 1/10 year and 1/25 year storm events. Data for the Wabush area was limited but after comparing the rainfall Intensity-Duration-Frequency (IDF) data for Wabush and St. John's it was considered a conservative approach because the precipitation amounts for St. John's are slightly higher.
3. The catchment areas and crossing locations have been provided by AMEC Environment & Infrastructure. Some catchment areas have been modified based on completing a cursory review. AMEC Power & Process has not completed a thorough review of the catchment areas and assumes no responsibility for its validity.
4. Each catchment area was modeled using Hydrologic Engineering Center–Hydrologic Modelling System (HEC-HMS) version 3.5. The Soil Conservation Service (SCS) method was used for calculating the flow volumes for each catchment. A weighted curve number (CN) was applied to each catchment based on a ratio of the forest area and the approximate area of water courses.

   Sparse Forest CN = 66
   Lakes / River CN = 100

5. Watershed area for Knight crossing 5 is assumed to be 20 ha rather than 109 ha as shown on Knight area map (Figure 3.3).
6. An additional 25% was added to the computed flow volumes from HEC-HMS to allow for snow melt. Data to estimate snow melt for the area is limited and actual amounts should be confirmed.
7. Limited information is available for each river of each catchment and therefore a typical cross section and roughness coefficient were assumed. The actual shape of the channel does not affect the volumes that will be seen passing through them.



Mannings "n" = 0.022 <--Earth Channel
Ref. Design of Small Dams -U.S. Bureau of Reclamation

8. For the sizing of the culverts the "Handbook of Steel Drainage & Highway construction products" was used. Sizing was based on inlet control with Headwater depth/Diameter(HW/D)=1 for both the 1/10 year and 1/25 year storm events. Round culverts were considered to have an entrance that was "Projecting from fill" (type (3)) and Arch culverts were considered to be $0.4 \leq$ Rise/Span < 0.5 with 90° headwall (type (2)) entrance.

References

1) Hydraulic Nomographs (Culvert Sizing) – Handbook of Steel Drainage and Highway Construction, Corrugated Steel Pipe Institute
2) IDF Data – Environment Canada
3) Storm Event Data- City of St. John's Subdivision Design Manual
4) HEC-HMS Manuals

Appendix B

List of Potentially Applicable Permits and Authorizations
(Provincial, Federal, Municipal)

Approval Potentially Required	Legislation / Regulation	Project Component / Activity Requiring Approval or Compliance	Department or Agency	Requirements
Government of Canada				
Experimental License	*Fisheries Act* , Section 52	Fish Habitat Surveys	Department of Fisheries and Oceans	An application must be made prior to fish habitat and electrofishing surveys for surveying works and handling of fish.
Letters of Advice	*Fisheries Act*, Section 35(2)	Construction of watercourse crossings, etc	Department of Fisheries and Oceans	Application must be made if fish habitat may be affected. Where potential for harmful effects to fish habitat can be prevented, a Letter of Advice will be issued outlining appropriate mitigation procedures or conditions to be followed. Authorizations will only be issued where there will be a loss of fish habitat that cannot be avoided by mitigation measures. The authorization requires a habitat compensation plan to be developed and agreed to by DFO and proponent before the authorization is given.
Permit for Construction Within Navigable Waters	*Navigable Waters Protection Act* and *Regulations*	Construction of dams, watercourse crossings, etc	Transport Canada	A permit is required for any works or construction activity located below the high water mark, either over, under, through or across any navigable waters. This could include any structure, device or thing that may interfere with navigation. An application must be submitted for each alteration to a navigable waterway.
Government of Newfoundland and Labrador				
Environmental Assessment Project Registration	*Environmental Protection Act*	Construction of mineral resource exploration access roads	Environmental Assessment Division Department of Environment and Conservation	The plan for a proposed undertaking must be submitted to the province and reviewed for environmental assessment procedures before and after the commencement of an undertaking that may be potentially damaging to the environment.
Certificate of Approval for any Alteration to a Body of Water	*Water Resources Act*	Any activities which may alter a water body	Water Resources Division, Department of Environment and Conservation	Permits are required for construction activities within 15 m of the high watermark of any water body. An application form is required for each alteration.

Approval Potentially Required	Legislation / Regulation	Project Component / Activity Requiring Approval or Compliance	Department or Agency	Requirements
Certificates of Approval for any Instream Activity (including Culvert Installation, Bridges and Fording a Watercourse)	*Water Resources Act*	Any in-stream activity	Water Resources Division, Department of Environment and Conservation	Approval is required for any in-stream activity, including culvert installations and fording activities, before undertaking the work. This also includes any development within 15 m of the high watermark of any water body.
Water Use Authorization	*Water Resources Act*	Water withdrawal for use at temporary camps or during construction and operation activities	Water Resources Division, Department of Environment and Conservation	Water use authorization is required for all beneficial uses of water.
Cutting Permit	*Forestry Act* and *Cutting of Timber Regulations*	Clearing land areas for the right-of-way, borrow pits, camp sites or laydown areas	Forestry Services Branch, Department of Natural Resources	A permit is required for the commercial or domestic cutting of timber on crown land.
Operating Permit	*Forestry Act*	Removing trees during the forest fire season	Forestry Services Branch Department of Natural Resources	A permit is required for cutting and / or removing of timber during the forest fire season.
Quarry Permit	*Quarry Materials Act* and *Regulations*	Extracting borrow material	Mineral Lands Division, Department of Natural Resources	A permit is required to dig for, excavate, remove and dispose of any Crown quarry material.
Highway Access Permit	*Urban and Rural Planning Act, 2000*, *Protected Road Zoning Regulations* , and*Works, Services and Transportation Act*	Accessing the Highway	Department of Transportation and Works	The construction of an access to a highway that is classified as a Protected Road requires the prior approval of the Department of Transportation and Works and/or the Government Service Centre.

Approval Potentially Required	Legislation / Regulation	Project Component / Activity Requiring Approval or Compliance	Department or Agency	Requirements
Compliance Standard	*Fire Prevention Act,* and *Fire Prevention Regulations*	On-site structures (temporary or permanent)	Engineering Services Division, Service NL	All structures must comply with fire prevention standards.
Compliance Standard	*Occupational Health and Safety Act* and Regulations	Project-related occupations	Service NL	Outlines minimum requirements for workplace health and safety. Workers have the right to refuse dangerous work. Proponents must notify Minister of start of construction for any project greater than 30 days in duration.
Municipalities				
Building Permit	*Urban and Rural Planning Act, 2000,* and Relevant Municipal Plan and Development Regulations	Development within municipal boundary	Town of Labrador City	A permit is required for any development or building within municipal boundaries.
Approval for Waste Disposal	*Urban and Rural Planning Act, 2000,* and Relevant Municipal Plan and Development Regulations	Waste disposal	Town of Labrador City	The use of a community waste disposal site in Newfoundland and Labrador by proponents/contractors to dispose of waste requires municipal approval. Restrictions may be in place as to what items can be disposed of a municipal disposal site.
Excavation Permit including quarry development	*Urban and Rural Planning Act, 2000,* and Relevant Municipal Plan and Development Regulations	Excavation within municipal boundary	Town of Labrador City	An Excavation permit is required prior to removing any materials, soil, etc.